

DESIGN AND DEVELOPMENT OF A CLOUD-BASED COMMUNITY OF  
PRACTICE PLATFORM FOR PUBLIC OFFICERS

A THESIS SUBMITTED TO  
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES  
OF  
MIDDLE EAST TECHNICAL UNIVERSITY

BY  
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF DOCTOR OF PHILOSOPHY  
IN  
COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

JANUARY 2024



Approval of the thesis:

**DESIGN AND DEVELOPMENT OF A CLOUD-BASED COMMUNITY OF  
PRACTICE PLATFORM FOR PUBLIC OFFICERS**

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## ABSTRACT

### **DESIGN AND DEVELOPMENT OF A CLOUD-BASED COMMUNITY OF PRACTICE PLATFORM FOR PUBLIC OFFICERS**

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Doctor of Philosophy, Computer Education and Instructional Technology

Supervisor: Prof. Dr. Ömer Delialioğlu

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January 2024, 250 pages

The aim of this study is to reveal design principles of a cloud-based community of practice platform designed and developed to support collaborative work for public officers. The study follows a design-based research methodology. Perceptions and suggestions of 12 participants were collected for the two design cycles. The opinions of four supervisors before and after the platform design were used to implement the iterations. Data were collected through semi-structured interview forms, observation and think-aloud notes. Content analysis of the collected data was performed with the MAXQDA 22 program. Data was collected by observing the participants while using the platform, recording their think-aloud data while they were interacting with the platform, and obtaining their opinions and perceptions after using the platform. During implementation, participants' likes or dislikes, difficulties in using the platform, and participants' suggestions for effective and efficient use of platform were recorded and the initial prototype was updated based on the finding of the content analysis. In iterative study, findings obtained from first implementation serve as input for the next implementation. After two design cycles, overall participant satisfaction was achieved and developments were finalized. The results revealed that the design principles for the development of a cloud-based community of practice

platform, can be clustered under five themes. The themes are, flexibility in the workplace, sharing, communication, contribution to professional development, and contribution to collaboration and cooperation skills. When a cloud-based community of practice platform is developed by considering the revealed design principles, more efficient business processes can be expected. The results can provide guidance for designers and developers who produce communication and collaboration software for the public sector.

Keywords: Community of Practice, Design-Based Research, Design Principles, Professional Development

## ÖZ

### **KAMU GÖREVLİLERİ İÇİN BULUT TABANLI BİR UYGULAMA TOPLULUĞU PLATFORMUNUN TASARIMI VE GELİŞTİRİLMESİ**

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Bu çalışmanın amacı, kamu görevlilerinin işbirlikçi çalışmasını desteklemek amacıyla tasarlanan ve geliştirilen bulut tabanlı bir uygulama topluluğu platformunun tasarım ilkelerini ortaya çıkarmaktır. Çalışma tasarım temelli bir araştırma metodolojisini takip etmektedir. İki tasarım döngüsü için 12 katılımcıdan görüş ve önerileri toplandı. Her iterasyonların uygulanması için platform tasarımı öncesinde ve sonrasında dört süpervizörün görüşlerinden yararlanılmıştır. Veriler yarı yapılandırılmış görüşme formları, gözlem ve sesli düşünme notları aracılığıyla toplanmıştır. Toplanan verilerin içerik analizi MAXQDA 22 programı ile yapılmıştır. Veriler, katılımcıların platformu kullanırken gözlemlenmesi, platformla etkileşimde bulunurken sesli düşünme verilerinin kaydedilmesi ve platformu kullandıktan sonra görüş ve algılarının alınmasıyla toplanmıştır. Uygulama sırasında katılımcıların beğendikleri veya beğenmedikleri, platformu kullanırken yaşadıkları zorluklar, platformun etkili ve verimli kullanımına yönelik önerileri kayıt altına alındı ve içerik analizi bulgularına göre ilk prototip güncellendi. İterasyon temelli çalışmada, ilk uygulamadan elde edilen bulgular bir sonraki uygulamaya girdi oluşturur. İki tasarım döngüsünden sonra genel katılımcı memnuniyeti sağlandıktan

sonra geliřtirmeler sonulandırılmıřtır. Sonular, bulut tabanlı bir uygulama topluluėu platformu geliřtirmeye ynelik tasarım ilkelerinin beř tema altında toplanabileceėini ortaya ıkarmıřtır. Temalar; alıřma ortamı esnekliėi, paylařım, iletiřim, mesleki geliřime katkı, iřbirlikli alıřma ve yardımlařma becerilerine katkıdır. Ortaya ıkan tasarım ilkeleri dikkate alınarak bulut tabanlı bir uygulama topluluėu platformu geliřtirildiėinde daha verimli iř sreleri beklenebilir. Elde edilen sonular, kamu sektr iin iletiřim ve iřbirliėi yazılımı reten tasarımcılara ve geliřtiricilere rehberlik saėlayabilir.

Anahtar Kelimeler: Uygulama Topluluėu, Tasarım Tabanlı Arařtırma, Tasarım Prensipleri, Mesleki Geliřim



To my family  
for their belief and support in me throughout this process

## ACKNOWLEDGMENTS

I wish to express his deepest gratitude to his supervisor Prof. Dr. Ömer Delialiođlu and co-supervisor Prof. Dr. M. Yařar Özden for their guidance, advice, criticism, encouragements and insight throughout the thesis study.

Furthermore, I would like to thank and express my sincere gratitude to my doctoral steering committee members Prof. Dr. Hasan akır and Prof. Dr. Zahide Yıldırım, for their valuable guidance, suggestions, and contributions throughout my study. I also would like to thank my thesis committee members Prof. Dr. Aslıhan Kocaman Karođlu and Assoc. Prof. Dr. Tarkan Gürbüz for their valuable comments and contributions.

I would like to express my deepest gratitude for my wife Figen Demirel Uzun for their unconditional support and endless love and my children Zeynep Duru, Bilge and Erdem their patience during this thesis study.

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## **LIST OF ABBREVIATIONS**

### **ABBREVIATIONS**

CoP : Community of Practices

DBR : Design Based Research

PLD : Professional Learning and Development

PSO : Public Sector Organization

TMC : Thesis Monitoring Committee









# CHAPTER 1

## INTRODUCTION

This chapter provides detailed information about the background of the study, the problem statement, the purpose and significance of the study, the research questions, the definitions of terms, and the chapter summary.

### 1.1 Background of the Study

Due to the developments in information and communication technologies, the increase in the structure and size of the information that individuals need to perform their work leads to radical changes in the ways of obtaining information. New forms of social learning are emerging on the basis of evolving communication paradigms, driven by the incapacity of formal education systems to meet the needs and demands of individuals (Zhou and Li, 2012; Davidson and Goldberg, 2009).

The rapid advancement of technology and its integration into various aspects of society have led to the emergence of Industry 4.0 and the information society. Industry 4.0, characterized by the fusion of digital technologies with traditional industrial processes, has revolutionized the nature of work and the skills required in the workforce. This transformation has necessitated a shift towards a more interconnected and knowledge-based economy, where the demand for skilled manpower with expertise in areas such as data analytics, strategy development, artificial intelligence, and automation has increased significantly (Brynjolfsson and McAfee, 2015).

Similarly, the concept of Society 5.0 has emerged, emphasizing the integration of cyber-physical systems with society to address various societal challenges and improve the quality of life. Society 5.0 requires a workforce that is not only

technologically adept but also possesses strong interpersonal and problem-solving skills to effectively navigate the complexities of a highly interconnected and digitized society (Kagermann, Wahlster and Helbig, 2013).

The shift towards collective learning and the emphasis on know-how in the digital era have underscored the importance of collaborative learning and knowledge sharing. The value of cooperative or collaborative learning has been recognized as essential for organizational and professional development, as it fosters a culture of continuous learning and innovation (Wenger, 1998). This necessitates the development of online communities of practice that facilitate collaborative learning, knowledge sharing, and professional development in a digital environment. Such communities can address the challenges faced by organizations in adapting to the demands of Society 5.0, such as delayed feedback, lack of awareness and connectivity among individuals, and the need for new employees to integrate into the professional community (Wenger, 1998). In conclusion, the impact of Society 5.0 on adult education and workplace learning is profound, requiring a shift towards continuous learning, collaborative knowledge sharing, and the development of new competencies to thrive in the interconnected and digitized society (Kravets, Bolshakov and Shcherbakov, 2022). The establishment of online communities of practice can play a pivotal role in addressing the challenges and fostering professional development in the context of Society 5.0.

## **1.2 Problem Statement**

In the contemporary era marked by the rapid evolution of Society 5.0, alongside a knowledge-based economy and groundbreaking technological advancements, the landscape of business life has undergone significant transformation. This era, characterized by the integration of digital technologies and a human-centered approach, emphasizes the importance of collaborative work and effective business processes. However, existing organizational structures and practices often lag behind, posing significant challenges in meeting the demands of this new paradigm.

The primary problem that needs to be addressed in this context is the gap between the current state of workplace practices in organizations and the ideal collaborative, efficient, and knowledge-driven environment envisaged in Society 5.0 (Tajpour, Hosseini, Mohammadi and Bahman-Zangi, 2022). Lifelong learning has become an important tool to adapt to the change in the world and to meet the increasingly diverse demands of society (Park, Heo and Lee, 2011). As a social process, learning occurs when people converse and interact with one another in an environment that is as close to the practice setting as feasible (Ataizi, 2000; Stein, 1998). Changes in the labor market and the reflections of technological, market and organizational developments on working life require skills and competencies that can be transferred to a new working environment (Colardyn and Bjornavold, 2004). Every stage of a person's life involves learning. The concept of teaching people to learn is the foundation of lifelong learning, which emphasizes the growth of individual skills and capacities for learning (Gündoğan, 2003).

Society 5.0 and Industry 4.0 are periods when technology develops rapidly and society, business and learning processes have to adapt to these changes. Especially when looking at the studies on the adaptation of employees who meet the needs of Society 5.0 and Industry 4.0, it can be said that employees are late in the adaptation process. The challenges encountered in the adaptation process in the studies can be categorized under 6 headings.

**Isolated Working Conditions:** Employees often work in silos, unaware of their colleagues' progress, leading to delays and negative impacts on work processes (Johnson, Grove, and Clarke, 2018). Furthermore, Damiani et al. (2015) discussed the obstacles faced by teams in their collaboration, such as poor communication and being unaware of other team members' knowledge, hindering the synthesis of diverse knowledge and impacting work processes.

**Inefficiencies Business Process:** The absence of collaborative tools results in slow execution of tasks and significant time wastage, often compounded by the need to duplicate efforts (Muuro, Wagacha, Kihoro & Oboko, 2014). The use of

collaborative tools is essential to address these challenges and facilitate effective online collaborative learning (Bonner, Desa, Petkova & Baack, 2022).

**Lack of Real-Time Collaboration:** Current practices relying on email or physical data sharing tools like USB drives prevent real-time collaboration, leading to repetitive work and potential errors (Capdeferro & Roméro, 2012). The integration of online collaborative writing tools, such as blogs and wikis, into educational settings has become increasingly prevalent, highlighting the importance of collaborative writing in online education (Brodahl et al., 2011; Woodrich & Fan, 2017).

**Delayed Feedback and Revisions:** The lack of collaborative and synchronous online learning environments results in delayed feedback and correction of errors, impacting overall productivity (Kirschner, Strijbos, Kreijns & Beers, 2004). The need for collaborative and collegial learning environments has been emphasized as a strategy to develop learning outcomes and address the challenges of delayed feedback in educational settings (Islami, Anantanukulwong & Faikhamta, 2022).

**Challenges for New or Less Experienced Employees:** New hires or less experienced employees struggle to integrate into the existing knowledge culture due to a lack of accessible shared resources and community learning opportunities (Larson and Sanjay, 2022). The success of adult learners' online professional development is influenced by various factors, including their engagement, welcoming, and the support provided by educational institutions (Vu et al., 2014).

**Lack of a Cohesive Organizational Culture:** There is often a disconnect between the organization's stated values and the actual culture experienced by employees, hindering the development of a shared identity and common purpose.

These challenges highlight the critical need to adapt to the principles of Society 5.0 and take advantage of the opportunities offered by the knowledge-based economy, organizations need an organizational culture where colleagues can support each other's professional skills to enable collaborative working and lifelong learning. Online social learning platform can facilitate collaborative learning, knowledge

construction, and professional development in a digital workplace environment (Margaryan, Albert, and Charlton-Czaplicki, 2022). Learning is structured by real tasks and social experiences in the context of real life (Clancey, 2005; Kılıç, 2004; Stein 1998). A community of practice, according to Wenger, McDermott, and Synder (2002), is a group of individuals who are continuously working to improve their knowledge and competence in an area of expertise and who have a shared interest, set of issues, or passion for it.

Online community of practice can would address the shortcomings of traditional work methods and enable individuals to work collaboratively, share knowledge, and collectively learn, thereby enhancing the effectiveness of business processes and meeting the demands of the evolving technological and economic landscape. Research by Zhang and Watts (2008) demonstrated that the concept of Communities of Practice (CoPs) can be used to guide the production and exchange of knowledge in digital environments, and provided empirical evidence that CoPs can emerge from online communities. Online communities of practice are characterized by rich conversations and mutual exchange of practice-rooted knowledge, facilitating the development of a socially embedded joint practice (Jørgensen, Edwards, Scarso & Ipsen, 2021). The body of research on this subject highlights the necessity of providing adult learners with effective and customized online professional development opportunities such as CoPs. To create meaningful online learning experiences, it is crucial to comprehend the special requirements and characteristics of adult learners (Ng & Baharom, 2018).

In the literature reviewed, Ardichvili, Page, and Wentling (2003), Chiu, Hsu, and Wang (2006), Wei and Chen (2006), Hew and Hara (2007), Zhang and Watts (2008), Zhao and Bishop (2011), Lin and Chen (2009), Thoma, Brazil, Spurr, Palaganas, Eppich, Grant and Cheng (2018), Abbott and Lee (2022), Amayah (2013), Jørgensen, Edwards, Scarso and Ipsen (2021) conducted various studies on Communities of Practice (CoPs). In general, these studies have presented the components of CoP (Community of Practice) used in research, highlighting its contributions such as communication, interaction, collaboration, to professional

development in adult education, impact on knowledge sharing, participation of members, mentoring and apprenticeship, etc., as well as potential challenges (Shachaf and Stoerger, 2009). However, despite groups collaborating on a platform in these studies, there has been no access to information about the features, design elements, or design process of the platforms they used. Yet, CoP is a method that encompasses elements of accessing, learning, and sharing knowledge. The characteristics and design of the learning environment should also be taken into consideration for effective learning. Indeed, Reigeluth (1999) stated that the purpose of instructional design is to facilitate and enhance learning with a product that will contribute to better learning. Therefore, the importance of the function of design at every point in the development of high-quality multimedia resources has been emphasized. From this perspective, it is considered important that the environments/platforms where CoPs are conducted are developed in accordance with design principles suitable for internet technologies, in addition to the benefits provided by CoPs, for the quality of the learning outcomes to be achieved.

In light of the above background, the problem addressed by this study is the need for a design guide for a cloud-based Community of Practice (CoP) platform that supports collaborative work among public sector employees. The proposed study will investigate the design principles of a cloud-based CoP platform that can address these challenges. By facilitating collaborative and real-time interactions, such a platform can enhance knowledge sharing, reduce inefficiencies, and create a more inclusive and dynamic lifelong learning environment.

### **1.3 Purpose of the Study**

The present study aims to investigate the design principles of a cloud-based community of practice platform designed and developed to support collaborative work for public officers. Moreover, it attempts to explore how the online community of practice platform can support professional development and business operation efficiency.

## **1.4 Significance of the Study**

The findings of the study are expected to provide functional recommendations for administrators and moderators on how to design community of practice platform to encourage community members in the use of educational tools such as shared library, co-authoring tool, welcoming e-mail, shared calendar, comments chain and chat on document creation.

Online communities of practice are becoming an increasingly important field of study in terms of providing a new ground for lifelong learning and adult learning, connecting colleagues with the real-life problem. The findings of the research are expected to be a pioneering source on how organizational knowledge management techniques, tools and concepts can be applied to different types of organization by determining the design principles of cloud-based community of practice for public officers to support collaborative work. This study also aims to contribute to the body of knowledge on collaborative learning and working in the context of Public Sector Officers, particularly in the digital.

By putting user needs and demands first, encouraging improved engagement and collaboration, encouraging innovation and problem-solving, and providing sustainability and scalability, our study's application of a Human-Centered Design improves the design and development of an online Community of Practice (CoP) platform for public officers. Through the use of techniques like participatory design, iterative testing, we make sure the platform is intuitively in line with the difficulties and daily tasks faced by public officers. This strategy emphasizes the value of user-centric design in enhancing public administration and services while simultaneously making the platform more efficient and user-friendly and establishing a precedent for the adoption of Human-Centered Design in digital public sector initiatives.

The current study contributes to the literature by defining design principles of community of practice platform to promote public officers' professional development, collaborative work and cooperation skills. To accomplish the aim, the

researcher conducted an inclusive analysis phase to determine the needs of the public officers to support collaborative works. Then, the researcher conducted two iterative design cycles with the stakeholders to get their opinions about the cloud-based community of practice platform. The aim is to reveal design principles by designing and developing a community of applications for public officials, considering their needs, characteristics and problems. Since we learn by doing and the best learning environments emerge when there are real consequences for the learner and his or her Community of Practice, knowledge and practice are inextricably linked (Botha, Kourie & Snyman, 2008). The study provides significant contribution to the body of literature since it focuses on creating a community of practice platform specifically for public officers.

When the studies in the literature are examined, it is seen that there are studies on participation, impact on learning, challenges and opportunities related to the community of practice in adult learning. Also, it is thought that this study will contribute to the literature with the possibility that it may represent the first studies to determine the design principles of the CoP to be developed especially for public officers.

Aside this study exemplifies design-based research (DBR). By identifying situation-specific design principles, it would create a solution for a real-world learning problem (Amiel & Reeves, 2008; Goff & Getenet, 2017). In compliance with DBR, the researcher collaborated with stakeholders to identify design principles and assess target beneficiaries' needs from various viewpoints. The significance of the study originates from presenting the method and findings sections straightforward to guide researchers, practitioners, and decision maker interested in the use of technology for lifelong professional development of public officer in workplace environment.

## **1.5 Research Questions**

The following are the research questions guiding the current research;



There are four sub research questions with a main Research Question.

1. What are the design principles of cloud-based community of practice platform for public officers to support collaborative work?
  - 1.1. What are the suggested components of a Community of Practice Platform?
  - 1.2. How can a Community of Practice platform support business operations?
  - 1.3. How does a Community of Practice platform impact the Professional Development of the Public officers?
  - 1.4. What are the factors for consideration in the Design and Implementation of the Community of Practice Platform?

## **1.6 Definition of Terms**

CoP : Community of Practice is that a community of people who share a common interest, a set of problems or a passion about a topic and who seek to continuously increase their knowledge and expertise in this area (Wenger, McDermott and Synder, 2002).

DBR : Design Based Research

PLD : Professional Learning and Development

PSO : Public Sector Organization



## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter includes theoretical background of the current study. In this part the literature related to the research topic and research problem is discussed. It tries to synthesize and summarize the literature about social learning, professional development, knowledge construction, community of practice and related studies.

#### **2.1 Social Learning**

Social Learning Theory, first introduced by Albert Bandura in the 1970s, remains highly relevant in the 21st century, especially in the context of lifelong learning. This theory suggests that learning occurs in a social context and individuals learn from each other through observation, imitation, and modeling. Learning is a social process that takes place as a result of mutual communication and exchange with other people, placed in a context that is as similar as possible to the practice environment (Ataizi, 2000; Stein, 1998)

Social Learning Theory has a broad and deep impact on how individuals engage with learning opportunities throughout their lives. It informs the design of educational programs, the use of technology for learning, and the strategies we employ to become continuous learners in a complex and ever-changing world. Lifelong learning has become an important tool to adapt to changes in the world and to meet the increasingly diverse demands of society (Park, Heo, & Lee, 2011). Since lifelong learning is a very important issue in the knowledge era ubiquitous learning has become the most effective tool for every individual to adapt to the competition and challenges of the age (Chen, Ma, Liu, Jia, Ran & Wang, 2013). Learning takes place in all periods of an individual's life. Lifelong learning, which focuses on developing

individual abilities and increasing personal learning capacities, is based on the approach of teaching individuals to learn (Gündoğan, 2003). Although learning mostly takes place in formal education settings such as school, much valuable knowledge is learned by observing or experiencing in daily life whether intentionally or informally (OECD, 2010). Modern workplaces and educational settings increasingly prefer collaborative learning environments in higher education (Laal and Ghodsi, 2012 & Berman, 2020). In support of this, Social Learning Theory supports the idea that individuals learn more effectively when they can observe others, ask questions, and share knowledge, leading to a deeper understanding and retention of information.

## **2.2 Professional Development in Adult Education**

The learning process for adults differs significantly from that for children, which is a critical consideration in the development of continuing professional development activities. In professional education and development processes, especially in adult education, continuing professional education is recognized as an important tool to promote knowledge sharing and knowledge construction among colleagues. This process includes formal and informal learning activities and is essential for professionals to maintain their competence in their field (Collin, van der Heijden, & Lewis, 2012).

The effectiveness of continuing professional development programs mostly relies on the internal motivation and collaborative work of participants. The satisfaction of understanding new concepts and the joying of finding applicability in knowledge are likely to be more sustainable and long-term internal motivators than external ones (Magwenya & Ross 2021). Digital and mobile technologies are important resources in supporting adult learners' self-directed learning processes. The increasing use and reliance of these technologies has significant implications for company's policies aimed at supporting or hindering effective self-directed learning processes (Curran et al, 2019). In this context, organizational cultures that support and encourage the

use of technology can contribute to adult learners' lifelong learning and professional development. Online professional development for adults is a critical aspect of lifelong learning and career advancement. The literature on this topic emphasizes the need for tailored and effective online professional development experiences for adult learners. It is essential to understand the unique needs and characteristics of adult learners to design meaningful online learning experiences (Ng & Baharom, 2018). The effectiveness of online professional development should not be underestimated, as it offers adult learners access, flexibility, and convenience (Müller, 2008).

Adult learners' involvement, the support offered by educational institutions, and the design of online courses are some of the elements that affect the success of adult learners' online professional development (Vu et al., 2014). Furthermore, Ruey (2010) and Mackey & Evans (2011) have identified the utilization of constructivist instructional strategies and the establishment of community of practice as beneficial methods for online professional development, enabling adult learners to participate in experiential learning and work together with peers and colleagues. Given that adult learners may have particular difficulties and health concerns, it is critical to acknowledge their unique needs in the context of online professional development (Thompson & Porto, 2014). One important component of online professional development for adults is the development of professional skills and identity through workplace learning (Poortman et al., 2014).

In summary, the literature highlights the importance of customized and effective online professional development for adult learners. Understanding the unique needs of adult learners, applying suitable instructional strategies, establishing collaborate with colleagues, and providing adequate support are essential for the success of online professional development programs.

### **2.3 Knowledge Construction in Online Collaborative Platform**

Knowledge construction in online platforms is grounded in educational theories like constructivism and social constructivism. These theories suggest that knowledge is constructed through social interaction and the active involvement of learners. Online platforms facilitate these interactions by providing spaces where individuals can share, discuss, and develop ideas collaboratively. Knowledge construction in online collaboration work platforms is a critical area of research that has garnered significant attention in the literature. The role of online platforms in facilitating knowledge creation, sharing, and collaboration has been explored. Faraj et al. (2011) emphasized the need for research on online knowledge collaboration, highlighting the existing gap in understanding how it occurs. Furthermore, Randhawa et al. (2017) integrated knowledge management literature into the context of open innovation, emphasizing the role of intermediaries in shaping knowledge collaboration between organizations and online communities. This integration provides valuable insights into the dynamics of knowledge exchange within online collaborative environments.

Rehman et al. (2019) emphasizes the impact of knowledge construction on organizational performance and highlight the critical role it plays in fostering organizational collaboration, communication, and workforce empowerment for collaborative learning and knowledge searching. This aligns with the findings of (Riyadh et al., 2021), who highlight the interaction between collaborative practices and efficient knowledge management by demonstrating the substantial influence of organizational structure, adopted technologies in mass collaboration, and collaborative learning techniques on knowledge management and leadership. Moreover, the use of co-authoring collaborative tools has been identified as a means to facilitate knowledge creation and sharing within online communities. Cress & Kimmerle (2008) regarded wikis as supportive media for learning and collaboration, enhancing inventiveness and inquiry. These platforms have provided a conducive environment for knowledge co-construction, collaborative writing, and interactive learning experiences. This is in line with the Olesen (2020) highlighted the flexible

approach of Google Docs in framing interactions among pupils and their collaborative or cooperative patterns during group work. Additionally, Bakar (2021) found that learners reacted positively to the use of Cloud based word processors, Google Docs for collaborative writing, improving their writing performance through successful collaborative work and feedback received from peers and instructors. Collaborative learning environments are becoming more and more popular in modern educational and workplace contexts. According to social learning theory, people learn better when they can watch others, observe them closely, and ask questions and share their knowledge. This results in a deeper comprehension and retention of the material.

Tacit knowledge, which is deeply rooted in individuals' experiences and insights, plays a crucial role in organizational knowledge management. In order to facilitate the transmission of highly implicit knowledge, Powell (2023) emphasizes the importance of rich social interaction and motivation. Know-how and experience sharing is vital issue in any organization learning. The literature emphasizes the significance of knowledge management practices in the public sector, particularly in enhancing organizational learning, innovation, and overall efficiency (Bibolli et al., 2021). It has been highlighted that knowledge sharing within governmental institutions is directly linked to innovation, evidence-based planning, and sustainable development, ultimately driving up public value to the citizenry (Bibolli et al., 2021). Furthermore, the establishment of intentionally developed Community of Practices has been found to have a positive impact on knowledge sharing and practice improvement in administrative public sector organizations (Jorgensen et al., 2021). The literature also emphasizes how communities of practice and other knowledge management strategies help to facilitate knowledge sharing in the public sector (Karagoz et al., 2020). Knowledge sharing was found to be significantly impacted by two barriers that measured organizational climate: the degree of empathy and the degree of courage (Amayah, 2013). It has been determined that the effective creation of CoPs can help public sector organizations overcome their knowledge sharing obstacles (Amayah, 2013). Furthermore, research has shown that employee

knowledge sharing has a major impact on public sector organizations' performance (Yen & Tung, 2022).

Collaborative knowledge construction in the context of Community of Practices for public officers underscores the importance of experience and knowledge sharing, innovation, and organizational learning in the public sector. It emphasizes the role of intentionally developed CoPs, enablers and barriers to knowledge sharing, and the impact of knowledge sharing on organizational performance (Rakšnys, Valickas & Vanagas, 2020). These insights keep great value for public sector organizations that aim to enhance their knowledge management procedures and cultivate an ongoing learning and development culture.

#### **2.4 Community of Practice (CoP)**

A Community of Practice (CoP) is a concept in social theory that refers to a group of people who share a concern, a problem, or a passion about a topic, and who deepen their understanding and knowledge in this area by interacting on an ongoing basis. This concept, extensively developed by Etienne Wenger and Jean Lave, is central to understanding how groups learn and share knowledge in both formal and informal settings. The community of practice concept, first introduced by Lave and Wenger (1991), is based on the constructivist paradigm in which control of learning shifts from the teacher to the learner. Wenger, McDermott, and Synder (2002) define a community of practice as a community of people who share a common interest, a set of problems, or a passion for a topic and who are constantly striving to increase their knowledge and expertise in that area.

The characteristics of a practice community differ from other communities. However, this does not represent a new idea. Individuals, whether they realize it or not, are involved with various practice communities at home, at work, at school, or in any part of their daily lives. Some of these are quite formal within an institution, while others are variable and informal. Nevertheless, community members come



together through common activities and the patterns of interaction within these activities' different dimensions. In this respect, a community of practice differs from other communities involving shared practice.

Wenger, McDermott and Synder (2002) argue that although community of practices can take various forms, they have three basic building blocks. Not every community is a community of practice. A community of practice is a unique combination of these three basic components.

Domain - Community - Practice

For a community to be called a community of practice, it must have these three basic characteristics. According to Wenger (2015), here's a more detailed look at its components:

#### **2.4.1 Domain**

The domain is the shared area of interest or expertise that unites the community. It's not just a common interest; it's an area where members feel a commitment and a sense of identity.

Importance: The domain defines the key issues, questions, and values that the community focuses on. It gives the community its purpose and identity.

#### **2.4.2 Community**

The community is the group of people who engage with each other, build relationships, and learn together. It's not just a network of connections; it's about actively participating and interacting.

Dynamics: In a community, members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other.

Role of Trust and Mutual Respect: Trust and mutual respect are key to fostering open and meaningful interactions within the community.

### **2.4.3 Practice**

The practice is the body of knowledge, methods, tools, stories, cases, documents, and other artifacts that community members share and develop together. It's the practical manifestation of the community's domain.

Knowledge Sharing and Creation: The practice involves the collective learning and experiences of the community. It's about developing a shared repertoire of resources: experiences, documents, stories, tools, and ways of addressing recurring problems.

The domain component represents the common ground that binds the members and provides the focus for their collective learning and knowledge sharing. The domain defines the boundaries of the community and sets the scope of the knowledge and expertise that is exchanged within the group.

The community component represents the social structure that facilitates the exchange of knowledge, experiences, and best practices. The sense of belonging, mutual engagement, and shared goals within the community foster a supportive environment for collaborative learning and knowledge creation.

The practice component refers to the shared resources, tools, and frameworks that enable members to engage in collective learning and problem-solving. It encompasses the activities, processes, and methods through which knowledge is exchanged, applied, and refined within the community. The practice component emphasizes the practical application of knowledge and the continuous development of expertise within the domain of interest.

According to Wenger (1998), communities of practice are important environments where an agreement is reached as a result of mutual interaction, learning takes place,

meaning is constructed and community identity develops. Members interact within a common practice (Wenger, 1998).

The short- and long-term values that joining a community of practice brings to community members and the organization are shown in Table 2.1 (McDermott and Synder, 2002).

Table 2.1 Short and Long Term Values of Joining a Community of Practice for Community Members and Organizations

	Short-term value	Long-term value
	Improve business outcomes	Develop organizational capabilities
Benefits to Organization	<ul style="list-style-type: none"> <li>• Arena for problem solving</li> <li>• Quick answers to questions</li> <li>• Reduced time and costs</li> <li>• Improved quality of decisions</li> <li>• More perspectives on problems</li> <li>• Coordination, standardization, and synergies across units</li> <li>• Resources for implementing strategies</li> <li>• Strengthened quality assurance</li> <li>• Ability to take risks with backing of the community</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to execute a strategic plan</li> <li>• Authority with clients</li> <li>• Increased retention of talent</li> <li>• Capacity for knowledge-development projects</li> <li>• Forum for “benchmarking” against rest of industry</li> <li>• Knowledge-based alliances</li> <li>• Emergence of unplanned capabilities</li> <li>• Capacity to develop new strategic options</li> <li>• Ability to foresee technological developments</li> <li>• Ability to take advantage of emerging market opportunities</li> </ul>
	Prove experience of work	Foster professional development
Benefits to community members	<ul style="list-style-type: none"> <li>• Help with challenges</li> <li>• Access to expertise</li> <li>• Better able to contribute to team</li> <li>• Confidence in one’s approach to problems</li> <li>• Fun of being with colleagues</li> <li>• More meaningful participation</li> <li>• Sense of belonging</li> </ul>	<ul style="list-style-type: none"> <li>• Forum for expanding skills and expertise</li> <li>• Network for keeping abreast of a field</li> <li>• Enhanced professional reputation</li> <li>• Increased marketability and employability</li> <li>• Strong sense of professional identity</li> </ul>

Adapted from Wenger, McDermott and Synder, 2002, p. 16

## 2.5 Online Community of Practice

With the advent of digital technologies, Communities of Practice have increasingly moved online, leading to the formation of Online Communities of Practice. These communities leverage the internet and digital platforms to facilitate communication, collaboration, and knowledge sharing among community members. Their study showed that the idea of CoPs can be used to direct knowledge creation and sharing in online environments and empirically confirmed that CoPs can arise from online communities (Zhang & Watts, 2008). Sims (2018) emphasizes the positive impact of online communities of practice on communication between medical practitioners, leading to improved care and practice efficiency. Furthermore, Barnett, Jones, Caton, Iverson, Bennett and Robinson (2014) discuss the implementation of a virtual community of practice for family physician training, focusing on overcoming isolation and improving connectedness through online knowledge sharing.

There is a plethora of literature available on online community of practice (CoP) that offers insightful information about their dynamics, opportunities, and challenges. (Gilmore, 2016) delves into the idea of "learning in landscapes of practice," highlighting the possibility of interactions that cross boundaries and the growth of knowledge in practice-based learning settings. This highlights the opportunities for meaningful interactions and expertise development within online CoPs (Gilmore, 2016). Moreover, the study by Liqin (2022) demonstrates the encouragement of critical reflection and self-evaluation through collaborative online peer learning in higher education, highlighting the positive outcomes of online knowledge construction. Additionally, Cheung, Lee and Lee (2013) explore the continuance intention of knowledge sharing in online communities of practice, emphasizing the influence of satisfaction and knowledge self-efficacy on the intention to continue sharing knowledge. Sulonen (2013) highlights the importance of stewarding technology for learning communities, indicating the need for effective management and governance of online platforms to ensure their sustainability and relevance.

The digital nature of online CoPs also presents challenges. Hara & Hew (2007) discuss knowledge-sharing in an online community of health-care professionals, emphasizing the complexities of shared knowledge and activities within an online CoP. The article by Hara, Shachaf and Stoerger (2009) underscores the challenges and complexities associated with managing information within online communities, including issues related to information overload and quality control. Additionally, Thompson (2006) delves into best practices in asynchronous online course discussions, shedding light on the challenges and opportunities of facilitating effective online discussions within a CoP (Hara & Hew, 2007; Thompson, 2006). As demonstrated by the research of (Titu et al., 2020), online CoPs have the potential to promote adaptive responses to educational disruptions despite these difficulties. As discussed by Walter et al. (2022), the potential for online Community of Practice (CoPs) platforms to support public health professionals' training on adaptive challenges is demonstrated by the bidirectional peer exchange of resources, approaches, and challenges through virtual meetings and online sharing platforms. In summary, online communities of practice (CoPs) provide chances for cooperative education and information sharing, but they also bring with them issues with facilitation, information management, governance, and equity. To fully utilize online communities of practice for professional development and flexible responses to changes in the educational landscape, it is imperative that these obstacles be overcome.

### **2.5.1 Types of Community of Practice**

When categorizing Communities of Practice (CoPs) based on goal-oriented classification they typically fall into categories like Helping Communities, Best Practice Communities, Knowledge Stewarding Communities, and Innovation Communities. Each of these types has distinct objectives and characteristics:

### **Helping Communities:**

Objective: These communities focus on providing support and assistance to members. The primary goal is to help solve each other's work needs and challenges.

Characteristics: They are often dynamic, with active problem-solving discussions. They are ideal for sharing experiences, offering advice, and providing practical support.

### **Best Practice Communities:**

Objective: The aim here is to develop and disseminate best practices in a specific domain or area of work. These communities focus on identifying, refining, and standardizing the most effective and efficient ways to perform tasks or achieve objectives.

Characteristics: They often involve the documentation of procedures, methodologies, and standards, and require a systematic approach to gathering and evaluating practices.

### **Knowledge Stewarding Communities:**

Objective: These communities are dedicated to preserving and evolving a body of knowledge over time. They focus on the long-term stewardship of knowledge assets.

Characteristics: Activities might include documenting knowledge, creating repositories, updating content, and ensuring the relevance and accuracy of information. They often play a key role in organizational learning and knowledge management.

## **Innovation Communities:**

**Objective:** The primary goal of these communities is to foster innovation and develop new ideas, products, or solutions. They are often forward-looking, focusing on creativity and experimentation.

**Characteristics:** These communities are typically more open to taking risks and trying out new approaches. They thrive on diversity of thought and encourage unconventional thinking to solve complex problems.

Each of these community types serves a distinct purpose but can overlap in practice. For instance, a Best Practice Community might also engage in some aspects of Knowledge Stewarding Community. The effectiveness of these communities often depends on factors like clear objectives, active and engaged membership, design of platform, tools for collaborative/cooperation, effective communication channels, and supportive organizational structures.

Since knowledge and practice are inextricably linked because we learn by doing and the best learning environments arise when there are real consequences for the learner and his or her Community of Practice (Botha et al., 2008). CoP literature covers a broad spectrum of subjects, such as innovation, professional development, knowledge creation, and organizational transformation. These studies shed light on the promotion of knowledge sharing, collaborative learning, and the transformative potential of these communities, contributing to a deeper understanding of the dynamics and implications of CoP in various contexts. Communities of practice are being used more and more in business, government, education, and other organizations to foster connections and enhance knowledge management.

## **2.6 Related Studies**

In the study conducted by Chiu, Hsu, and Wang (2006), the aim is to investigate the motivations behind people sharing information in virtual communities and to



develop a model for this purpose. To achieve this goal, the study integrates Social Cognitive Theory and Social Capital Theory. The dependent variables of the research are the quantity and quality of shared information. In analyzing the quantity of information, the average amount shared by individuals per month is examined, and for determining the quality of information, six attributes adapted from different researchers are utilized. These attributes include appropriateness, ease of understanding, accuracy, completeness, reliability, and timeliness. The data was collected through surveys from 310 participants who are members of the virtual community called BlueShop, which is based on information technologies. In the analysis process, a measurement model and confirmatory factor analysis were employed. The research findings indicate that, in terms of both quantity and quality, community-related outcome expectations play a significant role in information sharing. Personal gain has a negative impact on information sharing, but it is not significant in terms of information quantity. Social interaction ties, altruism, and identification only enhance the quality of information shared by individuals. Another important finding is that, contrary to previous research findings, trust does not have an impact on the quantity of information sharing. Similarly, shared language does not affect the quantity of information, but shared foresight has a strong negative impact, which is a significant result of the study.

In a case study research design conducted by Ardichvili, Page, and Wentling (2003), the aim was to identify the factors that enhance and hinder participation of members in a virtual application community. The study sought to determine the reasons that contribute to and inhibit employees' willingness to contribute their knowledge to the virtual application community and the factors that make employees view the application community as a new source of information or hinder this perception. Data were collected through semi-structured interviews with 30 members selected from three application communities determined through purposeful sampling and document analysis of the communities. The study found that employees perceiving knowledge as belonging to the organization rather than individuals, employees viewing themselves as experts, and employees feeling the need to share their

knowledge with others in the virtual application communities increased their willingness to contribute knowledge. The most significant obstacle was not the hoarding of knowledge by individuals, but rather concerns about the accuracy of the knowledge to be shared, its relevance to discussions or problem-solving, and the fear of not being sure about its accuracy. The two main reasons for the virtual application community being seen as a new source of knowledge were the majority of members viewing the community as a kind of database and a problem-solving tool. On the other hand, the obstacle was members gradually forming their own groups over time and distancing themselves from the community, leading to the inability to find timely and appropriate solutions to their problems.

Wei and Chen (2006) focus on the design of a mechanism that facilitates knowledge sharing among students through a discussion forum accessible anytime and anywhere. For this purpose, the study suggests the design of an electronic book interface where students can easily take notes or enter queries in response to text-based questions. The design components of the mechanism include a discussion forum accessible via students' mobile phones and a guide that directs students based on the knowledge levels determined by their answers to questions. The experimental procedures of the design were conducted over a one-year period with 52 students taking a Java Programming course. Data were collected through system logs and a 5-point Likert scale developed for the study. As a result of the research, it was found that after using the developed form, students' satisfaction levels increased. Many students viewed the electronic book as a fundamental learning activity and found the mechanism useful, especially when they did not understand the messages posted in the forum.

The study conducted by Hew and Hara (2006) investigates the knowledge sharing among highly specialized nurses who are members of a practice community involved in the care of critically ill patients. The research aims to understand the types of information that nurses share with each other and to identify the factors that promote or hinder knowledge sharing among them. The study group consists of Nurse Practitioners (NP-1), a specific practice community. Data were collected through

content analysis of 400 messages and online observation, as well as semi-structured interviews with 27 participants. Hara's framework for knowledge types was used to analyze the types of information shared. The research findings revealed that the most commonly shared types of knowledge were institutional practices and personal opinions. As a result of the study, five factors that encourage knowledge sharing were identified. These factors include the desire to enhance professional knowledge, self-selection of membership, reciprocity, the presence of a non-competitive environment, and the role of the automated mailing list moderator. Factors that hinder knowledge sharing included the absence of new or valuable information to add, distance from the topic, time constraints, and technological issues.

Zhang and Watts (2008) examines how online communities function as Communities of Practice (CoPs), focusing on a Chinese online travel forum. The research, utilizing Wenger's framework of practice and identity, analyzed 7,853 forum messages. It found that online communities could exhibit characteristics of CoPs, such as shared practice and identity development, challenging previous skepticism about the feasibility of online CoPs. Key elements like mutual engagement, joint enterprise, and shared repertoire were observed among members, who actively participated in knowledge exchange, travel planning, and social interactions. This participation was crucial for maintaining the forum's dynamic and collaborative environment. The study's findings indicate that the online environment offers unique opportunities for developing CoPs. It highlights the importance of member engagement and the role of moderators in fostering a functional CoP. The research suggests that the success of such online communities hinges not on technological complexity but on active member participation and organizational support. The study also proposes a hierarchical model of online social structures for knowledge management, emphasizing that organizations should assess their needs and choose or develop appropriate structures for fostering knowledge sharing and creation.

In their study, Zhao and Bishop (2011) examine the development process of Wikipedia, which has become a large-scale community, and propose a model for

more effective and efficient ways of designing and developing communities of practice. In the study, Delphi technique was used to collect data from wikipedia experts about the social, organizational and technical factors influencing the growth of the community. As a result of the study, six interrelated components were found to be effective in the development of the community. These factors are: community, practice, individuals, content, interactions, and technology.

Thoma, Brazil, Spurr, Palaganas, Eppich, Grant and Cheng (2018) aims to address the challenges faced by simulation educators in accessing professional development opportunities. Traditional development avenues like conferences are infrequent and expensive, so the authors explore the potential of virtual communities of practice (vCoPs) as a solution. These communities, formed on social media platforms, enable educators to share knowledge and advance learning collectively. The study outlines the growth of a simulation vCoP on social media, which provides a support network for educators globally. The authors suggest that simulation educators engage with social media platforms for personal benefit and to contribute to the field. They provide practical advice for educators to participate effectively in these online communities. Key insights from the study include the identification of social media's role in overcoming professional development challenges, the significance of community-related outcome expectations, and the advantages of global connectivity offered by social media. The article also discusses potential barriers to entry for educators new to social media and strategies to overcome them. The research paper advocates for the development of a robust vCoP for healthcare simulation on social media platforms, outlining the benefits, opportunities, and potential drawbacks of such a community. It encourages educators to join and contribute to these communities for enhanced professional development and global knowledge sharing in healthcare simulation.

Abbott and Lee (2022) aim to describes a five-year longitudinal study intended to fortify the link between research and practice in the context of professional learning and development (PLD) for instructors in adult second language (L2) programs. The study involved 76 TESOL instructors and their program administrators from nine

different ESL programs located in a large Canadian city. The participant instructors had a range of teaching experiences and academic backgrounds, with a majority holding specializations in TESOL or related fields such as applied linguistics. Throughout the study, these instructors were grouped into nine professional reading groups, each consisting of 6-12 members. These groups met monthly to discuss peer-reviewed journal articles, aiming to address shared PLD needs, implement and adapt research knowledge, and co-construct new practices. The researchers utilized retrodictive qualitative modeling to track the factors contributing to the development of ongoing autonomous communities of practice amongst these instructors. The investigation examined the participants' engagement in cycles of applying research knowledge in their practices, as informed by their group discussions and readings. To collect data, the researchers used instruments such as monthly questionnaires for reading group participants, which consisted of a two-part 14-item questionnaire that was filled out after each reading group discussion. These questionnaires aimed to capture the impact of the articles on the instructors' classroom practices and students' learning, as well as the instructors' application of the articles' content and findings. Additionally, a final questionnaire was administered to gather information on the overall impact of the research article discussions on the instructors' TESOL knowledge, teaching, and future plans regarding reading and participation in similar groups. The study's findings highlighted the emergence of various communities of practice developed through complex interactions among multiple factors, including the researchers, practitioners, and the educational environment. The study discusses ways in which researchers can enhance the research-practice link by promoting communities of practice that integrate research with practical knowledge to enhance and innovate educational practices.

Lin and Chen (2009) present an interactive user interface design framework for a knowledge management system. The main design components of the framework are: voice message and conference recording features, instant audio/video interaction, sketching and drawing, individual blog page for members, categorized discussion

board, feedback and suggestions section, general purpose search engine, an alert feature for regular search results, and online classroom for teaching application.

Amayah (2013) investigates the factors influencing knowledge sharing within a public sector context, a subject that has received less attention compared to the private sector. The study employs a quantitative research approach, utilizing questionnaires and multiple regression analysis to examine these factors. The research identified three main motivators for knowledge sharing in a public sector organization: personal benefits, community-related considerations, and normative considerations. Interestingly, personal benefits were found to have a negative correlation with knowledge sharing, suggesting that an increase in personal benefits might decrease the willingness to share knowledge. The study highlights several enablers that facilitate knowledge sharing, including organizational culture, trust, and social capital. Organizational climate and structure were identified as barriers. The research highlights that an environment emphasizing individual competition can hinder knowledge sharing. Community-related considerations emerged as the strongest predictors of knowledge sharing. This finding underscores the importance for public sector managers to focus on developing a sense of community among co-workers, possibly through the formation of communities of practice. In summary, the research provides valuable insights into the dynamics of knowledge sharing in a public sector organization, highlighting the interplay of motivational factors, enablers, and barriers, and offering practical implications for fostering a knowledge-sharing culture in public sector environments.

Jørgensen, Edwards, Scarso and Ipsen (2021) focused on the impact of intentionally developed Communities of Practice (CoPs) on knowledge sharing and practice improvement in a public sector organization (PSO). This study, conducted in a Danish PSO, the Danish Tax Administration (SKAT), used a case study approach to analyze the effect of CoPs created by four different teams. The research aimed to answer two main questions: how do intentionally developed CoPs impact knowledge sharing and practice improvement in a PSO, and what specific contextual factors shape CoP activities and influence their outcomes. The research was conducted over

70 weeks, examining the entire process from developing CoPs to observing changes in knowledge sharing and practice improvement. The study successfully developed three out of four CoPs, positively affecting knowledge sharing and practice improvement. These CoPs facilitated rich conversations among participants, exploring individual ways of working and leading to improvements in practice. The CoPs enabled discussions on different work methods, leading to improvements in practices and updated guidelines. Participants willingly shared their methods, demonstrating a high level of trust within the CoPs. Two main factors, standardization and boundary spanning, were identified as shaping the CoP activities. Standardization, due to legislative requirements, focused CoP conversations on finding collectively agreed-upon working methods. Boundary spanning was necessary when CoP participants lacked knowledge or decision-making competence. The findings confirm that CoPs can be intentionally developed in public organizations to enhance operational processes. The study also verifies a limited framework for CoP development and its steps. The research demonstrates the effectiveness of CoPs in enhancing knowledge sharing and practice improvement in the public sector, shaped by specific contextual factors such as standardization and boundary spanning.

These studies shed light on the promotion of knowledge sharing, collaborative learning, and the transformative potential of these communities, contributing to a deeper understanding of the dynamics and implications of CoP in various contexts. Communities of practice are being used more and more in business, government, education, and other organizations to foster connections, and professional development and enhance knowledge management.





## **CHAPTER 3**

### **METHODOLOGY**

This chapter present the research design and methodology implemented in the study to answer the research questions. The research model, study group, implementation process, data collection tools, data analysis, reliability and validity issues were detailed.

#### **3.1 Purpose of the Study and Resarch Questions**

It is expected from present study to investigate the design principles of a cloud-based community of practice platform designed and developed to support collaborative work for public officers. Moreover, it was attempted to explore how online community of practice platform support professional development and business operation efficiency.

1. What are the design principles of cloud-based community of practice platform for public officers to support collaborative work?
  - 1.1. What are suggested components of a Community of Practice Platform?
  - 1.2. How can a Community of Practice platform support business operations?
  - 1.3. How does a Community of Practice platform impact the Professional Development of the Public Officers?
  - 1.4. What are the factors for consideration in the Design and Implementation of the Community of Practice Platform?

The public officers working in the relevant department in the organization are the primary sources of data to elicit responses to the research questions. Participants' views were carefully examined to clarify the research questions.

### **3.2 Research Model**

In this study, Design Based Research (DBR) is used to determine design principles of a cloud-based community of practice platform for public officers and investigate research questions based on views of public officers. Design-based research (DBR) is a systematic research approach with a flexible structure in which analysis, design, development and implementation processes are carried out cyclically in a real-world application environment and in collaboration with all relevant parties in order to create and sustain technology-integrated educational environments and applications, resulting in both theoretical and practical outputs (Barab ve Squire, 2004; Wang ve Hannafin, 2005).

Design-Based Research Collective (2003) suggest that effective design-based research should embody the following five characteristics: Firstly, there is a close integration of the primary objectives, involving the creation of learning environments and the formulation of theories or 'prototheories' of learning. Secondly, the process of development and research occurs through continual cycles encompassing design, implementation, analysis, and subsequent redesign. Thirdly, research on designs should result in shareable theories that facilitate the communication of pertinent implications to practitioners and other educational designers. Fourthly, the research should consider how designs operate in real-world settings, not merely documenting success or failure but also focusing on interactions that enhance our understanding of the associated learning issues. Lastly, the creation of such accounts relies on methodologies capable of documenting and linking the processes of implementation to the desired outcomes. To tackle these issues, Design-Based Research Collective (2003) adopted a holistic perspective on educational interventions, considering them as actions emerging from the dynamic interactions

among materials, teachers, and learners. Since the effectiveness of an intervention in practice is shaped by the specific context of its implementation, the intervention itself serves as a significant outcome, or at least contributes to an outcome. Furthermore, the design of innovations empowers to establish learning conditions aligned with productive aspects of learning theory, which may diverge from conventional practices or lack comprehensive understanding. Also Design-Based Research Collective (2003) identify four domains in which methods rooted in design-based research show the greatest potential: (a) investigating opportunities to construct innovative learning and teaching environments, (b) formulating contextually grounded theories of learning and instruction, (c) progressing and solidifying design-related knowledge, and (d) enhancing ability to drive educational innovation.

The main purpose of DBR is to use the design iteratively in the real application environment and to evaluate it for improvement. This process ensures the continuous increase of knowledge and product development (Wang & Hannafin, 2005; Design-based Research Collective, 2003). Especially in technology development and application-oriented studies, appropriate products can be obtained effectively and efficiently with this method. Moreover, the findings obtained through the iterative cycles of this approach tend to be more reliable and detailed than the results of single applications (Amiel & Reeves, 2008).

Reeves (2006) states that there are four stages involved in design-based research. The analysis of the issues from various angles is the focus of the first stage. The solution development process using technology is covered in the second phase. Iterative cycles are used to test and refine the developed solutions during the third phase. The preparation of guidelines and design principles for documentation and

reflection is the focus of the fourth and final phase (refer to Figure3.1).

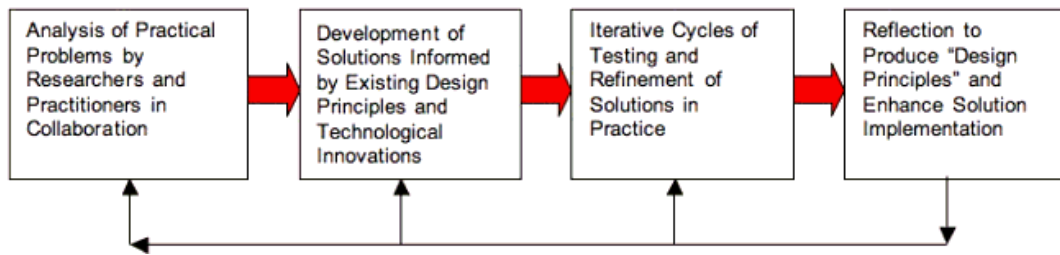


Figure 3.1. Steps in design and development research methodology (Reeves, 2000; 2006)

Design-Based Research (DBR) is a flexible, systematic research approach in which the processes of analysis, design, development and implementation for the provision and maintenance of technology-integrated educational environments and practices are carried out cyclically in the real application environment and with the cooperation of all stakeholders, and theoretical and practical outputs can be obtained as a result (Barab & Squire, 2004; Wang & Hannafin, 2005). DBR is to iteratively apply the design in a real application environment and evaluate it for improvement, thereby gradually increasing the knowledge gained and improving the product (Wang and Hannafin, 2005; Design-based Research Collective, 2003). In this way, especially in technology development and application-oriented studies, the appropriate product is obtained effectively and efficiently. The DBR steps defined by Fraefel (2014) are presented in the graph in Figure 3.2.

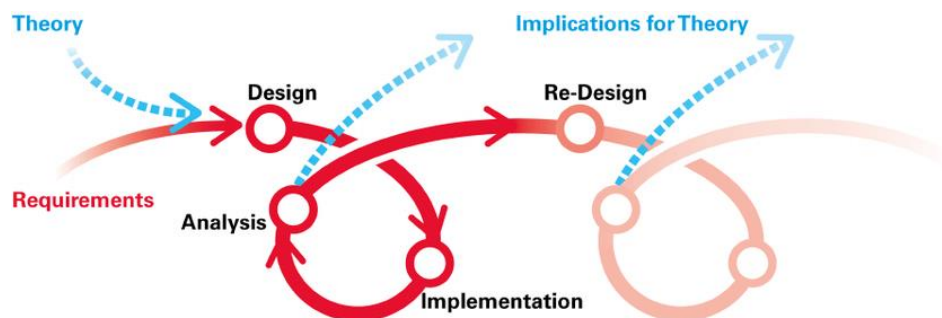


Figure 3.2. Design-Based Research as an iterative process. The Figure adapted from Fraefel (2014, p. 9)

In that study, DBR is used because that approach is a systematic but flexible and adaptive research methodology for to better educational solution in real world settings complexity by using iterative process of analysis, design, development and implementation together with teachers and practitioners and to establish contextually sensitive design principles and theories (Wang & Hannafin, 2005). Essentially, DBR is related to educational practice to design and develop research-based solutions for complex problems in educational settings. Also, it can be used for model development or model validation about the process of teaching and learning.

### **3.3 Design of the Study**

As in the Design Based Research, the study has a cyclic approach, in that empirical research findings can be applied to the theoretical design and then to the practical design, resulting in continuous modifications of both theory and practice. The following Figure 3.3 shows the systematic cyclical and iterative approach for design and development process of the cloud-based community of practice platform for public officers.

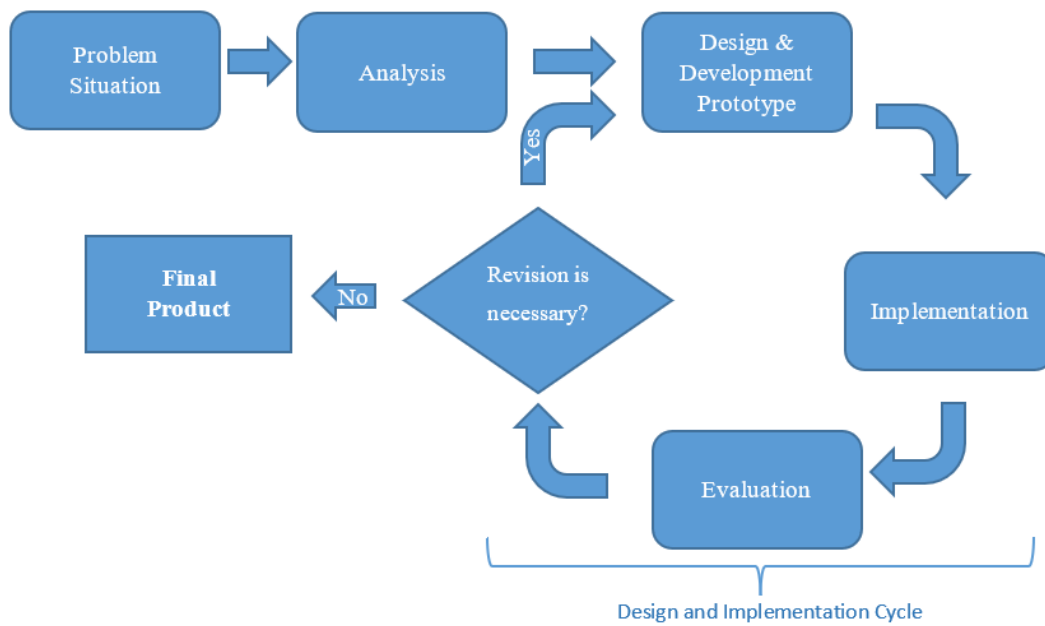


Figure 3.3. Iterations of the study

By its nature, all the purpose of the design-based research, like systematic instructional design process is iterative and spiral with prototype cycles named Design and Implementation Cycle. In the study each iterative process of design and development of cloud supported online community of practice platform, the product is matured and achieve the final design formation of it. Prototyping process continue until reaching the desired final product in iterative cycles during these stages, researcher/developer refines the product by developing prototypes.

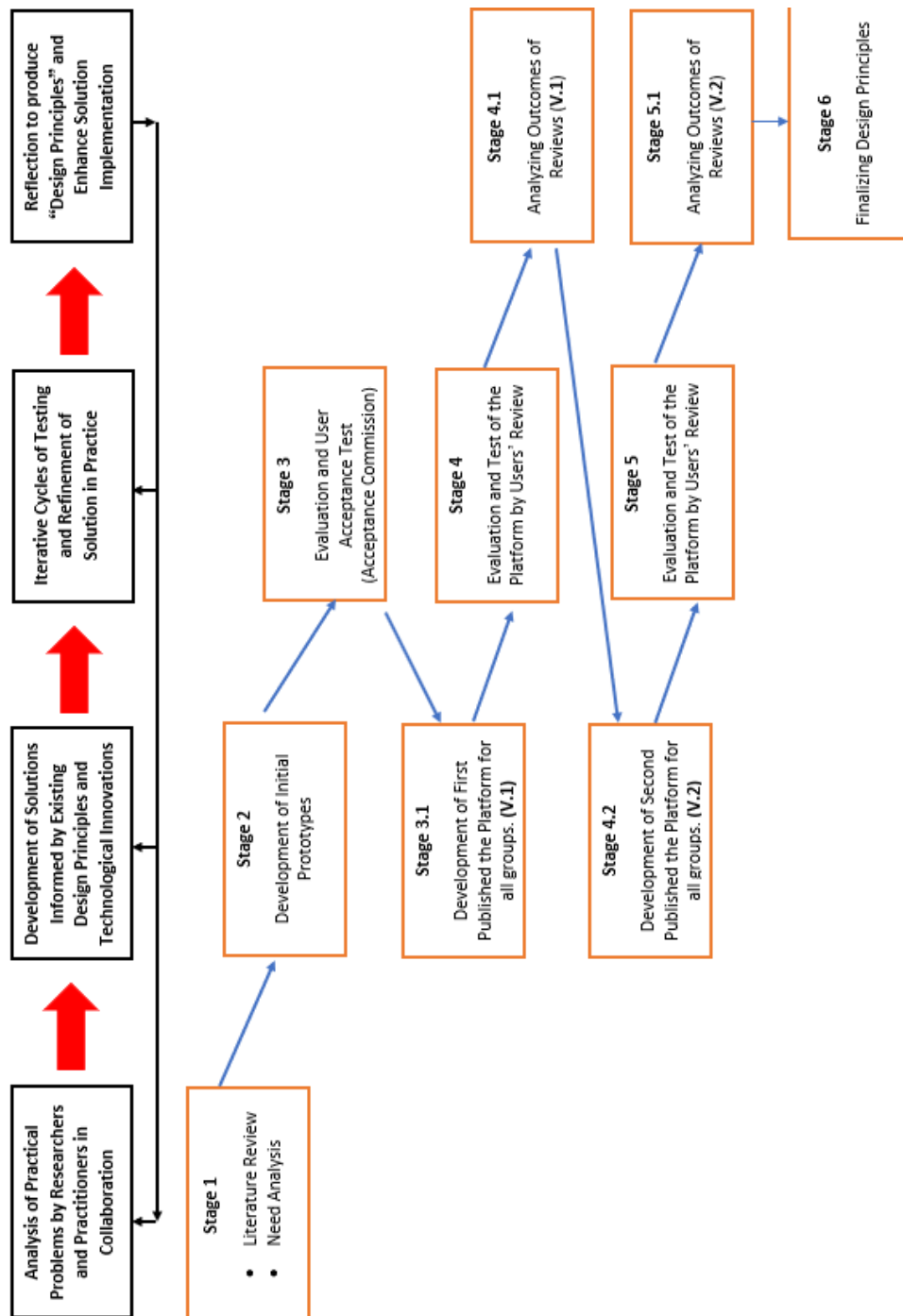


Figure 3.4. Design of study based on Design-Based Research

As can be seen above, Figure 3.4 shows the design of the study and the stages followed according to Design-Based Research of Reeves (2006).

### **3.3.1 Stage 1: Literature Review and Need Analysis**

In the first stage of the study, the validity of the opportunity that emerged from the necessary literature study was examined with a needs analysis. For this purpose, opinions were collected from both public officers and supervisors. The needs analysis results are presented in the findings section of this study.

### **3.3.2 Stage 2: Initial Design and Development of Platform**

In line the scope of the requirements and findings of need analysis for Public Sector Organization, the design and development of the community of practice web platform was carried out using SharePoint Server, SharePoint Designer, Office 365 Online Services infrastructures and C# software development language. The cloud supported web platform was developed by a team. The coordinator and leader of the development team is the researcher of this study. While developing the prototype design, the researcher participated in the meetings held within the public sector organization and worked in the analysis process in the public sector organization.

### **3.3.3 Stage 3: Evaluation and User Acceptance Test**

In third stage, an acceptance commission has been established within the institution to control and accept for the developed application. Acceptance tests have been carried out and any errors and deficiencies found have been forwarded to the development team. Improvements for bugs and security vulnerabilities were made by the development team.



### **3.3.4 Stage 3.1: Design and Development of First Iteration (Platform v.1)**

A web application development process for collaborative work has been carried out in iterations. As a living organism, software has continued to be developed and new features added. The researcher worked actively in the public sector organization for a while and participated in meetings and testing processes. Due to public organization data confidentiality, meeting documents or audio recordings could not be taken at the time of the meeting. The platform was developed and launched as an iterative prototype, with the researcher actively participating in the meetings, the process being constantly controlled by the employees in the implemented public sector organization, and multifaceted and multiple evaluations being made based on reporting data and process. While the iterations were being developed, the researcher, who was in constant interaction with the institution, also consulted the literature and Thesis Monitoring Committee (TMC) members on the design of a platform suitable for CoP, and a platform with both academic and literature support was created in the design of the platform. After these processes, the first version of platform was published for all departments of the public sector organization.

### **3.3.5 Stage 4: Evaluation and Test of the Platform (Platform v.1) by User's Review**

The first developed prototype (v.1) has been published for the use of all relevant departments in the public sector organization. Within the scope of the study, data was collected only from the selected volunteer participants. During the implementation, data were collected from the participants through short notes of observation while using the CoP platform, think aloud and semi-structured interviews recorded with a voice recorder after the implementation. Interviews with participants were conducted around three parts such as tools of application portal, collaborative work, and general platform usage. The data obtained was used as input in the development phase of the next iterative prototype.

### **3.3.6 Stage 4. 1: Analyzing Outcomes of Reviews (Platform v.1)**

The data obtained from the data sources were analyzed under five main themes using content analysis with Maxqda 2022, one of the qualitative analysis programs. The findings of first design and implementation iteration were used as input for the second design and implementation iteration.

### **3.3.7 Stage 4.2: Design and Development of Second Iteration (Platform v.2)**

After the analysis of the data obtained from the participants, redesigns and developments were made for the necessary changes and the prototype was updated. Meetings were held within the institution to evaluate the suitability of the updated prototype platform and the changes made, and updates were made in line with the decisions taken at the meeting. The researcher personally attended the meetings. In addition, during the implementation of the changes, the researcher interactively consulted the TMC member about the relationship of the changes made with the CoP. In other words, they examined whether the changes made were contrary to the CoP and whether they moved away from the CoP context. The iterative prototype was updated by making necessary changes in the process supported by expert opinion. After this update, the prototype was made ready to be published to all relevant departments in the public sector organization with its updated form and to receive the opinions of the participants again. Screenshots of the second iterative version of the study are given below. At the same time, these screenshots belong to the last stable version of the platform.

In the developed CoP portal, departments have sub-work areas that their own department employees can access. There is a panel on the left menu of the application so that they can easily access both these work areas and the links they can customize personally. In Figure 3.5, a screenshot of the platform is presented for a sample left

menu structure that allows for easy accessibility and customization in order to contribute to workplace flexibility.

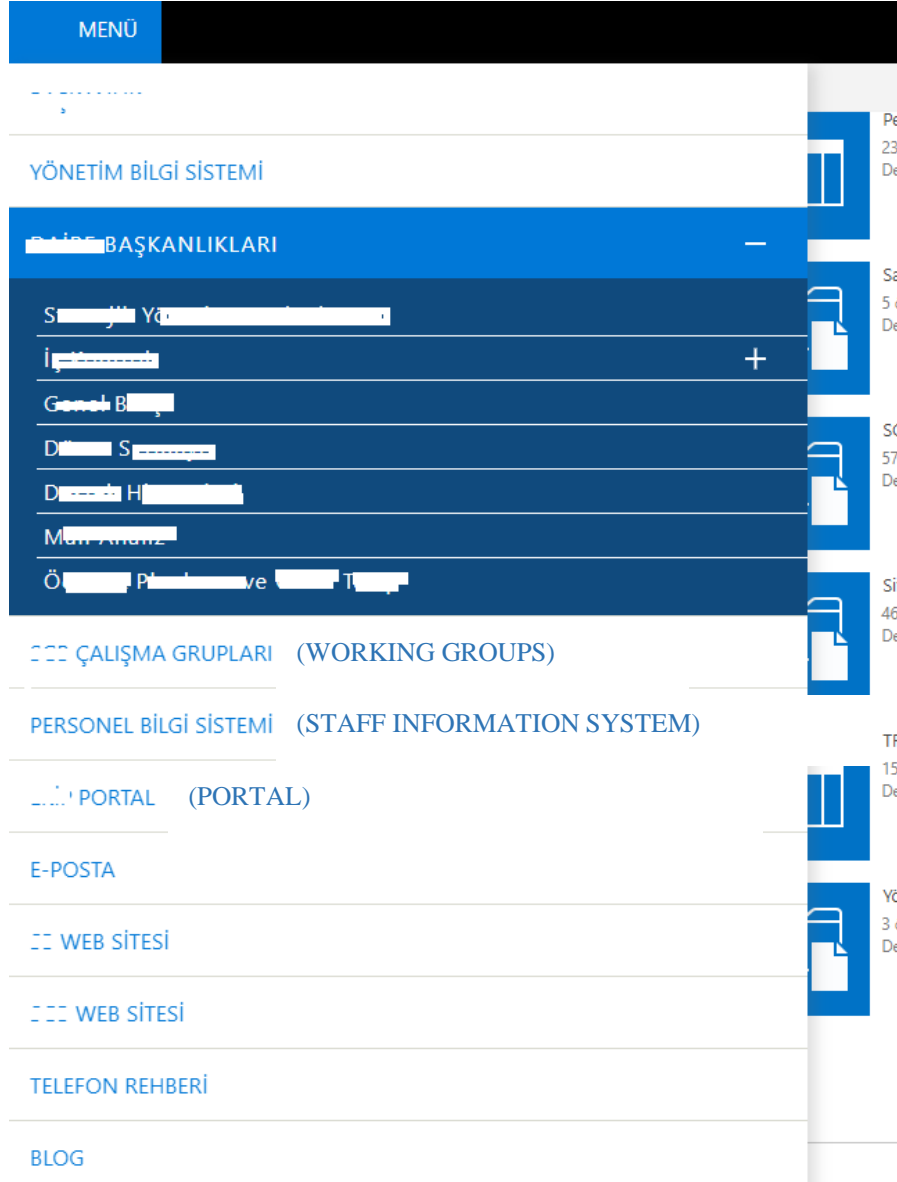


Figure 3.5. Sample screen capture with for easy access and customization.

In the developed CoP platform, there is Announcement component as a communication tool to inform all participants about common business operations. In announcement by default, new content was located at the top of list of content and green star showed for 3 days but it can be changed if needed as showed in Figure 3.6. The green star that automatically appears at the end of the relevant content title

is a feature added based on the findings of the first iteration analysis to make newly added content more visible.

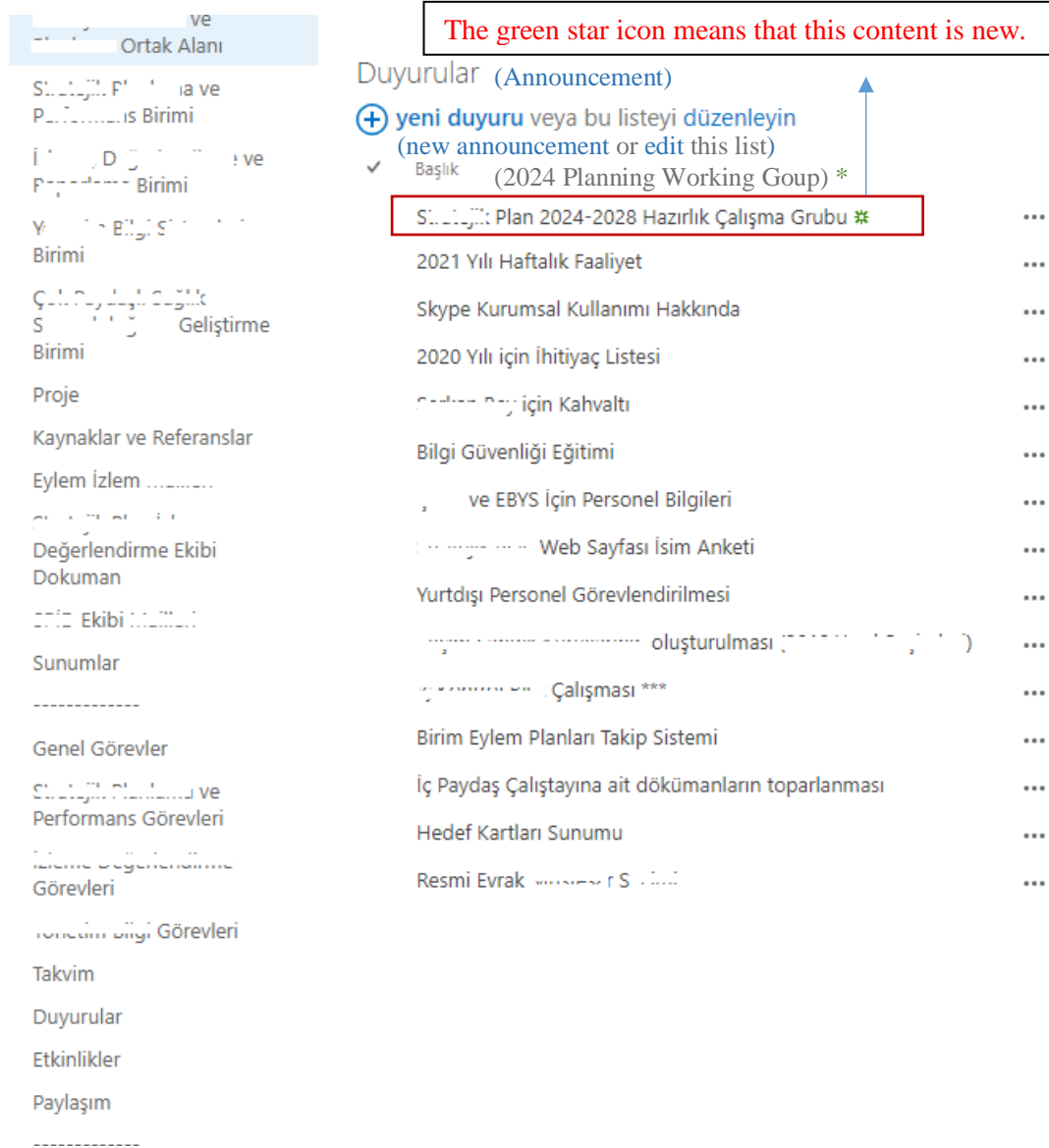


Figure 3.6. Sample Announcement component screen capture for communication and new content more visibility

The online community of practice platform have reusable library component to share documents and offer archive facilities. In the developed portal public officers can share guide document and experience via shared library components for other

colleagues to follow experienced processes. In Figure 3.7, a screenshot of the library shared with whole PSO as shared repository.

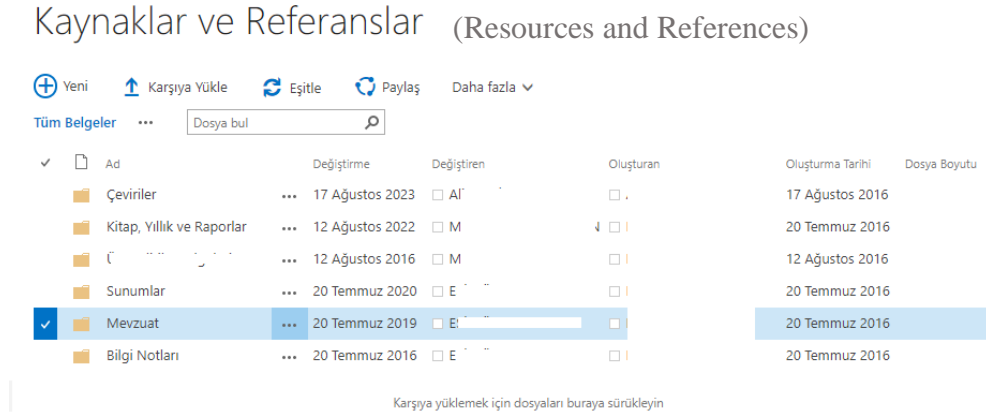


Figure 3.7. Sample Library component screen capture for guide documents and information sharing and shared repository for collaborative workspace.

The developed CoP platform has various facilities for document sharing to invite collaborative workplace with determined access authorization as showed in Figure 3.8. An opportunity for cooperative learning and problem-solving in business contexts is provided by the invitation to group work and best practice sharing in online CoPs.

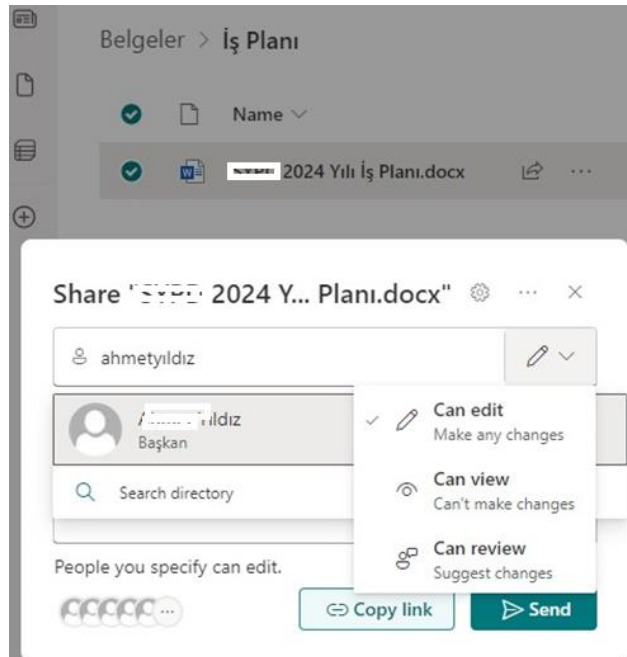


Figure 3.8. Sharing feature screen capture for invitation to work for document and sharing facility

In the developed CoP platform, each departments have workplace that their own department employees can access. The developed online CoP platform provide cloud-based co-authoring via office online services for collaborative document construction. Each participant can use the relevant document with the co-authoring tool if they are authorized to access the document. Editable each document can edit within browser synchronous with other shared authors. This makes it easier for public officers to collaborate in real time and work on documents at the same time, which is essential for quick decision-making, minimizing reworks and knowledge sharing. Also, it provides discussion chain on a document and real-time context-based discussion opportunity to support professional development and enhance collaborative work. In Figure 3.9, 3.10 and 3.11 are screenshots for the co-authoring tool discussion opportunities via cloud supported office online or Microsoft teams.

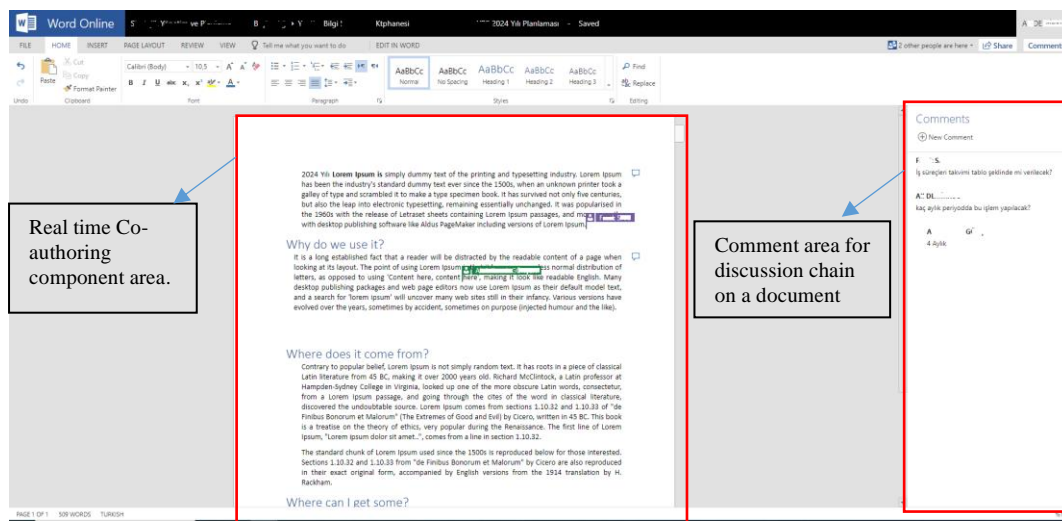


Figure 3.9. Co-Authoring component screen capture with comment discussion chain on a document for context-based discussion opportunity.

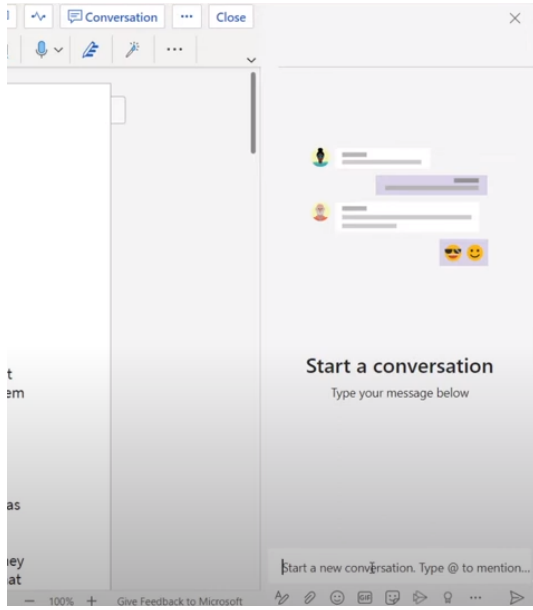


Figure 3.10. Capture of conversation chat area of co-authoring.

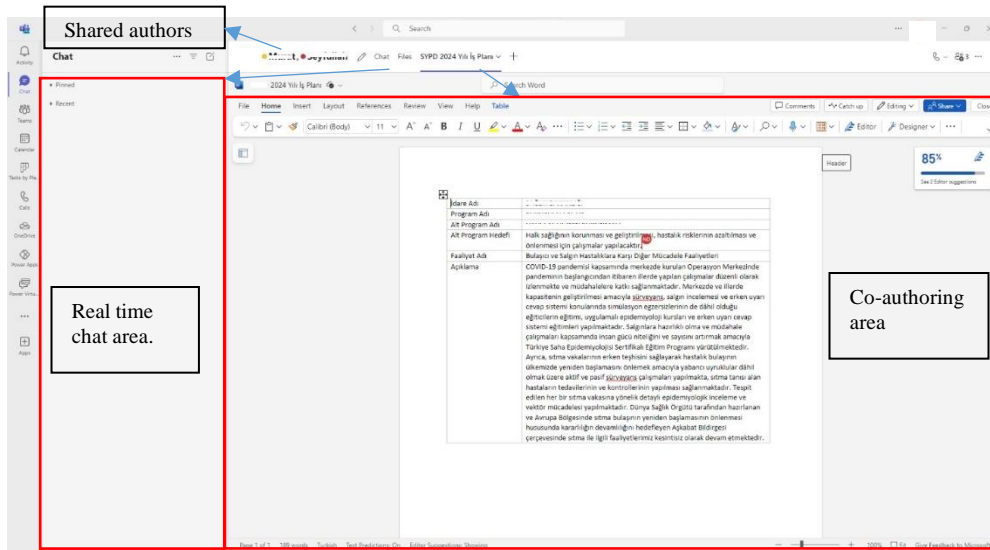


Figure 3.11. Microsoft Team chat tool with added Word co-authoring as a tab for context-based discussion opportunities.

In the developed CoP portal, public officers need to organize meeting or attend to meeting with their colleagues. There is shared calendar component that is easy to use for setting meeting event. With integrated invitation and notification via Outlook e-mail, calendar component support member participation to collaborative work process and team synchronization to contribute collaborative work. In Figure

3.12, a screenshot of the platform is presented for a sample shared calendar with setted meeting events.

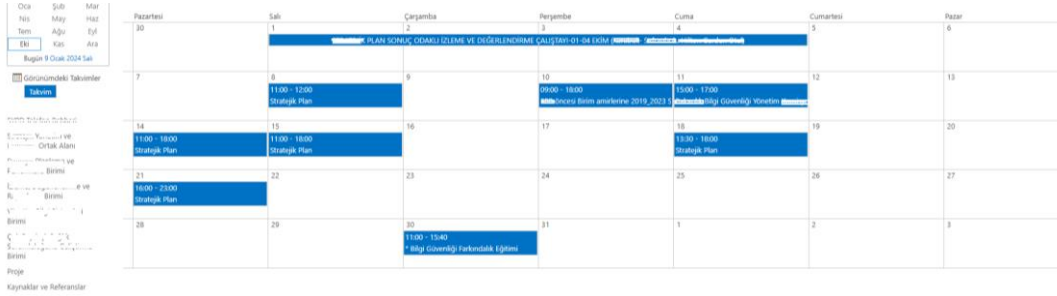


Figure 3.12. Screen capture of shared calendar

The developed CoP platform provide version history for document or content to enhance traceability of document and secure storage in collaborative workspace. The participants can follow the improvement and track how the document prepared and how the process works in collaborative workplace to contribute professional development. In Figure 3.13 a screen capture for version history of a shared document.

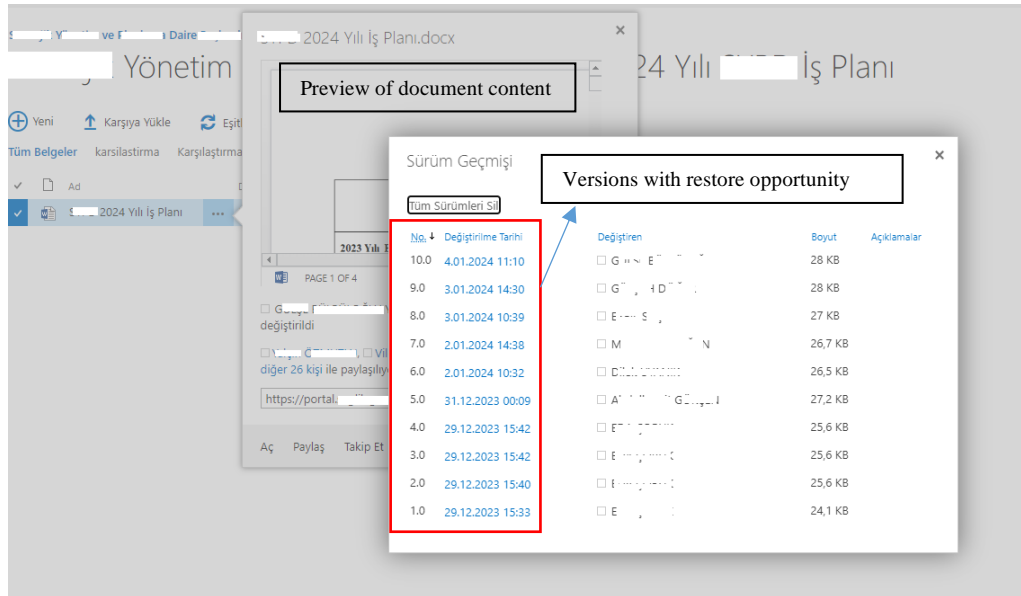


Figure 3.13. Screen capture for version history of a document



### **3.3.8 Stage 5: Evaluation and Test of the Platform (Platform v.2) by User's Review**

The second developed prototype (v.2) also has been published for the use of all relevant department in the public sector organization. Within the scope of the study, data was collected only from the selected volunteer participants. During the implementation, data were collected from the participants through short notes of observation while using the CoP platform, think aloud and semi-structured interviews recorded with a voice recorder after the implementation. Interviews with participants were conducted around three parts such as tools of application portal, collaborative work, and general platform usage.

### **3.3.9 Stage 5.1: Analyzing Outcomes of Reviews (Platform v.2)**

After the second design and implementation cycles, one of the content analysis qualitative analysis programs, maxqda, was used to analyze the data gathered from the data sources under five main themes. The second iteration of design and implementation was informed by the findings.

### **3.3.10 Stage 6: Finalizing Design Principles**

In the light of the findings obtained in the study, the design principles of a cloud-based community of practice platform were finalized. During this study, the process flow followed while creating the design principles of a online community of practice platform for public officers is as shown in Figure 3.4 and an iterative cycle process was followed.

### **3.4 Information on the Implemented Organization**

The implemented government organization, whose mission is to provide guidance and coordination in determining the medium and long-term strategies of the a government organization and to contribute to policy determination by monitoring, evaluating and reporting, underwent organizational restructuring in 2017. Thus, departments in all central units are combined under one roof.

There is a need to develop a platform for public officers from different units to work together and support professional development.

The implemented organization is a public sector organization, and the developed platform encompasses critical content such as documents produced during the process of forming and enhancing the strategic plans of public organization. An online community of practice platform has been developed at the request of the Public Sector Organization (PSO). Many data used during the development of the platform in the institution cannot be shared due to confidentiality reasons. However, the researcher actively participated in the institution as the project manager during the production stage of the web platform, involving in various phases from pre-prototype analysis, determining needs, and handling requests to creating the prototype, deploying it across the all departments of the PSO, collecting initial data after its use, making updates, re-launching the updated platform, utilizing it again, and gathering and assessing new usage data, culminating in the writing of the final report. In the design process of the platform, not only the researcher but also officials from the public institution played decisive and guiding roles. The enhancements were made by a team, analyzed, and updates were performed. In short, the platform prepared for the public institution has been a project in the form of consultancy services, undergoing significant analysis, synthesis, evaluation, and acceptance phases.

### 3.5 Participants of the Study

Design Based Research study often involve collaboration between researchers and practitioners in natural work settings. In the study, sampling is usually deliberately purposeful sampling where subjects are selected because of some characteristic. Also, it is crucial that the comments, suggestions and feedbacks will be as information-rich as possible in qualitative research.

Especially, purposeful sampling is to investigate and release significant cases or events instead of estimating population from the selected sample by generalizing (Patton, 1999). According to purposeful sampling techniques, information on the identified participants is presented in Table 3.1

Table 3.1 Details about participants

Participant	Number of participants	Phases of Design Based Research
Field expert	2 Field experts	Analysis phases
Supervisor	2 Supervisor	Analysis phases
Public officer	11 Public officers	
Supervisor	4 Supervisors	Prototyping I
Public officer	12 Public officers	Implementation & evaluation prototype I
Supervisor	4 Supervisors	Prototyping II
Public officer	12 Public officers	Implementation & evaluation prototype II

A detailed description of the sampling is provided below. Initially, the need analysis phase of the study was launched an interview for the initial design of CoP platform. In the public sector organization, eleven public officers and two supervisors in government organizations and participated in the interview that the researcher conducted.

Table 3.2 Demographic information of the need analysis phase participants

No	<i>Gender</i>	<i>Age</i>	<i>Experience</i>
A1	M	34	5 Years
A2	F	29	6 Years
A3	M	32	3 Years
A4	F	26	1 Year
A5	F	41	16 Years
A6	F	40	16 Years
A7	M	28	2 Years
A8	M	26	1 Year
A9	M	29	4 Years
A10	M	34	12 Years
A11	F	41	18 Years
S1	F	53	27 Years
S2	M	42	18 Years

Two design and implementation cycles were conducted in the study. As a result of purposive sampling in both cycles, 12 participants were interviewed with semi-structured interviews to obtain their views on the use of the community of practice platform. In Table 3.3, there is demographic information about the 12 Public Officers to whom the prototypes were implemented and their opinions were taken.

Table 3.3 Demographics of public officers included in the implementation & evaluation phase

No	<i>Gender</i>	<i>Age</i>	<i>Experience</i>
P1	M	30	3 Years
P2	M	30	4 Years
P3	F	26	1 Year
P4	F	31	5 Years
P5	M	34	9 Years
P6	M	27	2 Years
P7	F	25	1 Year
P8	M	28	2 Years
P9	M	26	1 Year
P10	M	34	11 Years
P11	F	40	16 Years
P12	F	50	23 Years

### 3.6 Data Collection

At the beginning of this study, the relevant approval was obtained from Research Ethics Committee of Middle East Technical University (METU) and provided in Appendix B. Then, prior to data collection from departments, a permission letter was obtained from the Public Sector Organization. Before data collecting, the aim of this study was explained to all participants, and asked to provide their written an informed consent form (Appendix C) for voluntary participation in this study.

The current research includes qualitative data collection techniques. Specifically, the data were collected through interviews, observations, thinking aloud, and expert opinions in the current study. The data collection tools are explained in detail below.

### **3.6.1 Interview**

In the study, semi-structured interviews, which are frequently used for qualitative studies, were used to obtain opinions from public officers about the cloud-based community of practice platform design. Expert opinions were consulted for the reliability of the forms. In addition, the interviews were conducted separately with each of the public officers and the interviews were recorded to prevent data loss.

Public officers used the first prototype application. Before use, the interview form was shown to the participants and they were informed about which aspects they should evaluate the platform. then, one-to-one interviews lasting about 30 minutes were conducted with the participants according to the prepared interview form. The interviews with the participants consisted of three parts and they shared their opinions and experiences around such as the tools of the application, collaborative work and general platform usage. With the data obtained from these interviews, the cloud-based community of practice platform design was improved with the feedback and a more appropriate, useful and usable platform was produced for the users. The interview form is given in Appendix- A. Semi Structured Interview Questions.

### **3.6.2 Observation**

Observations were made during the participants' use of the platform and the parts they had difficulty with were identified and noted along with the reason for the observed difficulty. In addition, the mimic movements of the participants were monitored and their expressions such as boredom, liking or not liking, being uncomfortable were paid attention to and these areas in the application were tried to be determined. The note-taking process was taken in the form of small reminders during the implementation and was organized according to the reminders after the implementation was completed.

### 3.6.3 Thinking Aloud During Implementation

Participants were informed about the think aloud technique and were asked to voice any behaviors or emotional expressions about the platform during the study. The think aloud technique aimed to identify data that could not be obtained or overlooked during observations or interviews.

Information about the data collection procedures and instruments used in this study is given in table 3.4 below.

Table 3.4 Data Collection Procedures & Instruments

Participant	Number of participants	Phase	Data collection instrument
Supervisor	2 Supervisors	Analysis phases	Interview
Public officer	11 Public officers		
Supervisor	4 Supervisors	Prototyping I	Expert review
Public officer	12 Public officers	Implementation & evaluation prototype I	Interview, Observation notes & Thinking aloud
Supervisor	4 Supervisors	Prototyping II	Expert review
Public officer	12 Public officers	Implementation & evaluation prototype I	Interview, Observation notes & Thinking aloud

### 3.7 Data Analysis

Data collected qualitative techniques with data collection instrument listed above. Content analysis used to analysis the data. In each prototyping phase, collected and analyzed used as feedback for the next data collection stage and prototyping phase.

Gathered data from Semi-structured interview, expert review, observation notes and thinking aloud notes were transcribed. After transcription, data was put into five sequenced processes; organizing data, generating categories, themes and patterns, testing hypotheses, searching for alternative explanations, and writing the report (Marshall and Rosmann, 1995). Content analysis technique was used for the data gathered with semi-structured interview, expert review, observation and think aloud notes.

In a research study, collecting data with different techniques supported each other and allowed to ensure results were valid or not (Creswell & Miller, 2000). The use of different tools enabled the data to support each other during the data analysis process.

In this study while analyzing the data, content analysis is utilized the steps offered by Creswell and Creswell (2018).

*Organize and prepare the data for analysis.*

*Read or look at all the data.*

*Start coding all of the data.*

*Generate a description and themes.*

*Representing the description and themes.*



### **3.8 Researcher's Role**

Unlike quantitative studies, researcher meets with participants and involves in the context of the qualitative study. Researcher should ensure about data collecting and interpretation stages without prejudice so researcher should use different instruments and care ethical issues (Yıldırım & Şimşek, 2008).

The researcher actively engaged in all aspects of the study. Initially, he conducted a thorough needs analysis by interviewing key stakeholders, namely public officers, supervisor and academicians, within their respective environments. Subsequently, researcher actively worked in all phases of analysis, design, development, implementation and evaluation of the cloud-based community of practice platform. He designed the platform, received expert opinions, tested the platform, analyzed the data obtained with data collection tools, improved the platform according to the feedback, and monitored the participants using the platform in a versatile way to understand their interactions.

Unlike quantitative studies, he met with participants and was involved in the context of the qualitative study. Researcher should ensure about data collecting and interpretation stages without prejudice so researcher should use different instruments and care ethical issues (Yıldırım & Şimşek, 2008). Additionally, during the implementation and evaluation phase, the researcher invested significant time in the public sector organization. By actively participating in work life, observing public officers in their natural settings, and integrating into the business community, the researcher aimed to ensure that public officers did not feel scrutinized or tested during the study.

### **3.9 Trustworthiness of the Study**

When assessing the accuracy of qualitative research, it is important to know what kinds of questions or problems the research is designed to support (Merriam, 1995). In addition, it is stated that qualitative research is appropriate to be used in studies

such as identifying and understanding events or situations where the relevant active variables cannot be defined in advance, finding a creative and different approach to familiar problems, understanding how participants perceive their roles or tasks in an organization, determining the history of a situation, creating theories, hypotheses or generalizations (Merriam, 1995). Merriam (1995) defines trustworthiness as how well a study designed with a problem serves its purposes, while at the same time emphasizing the importance of three elements such as internal validity, reliability and external validity to ensure validity and reliability in qualitative studies. Trustworthiness for the study is given in Table 3.5.

Table 3.5 Trustworthiness of the current study

Criteria	Techniques	Explanation
Credibility (internal validity)	Triangulation	Multiple sources: -different data collection tools (interview, observation form, think aloud) -different sources (academicians, public officers, supervisor)
	Peer debriefing	-Thesis monitoring committee -Supervisors
	Prolonged engagement	-More than 5 years use of CoP platform.
Transferability (External Validity)	Detailed description purposive sampling	-The research design, the procedures of design & development of the platform, methodology, and findings were explained in detail -Participants selected purposive sampling
Dependability (Reliability)	Triangulation audit trail intercoder agreement	-Same in credibility -The procedure is explained in detail -An expert has PhD, coded the interview data

### **3.9.1 Credibility**

Internal validity is related to whether the researcher's interpretations of the subject matter reflects the reality (Yıldırım & Şimşek, 2005). Merriam (1995) stated that triangulation, member control, peer/colleague control, researchers' experiences, assumptions, prejudices, and participation in the research situation can be used to ensure internal validity. At this stage in the study, triangulation, peer control and researcher experience were used.

#### **Triangulation**

In order to increase accuracy in research, different data sources should be utilized. Creswell (2009) defines triangulation as the process by which data from different sources such as different people (students, teachers, administrators, etc.), different types of data (observations, interviews, field notes, etc.) and different data collection methods (documents, interviews, etc.) support each other. Data triangulation is used to provide an in-depth understanding of the event in the study in question (Miles & Huberman, 1994). In the study, data triangulation was achieved by using different people (public officer, supervisor and academicians) and different data collection tools and methods (interview, observation, thinking aloud notes of the participants during the implementation). Thus, each data source was validated with the data obtained from the others.

#### **Peer Debriefing**

Peer review is about getting the opinions of peers or colleagues about whether the findings are meaningful or not by examining the data (Merriam, 2009; Creswell & Miller, 2000). At all stages of data collection and analysis, the comments, opinions and suggestions of the supervisor, the experts in the thesis monitoring committee and the supervisors at the institution were taken into consideration. Additionally, the researcher received input from Asst. Prof. Dr., who has extensive experience with qualitative research, during the data collection and analysis phases.

## **Prolonged Engagement**

Prolonged engagement is crucial for deeply understanding the research context (Lincoln & Guba, 1985), developing a comprehensive theoretical framework, and ensuring the reliability and validity of the research findings. It involves extended observation, data collection, and analysis over a significant period, allowing researchers to immerse themselves in the study subject, refine their research questions, and produce robust and nuanced conclusions. Creswell and Creswell (2018) suggest that the time a researcher spends in the subjects' environment tends to yield more robust findings (as cited in Yıldırım & Şimşek, 2016). In this study, the researcher worked with the participants in the official institution for 6 months. This long period of time allowed her to interact with and observe a larger number of public officers than the sample size. Moreover, the researcher had more communication with the public officers and gained insight in recognizing their needs. In fact, the researcher had the opportunity to develop a closer understanding of the organization culture in which the situation he was researching was embedded and to develop closer relationships with the participants.

### **3.9.2 Transferability**

External validity in qualitative research primarily concerns the generalizability of the study. As explained by Yıldırım and Şimşek (2011), as cited Lincoln and Guba, transferability is the qualitative equivalent of generalizability in quantitative research. It implies that while research findings cannot be directly generalized to similar contexts, they provide insights applicable to similar settings and allow for the development of testable environments (Yıldırım & Şimşek, 2005). Erlandson (1993) suggests using detailed description and purposive sampling for ensuring external validity. In the study, detailed description and purposive sampling with easily accessible participants who can provide in-depth and detailed information were used to ensure transferability. The sample is detailed in the participant section of the study. Moreover, the setting, participants, application process, and data analysis are

described in detail, allowing for interpretation by the reader and enabling the evaluation of results in similar contexts.

### **3.9.3 Dependability**

Merriam (1995) states that reliability is related to the question of the extent to which the findings of a research will be found again. In other words, it is about whether the findings will be the same if the research is repeated. Reliability is a problem in social sciences, whether internal or external. In other words, studying people and human behavior is not the same as studying an inanimate situation because human behavior is never constant (Merriam, 1995). Moreover, classroom interactions or the way people perceive the world may vary from day to day. Therefore, Merriam (1995), as cited in Lincoln and Guba, stated that the focus should be on dependability or consistency rather than reliability, and also stated that the main question for qualitative researchers should be whether the results of a study are consistent with the data rather than whether the results of a study are the same as the results of the second and third times. Merriam (1995) stated that triangulation, peer review and audit trail strategies can be used to ensure reliability. In this study, triangulation and audit trail were used to ensure reliability.

#### **Triangulation**

Definitions and explanations about triangulation are given in detail under the heading of internal validity. During the data collection process, data were collected from different data sources with different participants.

#### **Disclosure of Procedure (Audit Trail)**

Merriam (1995) as cited in Merriam (1995) reported that the researcher should explain the data collection, categorization and decision-making processes in detail so that the study procedure can be examined. In addition, Merriam (1995) as cited in Goetz and LeCompte (1995) suggested that the data collection process should be written in detail as a guide for other researchers repeating this study. In this study,

the design, development and implementation phases of the cloud-based community of practice platform were included and a detailed guide was tried to be prepared. In addition, by explaining the data collection and analysis part in detail, it is aimed to guide researchers who aim to conduct research on a similar topic, designers and developers who are considering developing the cloud-based community of practice platform, and employees who plan to use the online community of practice platform.

### **Intercoder Agreement**

Inter-rater reliability was assessed by analyzing and coding the data transcribed during the data collection process and coding them separately by the researcher and a researcher with a PhD title to create categories and themes. The other researcher (PhD) and the researcher evaluated the theme schemes they prepared together and the inter-coder reliability score was calculated using Miles and Huberman 's (1994) formula below

$$\text{Reliability} = \frac{\text{Number of matches}}{\text{Total number of matches} + \text{Number of disputes}}$$

After developing the applications according to the formula, the inter-coder reliability for the participants obtained in the first application was calculated as 0.87. After the corrections, the inter-coder reliability for the participants obtained from the second application was found to be 0.91. The overall inter-coder reliability for the study was calculated as 0.89. While Miles and Huberman (1994) do not give a specific criterion for the values, they suggest that the inter-coder reliability should be around 0.90. It is seen that the results obtained are around 0.90 as suggested by Miles and Huberman (1994).

## CHAPTER 4

### FINDINGS

This chapter presents findings related to each research question by combining findings from the iterative design and implementation cycles of the CoP platform developed for public officials, qualitative data collection tools, needs analysis, and interview protocol.

1. What are the design principles of cloud-based community of practice platform for public officers to support collaborative work?

There are four sub-questions with a main Research Question.

1.1 What are the suggested components of a Community of Practice Platform?

The first sub-question was answered by referring to the findings under the theme of **Workplace Flexibility**, which emerged as a result of content analysis for two iterative design-implementation cycles and Needs Analysis findings for the CoPs platform.

1.2 How can a Community of Practice platform support business operations?

The second sub-question was answered by referring to the findings under the theme of **Communication** and the theme of **Sharing** that emerged as a result of the content analysis for two iterative design-implementation cycles.

1.3 How does a Community of Practice platform impact the Professional Development of the Public officers?

The third sub-question was answered by referring to the findings under the theme of **Contribution of the Platform to Professional Development** and the theme of **Contribution of the Platform to Collaborative Work and Cooperation Skills** that emerged as a result of the content analysis for two iterative design-implementation cycles.

#### 1.4 What are the factors for consideration in the Design and Implementation of the Community of Practice Platform?

The fourth sub-research question was answered by referring to findings regarding the **revisions** made during the two iterative design-implementation cycles processes.

In this study, the primary aim is to seek answers to these questions through the analysis of findings and interviews with public officers. The researcher conducted a needs analysis via semi-structured interviews, which were executed with thirteen public officers for the initial design of the Community of Practice platform. The interview questions were prepared with the support of the literature on the components of online Community of Practice platforms and their needs for collaborative work.

With the release of the version of the cloud-based Community of Practice platform, semi-structured interviews were conducted in two design-implementation cycles to collect and analyze data on the use of the CoP platform developed in the research. According to the content analysis of the interview texts, there are five themes, their categories and codes.

The below Table 4.1 presents five themes and their stats according content analysis of interviews scripts.

Table 4.1 Themes and their frequencies and percentages.

Themes	f	%
Workplace flexibility	151	21,6
Sharing	104	14,9
Communication	120	17,1
Contribution of the platform to Professional Development	190	27,1
Contribution of the platform to Collaborative Work and Cooperation	135	19,3
Skills		
	Total: <b>700</b>	100,00



## **4.1 Tools/Components of Community of Practice platform**

In the design and development process, in this study it is sought answers to the first research question, what should be the components of developed community of practice. In this study it is attempted to answer this question first in the needs analysis during the initial design phase and then in the iterative design & implementation process with Workplace Flexibility theme from semi-structured interview content analysis, which was carried out in two cycles.

This study utilized qualitative research techniques for data collection and it is conducted semi structured interview with thirteen public officers for Need analysis to learn what tools they use and their initial recommendation for their requirement. The need analysis findings listed three main categories; Tools available for individual uses and usage areas, Tools available to work together and usage areas, and Recommended tools for working together and their potential.

### **4.1.1 Tools available for individual uses and usage areas**

All public officers in the institution have different major and minor roles in the project or professional task. In the department, a public officer should use computer technologies when doing his/her business in the department and also researching about the business domains.

Table 4.2 Available Platforms/Tools for Individual Use and Usage Reasons

*f: frequency*

Questions	Answers	f
Which web platforms / tools do you use when doing and researching business of institution?	E-mail groups	9
	Youtube (Channels)	9
	Facebook/Twitter	6
	RSS reader	4
	Linkedin networks	3
	Enterprise web sites	3
	RSS web portals	3
	Podcats	2
	Forums Web pages	3
	Why do you use these tools?	Communication and knowledge sharing with experienced people with experience related to their profession
Communication with colleagues		2
Obtain updated information related to the profession		2
Access to the correct information from the original source		2
File sharing & storage		2
	Visual & Audio information	2

The answers of thirteen public officers about individual use of platforms and tools show that e-mail groups and related business Youtube channels are the most applied tools for doing and researching business. In addition, Facebook/Twitter, RSS

Reader, LinkedIn networks are popular answers in the participants for individual use to support professional development. In the why do you use these tools section, their answers reveal that communication and knowledge sharing with experienced people is most popular reason to use them. The other reasons why use that platforms are also related to gain or share knowledge and experience.

#### **4.1.2 Tools available to work together and usage areas**

In the strategy development business domain, public officers should work together and construct knowledge with researching, analyzing data and synthesizing plans. That complex process necessitates collaborative work.

Table 4.3 Platforms/Tools to Work Together and Usage Reasons

Questions	Answers	f
Where do you share with your colleagues?	In office	10
	Out of office	3
	Social networks	1
How often?	Daily	5
	Monthly irregular	3
	In the workshops	3
	In joint projects	2
What matters?	Business-related issues	10
	Current technologies	3
	Problem solving	1
Which goals?	Knowledge sharing	6
	Experience sharing	3
	Helping colleagues	2
	Control and maintenance of work	2
	Production of quality work	1
How to (select)	With phone	11
	Face to face	7
	Online	4

According to the Table 4.3 frequency values (f), it shows that almost daily participants share with their colleagues about business-related issues but rarely share out of office. In that part, public officers expressed their goals of using tools mainly; knowledge and experience sharing, helping each other and controlling the maintenance or quality of work. Participant 4 stated that “We organize meetings or e-mails to share our experienced and specialized topics.”

In that part, the data indicates that they often select phone as a media when sharing or working with colleagues. However, Participant 10 said that “We cannot work on the

same screen when talking with the phone. For this reason, I am sending screenshots or asking by e-mail. This makes communication difficult.” The available “Online” tools other than Face to face is also not very useful because of Participant 6 state that “It is not the same with the online communication tool I have (WhatsApp, Bip etc). Sometimes there is no app or tools in their mobile phones.” Also, nearly the same complaint sentence of Participant 11 is that “There are people who don't use WhatsApp. For this reason, I'm sending an e-mail thinking that everyone would have an e-mail.” As the Figure 4.1 shows that also they did not think the facilities are suitable.

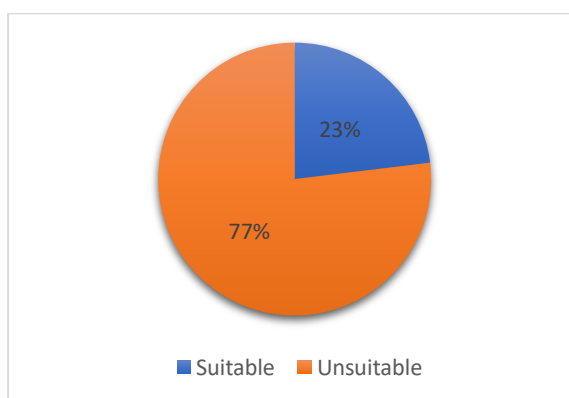


Figure 4.1. The ratio for the currently available tools is suitable or not

In this part Participant 13 explained that “Files can be lost in the portable memory or can be saved on the old version.” Also, Participant 4 emphasized with the sentence “E-mail, not suitable for cooperative work. There is a size limit for the attached file” and besides they it provides asynchronous access the files. For reasons like these that 77 percentage of participants (10 of 13) they cannot find suitable work with existing tools for collaborative work.

#### Recommended tools for working together and their potential contribution

In that part, findings were formed according to feedbacks and expectations of public officers. They suggested some features to eliminate barriers and limitations in doing business and providing professional development.

Table 4.4 Recommended tools/features for working together

Question	Answers	f
Which features would you like to have on the platform for collaborative work?	Document library	10
	Discussion forums	9
	Common announcement board	9
	Online spreadsheet processor (Excel, Sheets etc.)	8
	Multi-participant video conference	8
	Instant messaging	8
	Cloud storage	8
	Shared calendar	8
	Video portal	8
	Online word processor (Word, Docs etc.)	7
	Online presentation preparation (PowerPoint, Slides etc)	7
	Instant notifications	7
	Mobile application and responsive app	7
	Blogs	6
	E-Mail	6
Personal calendar	6	
News feed	6	
Personal task list	6	

As can be seen Table 4, the participants “Document Library”, “Discussion Forums” and “Common Announcement Board” are three most popular tools that like to have feature for collaborative work and collaborative knowledge management. The Participant 13 explained that specially “Document Library is vital features to eliminate the file lost and corrupt problems”. In addition to, Multi-participant video

conferencing tool and synchronous Co-authoring tools (Online Excel, Word and PowerPoint services) are the necessary features to effective collaborative tools and team work activity. Most of the participants explained the need as synchronous documents editing with supported messaging or screen sharing features. Therefore, co-authoring tools are important features especially in the strategy development domain.

Table 4.5 Recommended tools potential benefits

Question	Answers	f
What are the benefits or expectations?	Knowledge / experience sharing	5
	Doing common business fast	3
	Online collaborative work	3
	Save time	3
	Strong communication	2
	Be informed of developments	2
	Easy access to documents and files	2
	Ability to work synchronously on one document (Co-Authoring)	2
	Helping to each other	2

In this part, thirteen participants thought that knowledge or experience sharing is the most beneficial outcomes of the use a platform like as community of practices. Also, the other important outcomes are “Doing common business fast”, “Online collaborative work” and “Save time” popular theme in analyzed interview scripts. According to participant 2 state that “I think I will work more actively with the opportunity to work together”. So, these features directly can be a solution for communication and time issue in the business professional.

The design and development process has two iterative prototype cycles. After each cycle, the researcher conducted semi-structured interview and analyzed the interview

scripts. According to content analyze there are five themes and the first one Workplace Flexibility is related the first sub research question about components for community of practice platforms.

### 4.1.3 Workplace Flexibility

Workplace Flexibility (Theme 1) is a major source for answer the first sub research question, what are suggested components of a Community of Practice Platform. Workplace Flexibility has four categories; **easy to use platform, ease of access, Accelerating the process, and Welcome and Participation.**

According to Content Analyze, Table 4.6 shows the themes, categories and subcategories emerging for the sun research question 1.

Table 4.6 Themes, categories, codes and subcodes for the sub research question 1.

Theme	Category	Code	Sub Code	f
Workplace flexibility	Easy to use platform	Providing meeting event creation tools		13
		Providing familiar file view facilities		2
		Easy report creation		2
		Creating a categorical forum		3
		Easy to use Tracking		3
		Work/Activities		
		Difficulties in use	Screen freeze / slowdown	17
			Long name file upload and creation issue	9



		File size limit	7
		Calculation feature	3
		problem in excel	3
	Requests for Use	Design editing	11
		Should have a	8
		customized menu	8
		Should be a task type	3
		meeting	3
		Making an	
		announcement by	2
		selecting the	2
		department	
		Should be my activities	2
		New content must be	2
		clear	2
		Should be familiar	2
		content entry screens	2
Ease of access	Being easy to access		11
	Providing quick access		5
	Providing remote		4
	access opportunity		4
	Anonymous access		2
	from outside		2
Accelerating	Providing time saving		11
the process	Increasing the process		4
	speed in group of work		4
Welcome and	Providing		9
participation	opportunities for		9
	participation		9
	Sharing user manual		6
	Routing with access		4
	authorization		4
	Checking permission		2

Workplace Flexibility is the first theme emerging content analyze interviews of public officers who use developed community of practice platform. Workplace Flexibility theme has four categories, Easy to use platform, Ease of access, Accelerating the process and Welcome and Participation.

Table 4.7 Categories of the theme Workplace Flexibility

Category	f	%
1. Easy to use platform	93	61,59
2. Ease of access	22	14,57
3. Accelerating the process	14	9,93
4. Welcome and participation	21	13,91

#### **4.1.3.1 Easy to use platform**

Easy to use platform is the first category of theme Workplace Flexibility and focuses on providing facilities for ease of use and usage issues for components of developed platform. Category has nine codes and fifteen sub-codes.

Table 4.8 Codes and Sub-codes of the category easy to use platform

*n: number of participants f: frequency*

Code	Sub-code	n	f
Providing meeting event creation tools		12	13
Providing familiar file view facilities		2	3
Easy report creation		1	2
Creating a categorical forum		2	2
Easy to use		3	3
Tracking work/Activities		2	3
Difficulties in use		10	
	1) Screen freeze / Slowdown	7	17
	2) Long name file upload and creation issue	5	9
	3) File size limit	4	7
	4) Calculation feature problem in excel	1	3
Requests for use		11	
	1) Design editing	7	11
	2) Should have a customized menu	7	8
	3) Should be a task type meeting	3	3
	4) Making an announcement by selecting the department	2	2
	5) Should be my activities	2	2
	6) New content must be clear	2	2

## Providing Meeting Event Creation Tools

According to content analysis of interviews, all interview participants explained the importance of setting meeting event facilities and about ease of use the tool.

*We summarize the purpose of the workshop and meeting in one sentence and enter it into the platform by selecting the date and people. What I like about it is that it is very nice to send an e-mail to the participants after that and it is recorded in the calendar of all participants. (P4)*

*Çalıştay ve toplantı için amacı bir cümle ile özetleyip Tarihi ve kişileri seçerek sisteme giriyoruz. Beğendiğim tarafı bundan sonra Kişilere -email gitmesi çok güzel ve tüm katılımcı kişilerin takvimine işleniyor (K4)*

*It is used as a reminder for action plans. It is used in meeting organization (P9)*  
*Eylem planları için hatırlatıcı olarak kullanılıyor. Toplantı organizasyonunda kullanıyor. (K9)*

*It is used to create online or face-to-face meeting planning. It facilitates the organization of meetings for teamwork. (P1)*

*Online veya Yüzyüze Toplantı planlamasını oluşturmak için kullanılıyor. Ekip çalışmasına yönelik toplantı organizasyonunda kolaylık sağlıyor. (K1)*

## Providing Familiar File View Facilities

One of findings of interview analysis is that providing familiar view and icon facilities is an issue for easy-to-use platform category. Two interview participants expressed their opinions about familiar file view.

*Through Internet Explorer, I can copy and edit files as if I were working on the Desktop (P7)*

*İnternet Explorer aracılığıyla. Masaüstünde çalışır gibi dosya kopyalama ve düzenleme yapabiliyorum. (K7)*

*More familiar file icons can be used. It is understood what the format of the document to be edited is. With this change, I was able to work on which type of document to edit by seeing who edited it last and when. (P11)*

*Daha aşına dosya ikonları kullanılabilir. Düzenlenecek dokümanın formatının ne olduğu anlaşılır. Bu değişim ile birlikte hangi tip dokümanı düzenleyeceğimi en son kimin ne zaman düzenlediğini görerek çalışabildim. (K11)*

### **Easy Report Creation**

The findings indicated that report creation or export file features is facilities of platform usage, two times this mentioned in interviews.

*I can get a summary report by exporting the filtering result to Excel in the library tool. (P7)*

*Kütüphane aracında filtreleme sonucunu Excel'e çıkarma (Export to Excel) şeklinde özet rapor alabiliyorum (K7)*

*In the portal I can manage and edit target indicators and create reports. (P7)*

*Portalde hedef göstergeleri yönetebiliyorum, düzenleyebiliyorum ve rapor oluşturabiliyorum. (K7)*

### **Creating a Categorical Forum**

Two of interview participants argued that a categorical forum topic creation is necessary feature by saying;

*What I like about the forum is that the content can be grouped categorically. (P12)*  
*Forumda beğendiğim taraf içeriklerin Kategorik gruplanabiliyor olması. (K12)*

*The topic to be asked is actually easily created and categorized. (P1)*  
*Sorulacak konu aslında kolayca oluşturuluyor ve kategori veriliyor. (K1)*

## **Easy to Use**

Three of interview participants emphasized that easy to use the importance for their work in the developed platform with other users.

*It enabled easy use in matters such as systematic work and categorization of files. (P6)*

*Düzenli çalışmayı ve dosyaların kategorileşmesi gibi konularda kolay kullanım imkan sağladı. (K6)*

*We find it easier to use and more organized than physical processes. (P4)*

*Fiziksel süreçlere oranla Kullanım kolaylıkları sağlıyor ve daha düzenli buluyoruz. (K4)*

## **Tracking Work/Activities**

Two interview participants mentioned about tracking activities and informing about general work or announcement importance by saying;

*We use it to plan events and track the event with email notifications. (P5)*

*Etkinlikleri planlamak ve e-posta bildirimleri ile etkinliği takip etmek için kullanıyoruz. (K5)*

*... We use it as a general information area about our studies. (P11)*

*..... çalışmalar ile ilgili genel bilgilendirme alanı olarak kullanıyoruz. (K11)*

## **Locked Document**

One of interview participants emphasized on their work and about how their work is a template for future work. Therefore, participant opinion is that completed document can be locked or immutable by saying;

*Completed documents must be protected and cannot be deleted. I would like to have documents that cannot be changed. (P4)*

*Çalışması tamamlanan dokümanlar kesinlikle korunaklı olsun kaybolmasın.*

*Değiştirilemeyen dokümanlar olsun isterim (K4)*

## Difficulties in Use

The findings indicated that developed community of practice portal have some difficulties to use for public officers. Screen Freeze / Slowdown, Long Name File Upload and Creation Issue, File Size Limit and Calculation Feature Problem in Excel are mentioned in interviews.

Table 4.9 Sub-Codes of Difficulties in Use Code

Code	Sub-Code	n	f
Difficulties in use	Screen freeze / Slowdown	7	17
	Long name file upload and creation issue	5	9
	File size limit	4	7
	Calculation feature problem in excel	1	3

### Screen Freeze / Slowdown

Seven of interview participants mentioned about screen freeze or slowdown problem in co-authoring tools for synchronous editing in one document in groupwork.

*There are freezes in active use around 10 people when too many users connect.*

*There are problems in document synchronization. I think the slowdown in co-authoring when the number of people increases is a critical problem. (P6)*

*Çok fazla kullanıcı bağlandığı 10 kişi civarında aktif kullanımda donmalar oluyor. Doküman senkronizasyonunda sıkıntılar yaşıyor. Kişi sayısı artınca birlikte yazarlıktaki yavaşlama bence kritik bir sorun. (K6)*

*Once the page crashed when 20 people were in PowerPoint at the same time. (P8)*

*Bir kez de 20 kişi aynı anda PowerPoint de iken sayfa çöktü. (K8)*

*I would like to avoid freezes and errors on a single document in collaborative working. (P4)*

*Çoklu çalışmada tek doküman üzerinde donmalar olması ve hatalar vermesin isterim. (K4)*

### **Long Name File Upload and Creation Issue**

Five of interview participants reported that long named file upload or creation a document too nested folders can be problem by saying;

*I would solve the problem of long names in file naming. It's a problem with nested folders. (P1)*

*Dosya isimlendirmedeki uzun isim sorunu çözerdim. İççe klasör olunca sorun oluşuyor. (K1)*

*Long file names sometimes prevent us from uploading the document. (P2)*

*Uzun dosya isimleri bazen dokümanı yüklememizi engel oluyor. (K2)*

### **File Size Limit**

The findings indicated that developed community of practice platform have file size limit and not enough for the document of public officers. Four interview participants reported these difficulties by saying;

*It does not allow uploading when the file size is high. It happened to me once. (P1)*

*Dosya boyutu yüksek olunca yüklemeye izin vermiyor. Bir kez başıma geldi. (K1)*

*There was a file size limit and it was low, this should be changed. I don't know if it has been changed but it can be a problem for me. (P9)*

*Dosya boyut sınır vardı ve düşüktü bu değiştirilmeli. Değiştirildi mi bilmiyorum ama bana sorun olabiliyor. (K9)*



## Calculation Feature Problem in Excel

One of interview participants, reported three times about calculation feature problem in online co-authoring excel document in group works;

*Fields calculated in Online Excel are not working. I think it should be fixed. (P2)*

*Online Excelde hesaplanan alanlar çalışmıyor. Bence düzeltilmeli. (K2)*

## Requests for Use

Eleven of twelve interview participants have some Requests about usage of developed community of practice platform. According to content analysis of interview transcripts, the reported Requests are coded seven sub code.

Table 4.10 Sub-Codes of Requests for Use Code

Code	Sub-Code	n	f
Requests for use	Design editing	7	11
	Should have a customized menu	7	8
	Should be a task type meeting	3	3
	Making an announcement by selecting the department	2	2
	Should be my activities	2	2
	New content must be clear	2	2
	Should be familiar content entry screens	2	2

## **Design Editing**

Seven of interview participants requested that design can change to be more compatible mobile, simple design and attractive for usage. Some of their sentences;

*I would improve its design. I would like it to be more compatible with mobile. (P3)*

*Tasarımını geliřtirirdim. Mobile daha uyumlu olsun isterdim. (K3)*

*I would make changes to the User experience and Interface by getting feedback from users. I would make simpler filtering and categorization away from complex structures to make it user-oriented. (P9)*

*Kullanıcılardan geri dönüş alarak Kullanıcı deneyimi ve Arayüzde deęişiklikler yapardım. Kullanıcı odaklı olmasını için Kompleks yapılardan uzak daha basit filtreleme ve kategori yapardım. (K9)*

*It could be better designed visually. It can be attractive. New announcements can also be like the first 7 days of new posts. (P8)*

*Görsel açıdan daha iyi tasarlanabilir. Dikkat çekici olabilir. Yeni duyuru da ilk 7 gün Yeni yazsın gibi olabilir. (K8)*

## **Should have a Customized Menu**

Sevent of interview participants requested personally customized menu for quick access or their personal interest areas with the following sentences.

*Having a customized personal menu list would be nice for people's favorites. I think it would be nice for easy use of menus even if the design changes. (P12)*

*Özelleřtirilmiř kişisel menü listesi olması kişilerin sık kullanılanları için güzel olur. Tasarım deęişse bile menülerin kolay kullanılması için güzel olur bence. (K12)*

*It would be nice to be able to create quick access for the person. It provides easy access to the studies they visit and follow. (P9)*

*Kiřiye yönelik hızlı erişim oluşturabilmesi güzel olabilir. Ziyaret ettięi takip ettięi çalışmalara kolay erişim sağlar. (K9)*

### **Should be a Task Type Meeting**

Three interview participants requested the task type meeting for assign to do task in online workspace the following sentence:

*It is not good when not everyone goes regularly. It would be nice to have task-type meetings (P6)*

*Herkesin düzenli olarak gitmediği durum güzel olmuyor. Görev tipinde toplantılara olsa güzel olurdu. (K6)*

### **Making an Announcement by Selecting the Department**

Two of interview participants requested to make announcement with target departments by saying;

*I don't know if it is selected in detail in other departments area. It would be good if the department is selected and there is an announcement for them (P4)*

*Başka birimler içinde detay ile seçiliyor mu bilmiyorum. Birim seçilerek onlara yönelik duyuru olsa iyi olur (K4)*

### **Should be My Activities**

Two of interview participants reported their request about my activity's module to acces their task and notification with the following sentence;

*There should be an area called my activities and it would be nice to be able to see my tasks here. (P3)*

*Benim aktivitelerim diye bir alan olmalı ve buradaki görevlerimi görebilmem güzel olur. (K3)*

### **New Content Must Be Clear**

Two of interview participants reported that new content cannot be noticed by saying;

*It is not clear which announcement is new. I think it should be dated or new. (P2)*  
*Hangi duyuru yeni olduđu belli olmuyor. Tarih yazmalı veya yeni yazmalı bence.*  
*(K2)*

### **Should Be Familiar Content Entry Screens**

Two of interview participants emphasized that familiar screen and editor is important for Workplace Flexibility. The requested familiar content entry screen by saying;

*When entering content in the system, there may be fields such as bringing a format painter into the rich text box as in Word. (P7)*  
*Sistemde içerik girerken zengin metin kutusu içerisine Word de olduđu gibi biçim boyacısı getirme gibi alanlar olabilir. (K7)*

#### **4.1.3.2 Ease of Access**

Ease of access is the second and most popular category of the Workplace Environment theme. Ease of access category codes focus on the possibilities to access the developed platform. Ease of access category has four codes.

Table 4.11 Codes of the category Ease of access

Category	Code	n	f
Ease of access	Being easy to access	9	11
	Providing quick access	3	5
	Providing remote access opportunity	4	4
	Anonymous access from outside	1	2

### **Being Easy to Access**

The findings highlighted the importance of the being easy to access to access shared library on community of practice platform. Nine of interview participants noted that;

*Thanks to the portal, especially the Library, I can access all my works, tenders, etc. in one location. (P4)*

*Özellikle Kütüphane başta olmak üzere portale sayesinde yaptığım işlerin hepsini, ihaleler vb tüm işlerim bir lokasyonda ulaşabiliyorum. (K4)*

*... I can access all my work in one platform. I can immediately access the documents I need to review from other departments. (P10)*

*... tüm işlerim bir lokasyonda ulaşabiliyorum. Diğer birimlerden incelemem gerekli evrakları hemen ulaşabiliyorum. (K10)*

*I can access any information in any environment, independent of time and person. (P11)*

*Her bilgiye istediğim ortamdan, zaman ve kişiden bağımsız ulaşabiliyorum. (K11)*

### **Providing Quick Access**

Three interview participants explained that providing quick access opportunities can make participants more willing to use and contribute to the portal. They reported that:

*Access to documents in my field of interest and their organization within authorization (P3)*

*İlgi alanımdaki dokümanlara erişilebilmesi ve yetki dahilinde düzenlemesi. (K3)*

*I don't carry a disk, I can access it immediately and use the document, also I can download the document if I need .... (P4)*

*Disk taşımıyorum gerekli olduğundan hemen erişip çok gerekirse dokümanı indirip kullanabiliyorum ... (K4)*

### **Providing Remote Access Opportunity**

Four interview participants explained that providing remote access opportunities can opportunity to access their works whenever and wherever to use. They reported that:

*It is very important to have a single point for documents and to be able to access them from anywhere. (P11)*

*Dokümanın tek nokta durması ve buna her yerden erişebilmek çok önemli. (K11)*

*I can connect remotely. It is very nice that it is accessible from anywhere and mobile. (P6)*

*Uzaktan bağlanabiliyor olmam. Her yerden ve mobilden erişilebilir olması çok güzel. (K6)*

### **Anonymous Access from Outside**

One of interview participants argued that external stakeholder may need to be able to access practice platform even if the documents include business process. He noticed that:

*When there is a need for participation from external stakeholders, we cannot add them (P3)*

*Dış paydaştan da katılım olması gerektiğinde katılımcılara ekleyemiyoruz. (K3)*

#### **4.1.3.3 Accelerating the process**

Accelerating the process is the third category of theme Workplace Flexibility and focuses on saving time work environment providing facilities to increase group working efficiency.

Table 4.12 Codes of the category Accelerating the process

Category	Code	n	f
Accelerating the process	Providing time saving	7	11
	Increasing the process speed in group of work	2	4

#### **Providing Time Saving**

The findings highlighted the fact that participants can save time is an opportunity that encourages them to use the platform. Seven of interview participants reported that;

*Previously, we used to work one by one and time was lost while waiting for their turn. Now I find it successful. It increased our speed a lot (P4)*

*Daha önceden tek tek çalışılıyor zaman kaynı oluyordu sıranı beklerken ayrıca kayıplar oluyordu. Şimdi Başarılı buluyorum. Hızımız çok artırdı (K4)*

*... we don't need to come together physically. It allows us to do group work. Our whole team attended meetings have decreased. We no longer have all-day meetings (P4)*

*... fiziksel bir araya gelmeye ihtiyaç duymuyoruz. Grup çalışması yapmamıza imkan sağlıyor. Toplantılarımız azaldı. Gün boyu süren toplantılarımız artık yok. (K4)*

*.. and time is saved. Collaborative work occurs. Time savings occur when different work units make arrangements in their own areas of interest. (P9)*

*... ve zaman tasarrufu oluyor. İş birlikçi çalışma oluşuyor Ekipçe çalışılıyor. Farklı çalışma birimleri kendisi ilgi alanında da düzenleme yaparken zaman tasarrufu ortaya çıkıyor. (K9)*

### **Increasing the Process Speed in Group of Work**

According content analysis, two interview participants explained that working with seeing history in group work via co-authoring increase process speed in group work. They noticed that:

*... working by seeing the history without waiting for each other prevented loss of time. In this way, I find the process more successful. Co-authoring tools increased our process speed in group work.. (P10)*

*... birbirini beklemeden tarihçeyi de görerek çalışmak zaman kaybının önüne geçti. Bu şekilde süreci daha başarılı buluyorum. Birlikte yazarlık araçları Grup çalışmalarında süreç hızımızı artırdı. (K10)*

#### **4.1.3.4 Welcome and Participation**

Welcome and Participation category is the fourth category of theme Workplace Flexibility and focuses on encouraging the user to participate actively in developed platform via opportunities, user guide and inform about their authorization. Welcome and Participation category has four codes.



Table 4.13 Codes of the category Welcome and Participation

Category	Code	n	f
Welcome and participation	Providing opportunities for participation	7	9
	Sharing user manual	5	6
	Routing with access authorization	4	4
	Checking permission	2	2

### **Providing Opportunities for Participation**

Seven of interview participant emphasize that sense of belonging and informed about work groups are the key features for encouragement the users to participate the activity.

*It is nice to receive a message as a welcome in terms of belonging to the process. I like the fact that my user is informed that I have been added to an authorization/work group. (P1)*

*Bir karşılama anlamında bir mesajın gelmesi sürece aidiyet açısından güzel oluyor. Benim kullanıcıma bir yetki/çalışma grubuna eklendiğimin bilgisi gelmesi hoş bir özellik beğeniyorum. (K1)*

*An e-mail that shows who can use what part of the portal. It can give you information about what you will be doing. The places where I have authorization are related to the work I am going to do, so it informs me about my task or purpose. (P7)*

*Portalde kimlerin nereyi kullanabileceğini gösteren bir e-mail. Ne iş yapacağın konusunda bilgi verebilir. Yetkim olan yerler yapacağım, işe ile ilgili olduğu için görevimi yada amacımı bana bildirmiş oluyor. (K7)*

*The person learns where they need to access and which team they are a member of without asking. A sense of belonging and team awareness are formed. (P5)*

*Kişi nereye erişmesi gerektiğini ve hangi ekibin üyesi olduğunu sormadan öğrenmiş oluyor. Aidiyet duygusu ve Ekip bilinci oluşmuş oluyor. (K5)*

### **Sharing User Manual**

The findings highlighted the importance of the sharing User Manual for helping participants engage community of practice platform. Five interview participants requested a user manual to be included in the welcome message by saying;

*I could not directly figure out how to use the practice platform. The User Manual can solve this situation. (P9)*

*Platformu nasıl kullanacağını direkt çözemedim. Kullanım Kılavuzu bu durum çözülebilir. (K9)*

*Probably because it is an automated system mail, it is not very explanatory. It would be better if a link or a guide is also sent. (P1)*

*Otomatik sistem maili olduğu için olsa gerek çok açıklayıcı değil. Bir link veya kılavuz da iletirse daha iyi olur. (K1)*

### **Routing with Access Authorization**

Four of interview participant emphasize that sending email about access authorization is good for routing the participants where they can access and contribute which study or document by saying;

*... The system automatically sends it to the end user. In addition, we do not bother to go to the feet, it is notified in an official language. It creates a record (memory) in terms of where to go to remember. (P3)*

*... son kullanıcıya sistem otomatik gönderiyor. Birde gidip ayağına uğraşmıyoruz resmi bir dille anlatılmış tebliğ edilmiş oluyor. Hatırlaması için nereye gidecektim açısından kayıt (hafıza) oluşturuyor. (K3)*

*I think it's good that I know where I can access, I know which working group I can access (P8)*

*Bence güzel nereye erişebileceğimi böylece biliyorum. Hangi çalışma grubuna erişebileceğim biliyorum. (K8)*

### **Checking Permission**

Five of interview participants requested a page to help them learn about what authorization where in the platform. One of participant reported the sentences;

*In the work of a department, when only one document is authorized for one person, it is difficult to follow up afterwards. There should be a place to learn who has what authorization where. (P6)*

*Bir birimin çalışmasında sadece bir dokümana bir kişi için yetki verildiğinde sonrasında bunun takibi zor oluyor. Kimin nereye hangi yetkisi var öğreneceği yer olmalı. (K6)*

## **4.2 Support the operation of Business Processes**

In this research, through the findings obtained from the content analysis, the second sub-research question, primarily how the Community of Practice platform can support business operations, was examined. In this research, through the findings obtained from the content analysis, the second sub-research question, primarily how the Community of Application platform can support business operations, was examined. According to the results of the content analysis, it was revealed that Sharing and Communication are directly related to the second research question. Sharing and Communication are the key themes to support and encourage public officers for working on common domains in business environment.

For answering sub research question 2, How can a Community of Practice platform support business operations, revealed the themes, categories and codes are in below Table 4.14

Table 4.14 Themes, categories, codes for the sub research question 2

Theme	Category	Code	f
Sharing	Best practice sharing	Sharing good example	10
		Adapting the study	4
	Experience sharing	Tracking how it works	25
		Providing feedback	15
		Sharing business process document	8
		Reviewing past studies	8
		Tracking how the process and Documents are examined	3
	Document and information sharing	Document sharing	19
		Knowledge transfer among public officers about how business processes are performed	12
Communication	Online Communication	Instant communication	20
		Online meetings	7
		Person accessibility status	7
		Online conference communication	6
		Group messaging	4
		Automatic skype opening	3
		Communication by phone	3

Engagement for participation	Staying informed	16
	Receiving notification about process	8
	Receiving notification by e-mail	8
	Too many e-mail notifications	2
	Invitation to the working group	6
	Notification of authorization to access the study	4
	Following document editing	2
Announcement	Creating an announcement	6
	Using the public announcement area effectively	5
	Creating announcements specific to target audiences	5
Physical meeting	Getting together physically	10

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#### 4.2.1 Sharing

Sharing theme is one of major sources the developed Community of Practice platform how support the operation of Business Processes. Sharing has three categories; **Best practice sharing**, **Experience sharing**, and **Document and Information sharing**.

According to Content Analyze, Table 4.15 shows the sharing theme's categories and codes emerging for the question 2.

Table 4.15 Insert Table Caption Here

Theme	Category	Code	f
Sharing	Best Practice Sharing	Sharing good example	10
		Adapting the study	4
	Experience Sharing	Tracking How It Works	25
		Providing Feedback	15
		Sharing business process document	8
		Reviewing past studies	8
		Tracking how the process and Documents are examined	3
	Document and Information Sharing	Document Sharing	19
		Knowledge Transfer among public officers about How Business Processes are Performed	12

The Sharing theme has three categories, below Table 4.16 shows the frequencies and percentage in the theme.

Table 4.16 Categories of the theme Sharing

Category	n	f	%
1. Best practice sharing	5	15	14,42
2. Experience sharing	12	58	55,77
3. Document and information sharing	12	31	29,81

#### 4.2.1.1 Best Practice Sharing

Best Practice Sharing is the first category of theme Sharing and focuses on sharing best sample as using a template to support public officers for working on common business domains in workplace environment. Best Practice category has two codes.

Table 4.17 Codes of the category Best Practice Sharing

Category	Code	n	f
Best practice sharing	Sharing good example	5	10
	Adapting the study	2	5

#### Sharing good example

Five interview participants emphasized that sharing good example importance for use as template to support and encourage public officers for working on common domains in business process.

*In order to take the best of the past years as a basis, it is uploaded from the library and shared by clicking share. It is further developed by looking at the good example. (P2)*

*Geçmiş yıllarda yapılanların iyilerinin baz alınması için kütüphaneden yüklenerek paylaş denerek paylaşılıyor. İyi örneğe bakarak daha da geliştiriliyor. (K2)*

... good examples or templates from the past are shared and we end up creating a document together. (P10)

... geçmişteki güzel örnekler veya şablonlar paylaşılıyor ve sonunda bir dokümanı birlikte oluşturmuş oluyoruz. (K10)

We share the table prepared by someone and similar good examples that we like. (P4)

Birinin hazırladığı tablosunu ve benzeri beğendiğimiz iyi örnekleri paylaşıyoruz. (K4)

### **Adapting the study**

Two interview participants mentioned about the importance of looking at shared examples and adapting them to new studies by saying;

*My colleagues did a good job, so I thought I'd edit it from that perspective. (P4)*

*Bir arkadaşım güzel yapmış bende bu açıdan düzenleyeyim diyorum. (K4)*

*I learned through the portal what kind of process or know-how they use and adapted it to our internal processes (P4)*

*Onların nasıl bir süreç veya bilgi birikimiyle iş yaptığını portal aracılığıyla öğrendim ve iç süreçlerimize uyarladım (K4)*

#### **4.2.1.2 Experience Sharing**

Experience Sharing is the second and most popular category of theme Sharing. Experience sharing focuses on sharing experience to coworker colleagues to support operation business processes. Experience Sharing category has five codes.



Table 4.18 Codes of the category Experience Sharing

Category	Code	n	f
Experience Sharing	Tracking how it works	9	24
	Providing feedback	6	15
	Sharing business process document	6	8
	Reviewing past studies	6	8
	Tracking how the process and documents are examined	3	3

### Tracking how it Works

Nine interview participants claimed the portal should provide opportunities to track how the document prepared and how the process works. The interview participants reported their opinions as follows:

*Being able to follow how my colleagues work and the process while working together increases my professional knowledge and I learn. (P1)*

*Birlikte çalışırken arkadaşların nasıl çalıştığını ve süreci takip edebilmek mesleki bilgimi artırıyor ve öğreniyorum. (K1)*

*Being able to instantly see where my other friends are editing and knowing that it saves automatically gives me confidence while working. (P2)*

*Diğer arkadaşlarının nereyi düzenledikleri anlık görebilmek ve otomatik kaydettiğini bilmek çalışırken güven veriyor. (K2)*

*I can see who my friends in other units have done their research with and what they have interviewed. (P10)*

*Çalışmanın canlı olarak diğer birimlerdeki arkadaşların araştırmalarını kimin ile yapmışlar ve ne görüşmüşleri görebiliyorum. (K10)*

*We can see what and how someone is working, we can follow them and it gives us ideas. (P4)*

*Birilerin neyi nasıl yaptığını çalıştığını görebiliyoruz, takip edebiliyoruz hemde bize fikir veriyor. (K4)*

*A newcomer can understand the business department and processes more clearly thanks to the Practice Portal. I can understand more clearly what another unit does. (P6)*

*Yeni gelen bir kişi birimi ve süreçleri daha net anlayabiliyor UP sayesinde. Başka birimin ne iş yaptığını daha net anlayabiliyorum. (K6)*

### **Providing Feedback**

Six interview participants reported that providing opportunities for feedback on developed platform is crucial to support the operation of business process and improve their future works.

*When I see something wrong, I share my opinion and say look, you need to fix this. (P4)*

*Yanlış birşey gördüğümde de fikrimi paylaşıyorum bak burayı düzeltmen gerek diye. (K4)*

*I have also experienced situations such as a place I wrote was edited by giving me feedback. (P1)*

*Benim yazdığım bir yerin bana geri dönüt verilerek düzenlenmesi gibi durumlar da yaşadım. (K1)*

*When someone corrects my mistakes, it contributes to my future studies. (P12)*

*Birisinin hatalı olduğum konuyu düzeltmesi, sonraki çalışmalarına da katkı sağlamış oluyor. (K12)*

*We intervene in all the changes made in case there are mistakes. I can see my own mistakes or if I have insufficient information. (P11)*

*Yapılan tüm değişiklikleri hata olmasında müdahale ediyoruz. Eksik bilgim varsa ya da kendi hatalarımı görebiliyorum. (K11)*

### **Sharing business process document**

Six interview participants emphasized that sharing documents related business process provide convenience in operational work by saying;

*It is used for multiple public officers to work on the same shared document at the same time. It saves time and shares information. It also provides business task sharing. (P7)*

*Burası aynı anda birden fazla kişinin paylaşılmış aynı doküman üzerinde işlem yapması için kullanılıyor. Zaman kazancı ve bilgi paylaşımı sağlıyor. Görev paylaşımı da sağlıyor. (K7)*

*We shared the prepared documents with the whole community through the common library. (P9)*

*Hazırlanan dokümanlar Ortak kütüphane üzerinden bütün genele paylaştık. (K9)*

*... I upload the document on the portal and I share the link and we add our opinions. Everyone is doing this process. (P8)*

*...dokümanı portale koyuyorum ve linkini paylaşıyorum. Görüşlerimizi de ekliyoruz. Herkes bu süreci yapıyor. (K8)*

### **Reviewing past studies**

Six interview participants highlighted reviewing shared past studies about their common interest of business is important to support business operation work.

*The Presidency has a 180-day planning period, and now we can prepare it more easily. We can follow how we have done this work in the past. (P8)*  
*Cumhurbaşkanlığının 180 günlük planlama süreci var onu artık daha kolay hazırlayabiliyoruz. Geçmişte ne yolla bu çalışmayı yapmışız takip edebiliyoruz. (K8)*

*I also see and access documents created by others. (P11)*  
*Başkalarının oluşturduğu dokümanları da görüyorum ve ulaşıyorum. (K11)*

*From here I see a colleague filling out a goal card for his area of expertise. I learned how to use the statistical year from my friend's study. (P4)*  
*Bir arkadaşımın uzmanlık alanıyla ilgili hedef kartını doldurduğunu buradan görüyorum. İstatistik yılının nasıl kullanıldığını arkadaşımın yaptığı çalışmadan öğrendim. (K4)*

### **Tracking how the process and documents are reviewed**

Three interview participants reported that tracking how the process and documents reviewed supports the operation of business process and contribute learning process by saying;

*Even if my area of expertise is not the same, I can learn new information by tracking what they pay attention to. (P2)*

*Uzmanlık alanım aynı olmasa bile neye dikkat ettiklerini görmek yeni bilgiler edinebiliyorum. (K2)*

*It contributed a lot to my learning process. I saw how I should examine the works. (P5)*

*Öğrenme sürecime çok katkı sağladı. Çalışmaları nasıl incelemem gerektiğini gördüm. (K5)*

#### **4.2.1.3 Document and Information Sharing**

Document and Information Sharing is the other emerging category of theme Sharing. Document and Information category emphasized on sharing document and transferring knowledge among colleagues to support business processes. The Document and Information Sharing category has two codes.

Table 4.19 Codes of the category Document and Information Sharing

Category	Code	n	f
Document and Information sharing	Document sharing	12	19
	Knowledge transfer among public officers about how business processes are performed	8	12

#### **Document Sharing**

According to the findings, all interview participants believed that the document sharing facilities help them doing common domain process by saying;

*I share a document from another study or ministry to a friend, I can share the PDF publication through the library immediately in the relevant library (P4)*

*Arkadaşa bir başka çalışmadan veya bakanlıktan bir dokümanı, Kütüphane aracılığıyla PDF yayını hemen ilgili kütüphanede paylaşıyorum (K4)*

*I shared my previous experiences and archived data through the portal. We shared them in the form of Direct Sharing to the Library or uploading to common areas. (P3)*

*Daha önceki deneyimlerimi ve arşivimde oluşan verileri portal üzerinden paylaştım. Kütüphaneye Direkt Paylaşma veya ortak alanlara yükleme şekillerinde paylaştık. (K3)*

*We shared document with everyone through the common library. If the document is private for the department, it is shared only for that department, for example Audit department documents. (P1)*

*Ortak kütüphane üzerinden herkese paylaştık. Bir birimi özel ise örneğin Denetim birimine sadece o birim özelinde paylaşıldığı da oldu. (K1)*

*... We also use it for secure sharing when sharing a document with a team. (P10)*

*... Ayrıca bir dokümanı bir ekip ile paylaşırken de güvenli bir paylaşım amacıyla da kullanıyoruz. (K10)*

### **Knowledge Transfer among public officers about How Business Processes are Performed**

Eight interview participants explained that knowledge transfer opportunities such as master-apprentice relationships, working with field experts on the same document, and collaborative work on shared documents contribute to the accumulation of knowledge about business processes.

*Collaborative work in the Practice Portal is more successful for me if the other person has more experience. (P7)*

*Uygulama Portalinde İşbirlikli çalışma Eğer işte karşımdakinin tecrübesi daha fazla ise benim için daha başarılı oluyor. (K7)*

*As my experience increases, I contribute to my other friends with the documents I share and create. (P12)*

*Bende deneyimim artıkça paylaştığım ve yaptığım dokümanlarla diğer arkadaşlarıma katkı sağlıyorum. (K12)*

*The portal contributes to the master-apprentice relationship with its modules and tools. Know-How is transferred through the portal. (P8)*

*Portal, modül ve araçları ile Usta çırak ilişkisine katkı sağlıyor. Know-How uygulama portal ile transfer edilmiş oluyor. (K8)*

*Sharing and cooperation between subject matter experts and young friends contributes to knowledge acquisition. (P2)*

*Konu uzmanları ile genç arkadaşlar arasında paylaşım ve yardımlaşmanın olması bilgi birikimine katkı sağlıyor. (K2)*

#### **4.2.2 Communication**

Communication theme is one of major sources the developed CoP platform how support the operation of Business Processes among public officers. Communication has four categories; **Online Communication, Engagement for Participation, Announcement and Physical Meeting.**

According to Content Analyze, Table 4.19 shows the Communication theme's categories and codes emerging for the sub research question 2, how can a Community of Practice platform support business operations.

Table 4.20 Categories and Codes of the Communication theme

Theme	Category	Code	f
Communication	Online Communication	Instant communication	20
		Online meetings	7
		Person accessibility status	7
		Online conference communication	6
		Group messaging	4
		Automatic skype opening	3
		Communication by phone	3
	Engagement for participation	Staying informed	16
		Receiving notification about process	8
		Receiving notification by e-mail	8
		Too many e-mail notifications	2
		Invitation to the working group	6
		Notification of authorization to access the study	4
		Following document editing	3
	Announcement	Creating an announcement	6
		Using the public announcement area effectively	5
Creating announcements specific to target audiences		5	
Physical Meeting	Getting together physically	10	

Communication theme has four categories, below Table 16 shows the frequencies and percentage in the theme.

Table 4.21 Categories of the theme Communication

Category	n	f	%
1. Online communication	12	49	40,00
2. Engagement for participation	12	46	38,33
3. Announcement	10	16	13,33
4. Physical meeting	10	10	8,33

#### 4.2.2.1 Online Communication

Online Communication is the first category of theme Communication and focuses on online communication among colleagues. Online Communication category has seven codes.

Table 4.22 Codes of the category Online Communication

Category	Code	n	f
Online communication	Instant communication	11	19
	Online meetings	6	7
	Person accessibility status	7	7
	Online conference communication	5	6
	Group messaging	4	4
	Automatic skype opening	2	3
	Communication by phone	2	2



## Instant Communication

Eleven interview participants emphasized that instant communication via different medias like skype instant messaging, office online document instant messaging via chat and document comments etc is a major communication method to support operation of business domain for collaborative working among public officers.

*Generally, instant messaging happens while working on a document or usually on Skype. (P3)*

*Genelde anlık mesajlaşma doküman üzerinde çalışırken veya genellikle Skype üzerinde oluyor. (K3)*

*We generally decide to create a shared document by instant messaging or conversation. We copy and create a template, sometimes by deleting the content of the old document. (P1)*

*Genelde anlık yazışarak veya konuşarak ortak doküman oluşturmaya karar veriyoruz bir şablona bazen eski dokümanın içeriğini silerek kopyalayıp oluşturuyoruz. (K1)*

*We use it to speed up the process for internal communication purposes. (P11)*

*Kuruluş içi iletişim amaçlı süreci hızlandırmak için kullanıyoruz. (K11)*

*Messaging is the best method for instant communication. I don't have to go and look at his place, I can reach him directly. We don't try to send friends to people I want to talk to, I can write directly to anyone on the platform. (P6)*

*Anlık iletişim için mesajlaşma en iyi yöntem. Yerine gidip bakmıyorum direkt ulaşabiliyorum. Konuşmak istediğime arkadaşlık göndermeye uğraşmıyoruz, platformdaki herkese direkt yazabiliyorum. (K6)*

*When we had a meeting or something, we would communicate via messaging and synchronization was achieved. (P10)*

*Toplantı falan olduğunda mesajlaşarak haberleşiyorduk ve senkronizasyon sağlanıyor. (K10)*

## Online Meetings

Six of interview participants highlighted online meeting to communicate with a group people to decision making or explain any issues via platform supported tools like Skype by saying;

*When it was not possible or necessary to come together physically, we held audio or video meetings and communicated. When we have questions while working on a shared document, I invite the person to work on the document simultaneously via Skype. (P1)*

*Fiziksel olarak bir araya gelme imkanı olmadığında veya gerekli değil ise, sesli veya görüntülü toplantı yaptık ve iletişim kurduk. Ortak dokümanda çalışırken de sorularımız olduğunda kişiyi Skype üzerinden dokümanda eş zamanlı çalışmaya davet ediyorum. (K1)*

*Sometimes we hold an online planning meeting and discuss and plan there (P12)*  
*Bazen online planlama toplantısı yapıp orada tartışıp planlama yapıyoruz (K12)*

*I was able to handle the entire process online through the portal and work without meeting together. (P11)*

*Bütün süreci portal üzerinden online olarak halledip bir araya gelmeden çalışabildim. (K11)*

## Person Accessibility Status

Seven of interview participants highlighted seeing person accessibility status is importance to communicate quickly by saying;

*Since it shows the availability of the person, I can sign up directly if he/she is available. (P1)*

*Kişinin Müsaitlik Durumu gösterdiği için müsaitse direkt yazılabiliyorum. (K1)*

*What I like the most is that I can see the availability of the colleague I am going to write to before we communicate. (P12)*

*Yazacağım arkadaşın, iletişim kurmadan önce müsaitlik durumunu uygun olup olmadığı görebiliyor olmamız en beğendiğim tarafı. (K12)*

*I can see people online when I have a question. I can communicate instantly. (P11)  
Bir sorum olduğunda online kişileri görebiliyorum. Anlık iletişim kurabiliyorum.  
(K11)*

### **Online Conference Communication**

According to content analysis findings, five participants argued that online conference communication is considerable feature of platform to discuss with participants about common domain and to support division of labor among working groups. They stated that online conference communication helped them in their work on business processes with the following sentences;

*When working with the World Health Organization, we have used it to work with foreign experts. It was used to attend the conference and discuss the process when there were questions. (P10)*

*Dünya sağlık örgütü ile çalışırken yurtdışı uzmanlar ile çalışmak için kullandığımız oldu. Konferansa katılım ve sorular olduğunda süreci tartışmak için kullanıldı.  
(K10)*

*I communicated collectively by voice. There was very little instant messaging. There is a division of labor between us and accordingly, teams start working with voice communication. (P9)*

*Sesli olarak toplu iletişim kurdum. Çok az Anlık mesajlaşma oldu. Aramıza İş bölümü yapılmış olunuyor buna göre ekipler sesli iletişim ile çalışmaya başlamış oluyor. (K9)*

*We mostly experienced communication in writing and through video screen sharing. (P10)*

*Çoğunlukla yazılı olarak ve Görüntülü ekran paylaşımı ile iletişim deneyimimiz oldu. (K10)*

### **Group Messaging**

Four interview participants explained that they use the group messaging to communication group of colleagues by saying;

*We usually send group messages to the working group and create documents. (P12)  
Genelde çalışma grubuna toplu mesaj atıp doküman oluşturuyoruz. (K12)*

*It would be very nice to be able to send bulk messages. It keeps the correspondence in the past. (P3)*

*Toplu mesaj gönderim olması çok güzel olur. Yazışmaları geçmişte tutuyor. (K3)*

### **Automatic Skype Opening**

According to content analysis of interview, three participants mentioned the automatic skype opening and showing the online status with the following sentences;

*I don't know if there is a setting for this, it can be annoying when the computer turns on automatically. There are times when I don't want them to see that I am online. For example, when I work at home in the evening, it is immediately seen that I am online. (P3)*

*Şunun ayarı var mı bilmiyorum, Bilgisayar açıldığında Otomatik açılması rahatsızlık verebiliyor. Benim Online olduğumu görmelerini istemediğim olabiliyor. Akşam evde çalışırken mesela online olduğumu hemen görülüyor. (K3).*

*I would like the messaging section (Skype) not to open automatically on my computer. (P12)*

*Mesajlaşma kısmı otomatik açılmasını bilgisayarımda isterim. (K12)*

#### **4.2.2.2 Engagement for Participation**

Engagement for participation is the substantial category of communication theme and community of practice framework to keep the user active and inform which work group they will take part in. According to content analysis findings Engagement for Participation category has six codes.

Table 4.23 Codes of the category Engagement for Participation

Category	Code	n	f
Engagement for participation	Staying informed	9	16
	Receiving notification about process	6	8
	Receiving notification by e-mail	6	8
	Too many e-mail notifications	2	2
	Invitation to the working group	6	6
	Notification of authorization to access the study	4	4
	Following document editing	2	2

### Staying Informed

Nine of interview participants highlighted the necessary of staying informed for a group work or business domain process to support collaborative work environment. Generally, interview participants said that they were informed through the announcement module, notifications and welcome mail module:

*Announcements module is good to be informed. Work-related or general information. It is also good to conduct social and general surveys (P8)*  
*Duyurular, haberdar olması açısından iyi oluyor. İş ile ilgili veya genel bilgilendirme. Sosyal ve genel Anketler de yapılması güzel oluyor (K8)*

*When I first joined the Portal, I received a few welcome emails when the portal was authorized. To inform you that you were authorized. (P2)*  
*Portale ilk katıldığımda portale yetki verilince hoş geldin konulu birkaç mail geldi. Yetki verildiğinin haber etmek için. (K2)*

*It is good to know what is going on and to announce the deadlines so that the whole organization can see that they are interested in these issues. It is good in terms of being informed. (P1)*

*Ne olup bittiğinin bildirilmesi ve son tarihlerin duyurulması tüm kuruluşun bu konularla ile ilgilendiğinin görülmesi açısından güzel oluyor. Haberdar olma açısından iyi oluyor. (K1)*

### **Receiving Notification about Process**

The findings highlighted the importance of the receiving notification about business domain process to support collaborative online work environment. Six of interview participants noted that;

*It reminds the person of the e-mail and Synchronizes with the Phone if calendar was installed. (P9)*

*Kişiye e-posta hatırlatıyor olması ve Telefonda takvim ekli ise Telefon ile Senkronize oluyor. (K9).*

*It is very nice that the person receives an e-mail when the work is planned in calendar module and also it shows when there is a change. (P12)*

*Takvimde Çalışma planlanınca Kişiye e-posta gitmesi ve bunun değişiklik olduğunda bunu göstermesi çok güzel. (K12)*

### **Receiving Notification by E-Mail**

Six of interview participants highlighted essential feature of receiving notification by e-mail to inform about work in business environment. Some interview participants noted that:

*I like the fact that all the details are sent to the person by e-mail when I add the contact. Information about the Place, Time, Location, Participants, Description and Meeting is sent directly to the participants. (P8)*

*Kişiyi eklediğimden tüm detayların kişiye e-posta ile bilgilendirme gitmesini beğeniyorum. Yer, Zaman, Konum, Katılımcılar, Açıklama ve Toplantıya yönelik bilgilendirme direkt katılımcılara gönderiliyor. (K8)*

*When planning workshops and meetings in the shared calendar module, we summarize the purpose in one sentence. We enter the date people into the system. And then it is very nice to send an e-mail to the contacts. It is entered into the calendar of the colleagues. (P10)*

*Takvim modülünde Çalıştay ve toplantı planlarken amacı bir cümle ile özetleyip. Tarihi kişileri sisteme giriyoruz. Ve sonrasında Kişilere e-mail gitmesi çok güzel. Kişilerin takvimine işleniyor (K10)*

### **Too Many E-mails Notifications**

Two of the interview participants explained that receiving too many emails is frustrating and can cause some important emails to be missed:

*Too many e-emails with different authorizations can tire the user and sometimes he/she does not pay attention to the incoming e-mail. (P6)*

*Farklı yetkilerde çok fazla e-psota gitmesi kullanıcı yorabiliyor ve gelen emaile bazen önem göstermiyor. (K6)*

### **Invitation to the Working Group**

The findings highlighted the importance of the invitation of a group work or a meeting to support collaborative work environment for business process. Six of interview participants noted that;

*The calendar is used to inform and invite participants about the common business workflow (P3)*

*Takvim, Personelin ortak iş akışından haberdar olması ve davet edilmesi için kullanılıyor (K3)*

*You can select the participants and an e-mail is sent to the invitee based on location information and business topic. Sending a notification or invitation in this way is very nice for participation in the study. (P2)*

*Katılımcıları seçebiliyor ve yer bilgisi ve konuya göre davetliye e-posta gidiyor. Bu şekilde bildirim veya davetliye göndermesi çalışmaya katılım için çok güzel. (K2)*

## Notification of Authorization to Access the Study

Four of interview participants claimed that notification about granting permission to inform working group by saying;

*With the welcome mail, the system sends authorizations to the person who has just been added to the portal so that they can be notified. (P1)*

*Hoşgeldin maili ile Portale yeni eklenen kişinin haberdar olması için sistem tarafından yetkileri gönderiliyor. (K1)*

*When a participant is added to the work without having to ask if they have authorization, an e-mail goes directly to the person. There is information. (P6)*

*Kullanıcıların yetkim varmı demesine gerek kalmadan çalışmaya eklendiğinde direkt kişiyi e-posta gidiyor. Bilgilendirme oluyor. (K6)*

### 4.2.2.3 Announcement

The Announcement is the third most common category under the Communication theme. Announcement as a component of online community of practice, is also a tool to support the share information about business domain or a common interest in specific group. According to content analysis findings Announcement category has three codes.

Table 4.24 Codes of the category Announcement

Category	Code	n	f
Announcement	Creating an announcement	5	6
	Using the public announcement area effectively	5	5
	Creating announcements specific to target audiences	5	5



## **Creating an Announcement**

Five of interview participants mentioned about announcement what they use it for;

*We send announcements to determined groups on a topic of common interest. We can send it to the relevant units or to everyone. (P3)*

*Ortak ilgi olan konu hakkında belirlenmiş gruplara duyuru atıyoruz. İlgili birimlere veya herkese atıyoruz. (K3)*

*I use it quite announcement module. I use it in planning and announcing the activities. (P10)*

*Oldukça faal kullanıyorum. Yapılan etkinliklerin planlanması ve duyurulmasında kullanıyorum. (K10)*

## **Using the Public Announcement Area Effectively**

According to the findings, five interview participants mentioned the importance of using the public announcement area as a communication tool and informing all users of the application community portal with the following sentences;

*It is used for content that is desired to be seen, as it is an area where relevant people can definitely see it at the page opening (home page). I think the information that the announcements have been read can also be seen by the authorities. (P6)*

*Sayfa açılışında (ana sayfa) ilgili kişilerin kesinlikle görebileceği bir alan olduğu için görülmesi istenen içerikler için kullanılıyor. Duyuruların okunduğu bilgisi de sanırsam görülebiliyor yetkililer tarafından. (K6)*

*It is used for death, birth and special occasions. Announcements related to common work are also shared. Social events are shared here (P8)*

*Ölüm, Doğum, Özel günler için kullanıyor. Ortak iş ile ilgili duyurular da atılıyor. Sosyal Etkinliklerde burada paylaşılıyor. (K8)*

## **Creating Announcements Specific to Target Audiences**

Five interview participants argued that announcements should be filtered according to target audiences or purposes. They requested announcements for the target audience feature with following sentences;

*I think announcements should be purposeful. There is no need to show me the military service announcement. (P2)*

*Bence duyurular amacına yönelik olmalı. Askerlik duyurusunun bana gösterilmesine gerek yok. (K2)*

*It would be nice if you could publish announcements by filtering them (e.g. gender). (P6)*

*Duyuruları filtreleyerek (örneğin cinsiyet) yayımlama olsa güzel olurdu. (K6)*

#### 4.2.2.4 Physical Meeting

Physical Meeting is the category for the activity that can be performed outside the developed CoP platform and is considered to be provided to support physical social communication in the operational workspace.

Table 4.25 Codes of the category Physical Meeting

Category	Code	n	f
Physical Meeting	Getting together Physically	5	10

#### Getting Together Physically

According to content analysis ten interview participants think about sometimes getting together physically is good for them to support physical social communication. Face to face conversation is need for communication by saying;

*.... I think sometimes it is useful to get together for social communication. No matter how much we send messages or make video calls, it is not like a face-to-face conversation. (P12)*

*.... Bence bazen bir araya gelmek gerekiyor sosyal iletişim için yararlı oluyor. Ne kadar mesajlaşsak görüntülü görüşmelerde yapsak yüz yüze sohbet gibi olmuyor. (K12)*

*Sometimes we come together physically. Because we come for training or to explain how to use it. We need it for the socialization. I think getting together physically is a need for first time or beginners (P9)*

*Bazen fiziksel olarak bir araya geliyoruz. Çünkü, Eğitim veya nasıl kullanılacağını anlatmak için geliyoruz. Sosyalleşme için ihtiyaç duyuyoruz. Bir araya gelmenin ilk defa veya yeni başlayan kişiler için ihtiyaç olduğunu düşünüyorum. (K9)*

*Sometimes we come together physically. I think there is definitely a need to come together at regular intervals to support social trust. (P2)*  
*Bazen bir araya geliyoruz. Bence mutlaka belli aralıklar ile sosyal güveni desteklemek için bir araya gelme ihtiyacı oluşuyor. (K2)*

### **4.3 Professional Development of Employee**

The researcher primarily sought an answer to third sub research question that How does a Community of Practice platform impact the professional development of public officers. According to the results of the content analysis from two cycle of semi-structured interview, it was revealed that Contribution of the Platform to Professional Development and Contribution of the Platform to Collaborative Work and Cooperation Skills are the key themes to contribute professional development of employee and encourage public officers for working on common business domains and platform usage.

For answering sub research question 3, How does a Community of Practice platform impact the professional development on the domain, revealed the themes, categories and codes are in below Table 4.26

Table 4.26 Themes, categories, codes for the sub research question 3

Theme	Category	Code	f
Contribution of the platform to professional development	Providing opportunities for discussion	Using synchronous discussion tools	7
		Starting an online discussion	6
		Creating a discussion chain on a document	4
		Utilizing frequently asked questions	2
		Using to find the solution to the problem	4
		No need for a classic forum	2
		Learning from another	Providing opportunities to learn new knowledge
	Providing Opportunities for working groups	Contributing to Organizational/Personal knowledge accumulation	12
		Master apprenticeship contribution (know how)	9
		Increased level of care	2
		Assisting professional development	15
		Opportunity for collaboration between groups	8
		Providing opportunities to do together	5
		Seeing the knowledge level of people in the group	3

		Improving written communication skills	3
		Creating corporate memory	3
	Use of shared workspace	Providing secure storage space	23
		Providing in-group collaborative workspace	16
		Providing version history	15
		Providing hierarchical filing facility	10
		Providing Opportunity for Document Archive Review	8
	Providing Search and Filtering and Information Search Tools	Document Filtering	7
		Search for Content in Documents	5
		Document Previewing	1
Contribution of the platform to collaborative work and cooperation skills	Providing opportunities for collaborative work	Realizing collaborative work	23
		Supporting online group work	5
		Ensuring efficient work in group	2
		Motivating to work	2
	Collaborative document creation	Providing a synchronous collaborative environment	15

	Providing opportunity for the formation of a common language	3
	See document development stages	3
Providing synchronous operation	Using synchronous operation tools	13
	Ensuring team synchronization	5
Improvement of management skills During the opinion exchange process	Obtaining expert guidance/opinion	10
	Consultation	8
	Providing a different view	5
	Emergence of a broad perspective	4
Supporting the decision-making process	Co-Decision making	11
	Offering options	4
	Consulting the specialist/supervisor	4
Creating opportunities for cooperation	Helping other people	11
	Asking questions and opinions about the problem	4

#### **4.3.1 Contribution of the Platform to Professional Development**

Contribution of the Platform to Professional Development theme is one of major sources the impact of community of practice platform how contribute to professional development. Contribution of the Platform to Professional Development has five categories Providing Opportunities for Discussion, Learning from Another, Providing Opportunities for Working Groups, Use of Shared Workspace and Providing Search and Filtering and Information Search Tools.

According to content analyze, Table 4.27 shows the Contribution of the Platform to Professional Development theme's categories and codes emerging for the sub research question 3.

Table 4.27 Categories and Codes of the Contribution of the Platform to Professional Development theme

Theme	Category	Code	f
Contribution of the platform to professional development	Providing opportunities for discussion	Using synchronous discussion tools	7
		Starting an online discussion	6
		Creating a discussion chain on a document	5
		Utilizing frequently asked questions	2
		Using to find the solution to the problem	4
		No need for a classic forum	2
	Learning from another	Providing opportunities to learn new knowledge	15
		Contributing to organizational/personal Knowledge accumulation	12
		master apprenticeship contribution (know how)	9
	Providing Opportunities for working groups	Increased level of care	2
		Assisting professional development	15
			Opportunity for collaboration between groups



	Providing opportunities to do together	5
	Seeing the knowledge level of people in the group	3
	Improving written communication skills	3
	Creating corporate memory	3
Use of shared workspace	Providing secure storage space	23
	Providing In-Group collaborative workspace	16
	Providing version history	15
	Providing hierarchical filing facility	10
	Providing opportunity for document archive review	8
Providing search and filtering and information search tools	Document filtering	7
	Search for content in documents	5
	Document previewing	1

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The Contribution of the Platform to Professional Development theme has three categories, below Table 4.28 shows the frequencies and percentage in the theme.

Table 4.28 Categories of the theme Contribution of the Platform to Professional Development

Category	n	f	%
1. Providing opportunities for discussion	11	26	13,68
2. Learning from another	11	35	20,00
3. Providing Opportunities for working groups	12	37	19,47
4. Use of shared workspace	12	78	40,00
5. Providing search and filtering and information search tools	8	13	6,84

#### 4.3.1.1 Providing Opportunities for Discussion

The Providing Opportunities for Discussion is the first category of theme Contribution of the Platform to Professional Development. Providing Opportunities for Discussion focuses on brainstorming within the working group to ask questions and get answers and reach a common understanding about the process or document. Providing Opportunities for Discussion category has six codes.

Table 4.29 Codes of the category Providing Opportunities for Discussion

Category	Code	n	f
Providing Opportunities for discussion	Using synchronous Discussion tools	6	7
	Starting an online discussion	5	6
	Creating a discussion chain on a document	4	5
	Utilizing frequently asked questions	2	2
	Using to find the solution to the problem	3	4
	No need for a classic forum	2	2

### Using Synchronous Discussion Tools

Six of interview participants highlighted the necessary of synchronous discussion tools as a component of community of practice to support professional development on the common domain. Generally, interview participants said that they used text-based communication or video conference with screen sharing to discuss about the topics or document.

*When the work matures, we can work on the document simultaneously by discussing or sharing presentations. (P10)*

*Çalışma olgunlaşınca doküman üzerinde eş zamanlı tartışarak veya sunum paylaşımı şekilde çalışabiliyoruz. (K10)*

*I learned to be open to different ideas. Different opinions also improved me. (P8)*  
*Farklı fikirlere açık olmayı öğrendim. Farklı görüşler de beni geliştirdi. (K8)*

## **Starting an Online Discussion**

Five interview participants mentioned the contribution and opportunity for starting online discussion with colleagues to support professional development on the common domain with the following sentences.

*It also increased my ability to start discussions and comment online. (P10)*  
*Online ortamda tartışma başlatabilme ve yorum yapabilme yeteneğimi de artırdı. (K10)*

*If an agreement is to be reached on an issue (when discussing the ownership of an indicator), it can be done by instant chat here or by recording the discussion so that there is a history of the process in the future. (P7)*  
*Bir konu üzerinde anlaşmaya varılacaksa (bir göstergenin sahipliği konusunda konuşurken) buradan anlık yazışarak veya tartışmanın kayıt altında olduğu için ileride sürecin tarihçesi olur. (K7)*

## **Creating a Discussion Chain on a Document**

The findings of the content analysis indicated that when doing collaborative work towards a common goal, users prefer to discuss issues through documents and to ask questions and receive answers. Four of interview participants mentioned about discussion chain on a document by saying;

*When I am preparing a Word document, I answer questions when they come from the chat section or via Skype message, which I think is a contribution. (P12)*  
*Word dokümanın hazırlarken sohbet kısmından soru geldiğinde veya Skype mesaj ile geldiğinde cevaplıyorum bu da katkı bence. (K12)*

*We can open and discuss topics in the workshops, and you usually discuss online textually through the document. (P10)*  
*Çalıştaylarda konuları açıp tartışabiliyoruz ayrıca Doküman üzerinden de genelde metinsel tartışıyoruz. (K10)*

## **Utilizing Frequently Asked Questions**

Two of interview participants mentioned the opportunity of utilizing frequently asked question to support professional development on the platform with the following sentence.

*When we have a problem, we have the Frequently Asked Questions section ready, so we use it to see if there is a solution. (P12)*  
*Bir problemimiz olduğunda hazırda Sıkça Sorulan Sorular kısmı var o amaçla çözümü varmıdır diye bakmaka amacıyla kullanılıyor. (K12)*

### **Using to Find the Solution to the Problem**

The findings of content analysis of interviews of two design-implementation cycle pointed out the using history of discussions on skype history, document chat and forum to find solution to the problem. The interview participants mentioned about opportunity finding solution from discussion with the following sentences.

*For quick answer sharing to the asked question. Everyone can answer to question. (P6)*  
*İletilen soruya hızlı cevap paylaşımı için. Herkes cevap verebilir oluyor. (K6)*

*I use the forum to read and find out about the problems I have. (P6)*  
*Forumu, kullanma amacım yaşadığım Problemleri buradan okuyup bulmak içindir. (K6)*

#### **4.3.1.2 Learning from Another**

Learning from Another is the second category of theme Contribution of the Platform to Professional Development. Learning from Another category codes focused on knowledge stewardship and organization or personal knowledge accumulation for professional development. Learning from Another category has four codes.

Table 4.30 Codes of the category Learning from Another

Category	Code	n	f
Learning from another	Providing opportunities to learn new knowledge	8	15
	Contributing to organizational/personal Knowledge Accumulation	7	12
	Master apprenticeship contribution (know how)	6	9
	Increased level of care	2	2

### Providing Opportunities to Learn New Knowledge

The findings highlighted that providing opportunities to learn new knowledge is necessary feature to support professional development. About whether in department or between department group work, eight of interview participants reported that;

*This is where I see a friend of mine filling in the scorecard related to his area of specialization. I learned how to use the year of statistics from my friend's work. (P4)*  
*Bir arkadaşımın uzmanlık alanıyla ilgili hedef kartını doldurduğunu buradan görüyorum. İstatistik yılının nasıl kullanıldığını arkadaşımın yaptığı çalışmadan öğrendim. (K4)*

*For example, I had no idea how sections such as auditing worked in the document prepared for the 5-year plan, but I saw and learned here, and even contributed. (P12)*

*5 yıllık plan için hazırlanan dokümanda, denetim gibi kısımların nasıl çalıştığını hiç bilmiyordum mesela ama burada gördüm ve öğrendim hatta katkı da sağladım. (K12)*

*We learn about different areas where we are lacking. Even if it is not my field of interest, I can get new information from there. (P8)*

*Farklı eksik olduğumuz yerleri öğreniyoruz. İlgi alanım olmasa bile oradan yeni bilgiler edinebiliyorum. (K8)*

*I have worked with other units while examining the work of other teams or writing 180-Day Activity reports, I learn processes I have never heard of (P5)  
Diğer ekiplerin çalışmasını incelerken veya 180 Günlük Faaliyet raporları yazarken diğer birimlerle çalıştım, hiç duymadığım süreçleri öğreniyorum (K5)*

## **Contributing to Organizational/Personal Knowledge Accumulation**

The findings indicated that using community of practice platform support to create organizational knowledge or personal knowledge and also improve organizational development and professional knowledge.

*I have definitely contributed to my friends. Just as they have contributed to my knowledge, I have also contributed to my other friends. (P3)  
Bende arkadaşlara mutlaka katkı sağlamışumdır. Onların bilgi birikimime katkı sağladığı gibi benimde de diğer arkadaşlarıma katkı sağladığım oldu. (K3)*

*In Strategy Platform, I learned to work online. I think it has a positive contribution to knowledge accumulation. (P2)  
Strateji Platformunda Online olarak çalışmayı öğrendim. Bence bilgi birikimine pozitif katkısı var. (K2)*

*It contributes positively to our knowledge about the subjects of other groups we work with. (P7)  
Çalışılan diğer gruplarının konuları hakkında bilgi sahibi olmamıza olumlu katkı sağlıyor. (K7)*

## **Master Apprenticeship Contribution (Know How)**

Six interview participants focus on that master apprenticeship help to learn from more experienced colleague to contribute to the transfer know-how. They emphasized about master-apprenticeship by saying;

*The Application Portal contributes to the master-apprenticeship with its modules and tools. Know-How is transferred through the application portal. (P8)  
Uygulama Portal, modül ve araçları ile Usta çırak ilişkisine katkı sağlıyor. Know-How uygulama portal ile transfer edilmiş oluyor. (K8)*

*...It helped me to get more information from people who were more familiar with the subject being studied than me. It allowed me to pass on what I knew to others. (P1)*

*...benden daha çok çalışılan konuya hakim olan kişilerden daha fazla bilgi sahibi olmamda yardımcı oldu. Bildiklerimi de başkalarına aktarmama vesile oldu. (K1)*

*Sharing and cooperation between subject matter experts and young friends contributes to knowledge accumulation. (P2)*

*Konu uzmanları ile genç arkadaşlar arasında paylaşım ve yardımlaşmanın olması bilgi birikimine katkı sağlıyor. (K2)*

### **Increased Level of Care**

Two of interview participants emphasized that level of care for their work is increased with using developed application platform and so on help each other to learn.

*I take more care to work properly because others can easily see my work and what I have prepared. (P10)*

*Düzenli iş çıkarmaya daha çok özen gösteriyorum çünkü başkaları da benim çalışmalarımı ve hazırladıklarımı çok rahat görüyor. (K10)*

#### **4.3.1.3 Providing Opportunities for Working Groups**

Providing Opportunities for Working Groups is another important category of theme Contribution of the Platform to Professional Development. Providing Opportunities for Working Groups category codes focused on assisting and providing opportunity group working to contribute professional development of public officers in community of practice platform. Providing Opportunities for Working Groups category has four codes.



Table 4.31 Codes of the category Providing Opportunities for professional development

Category	Code	n	f
Providing Opportunities for working groups	Assisting professional development	9	15
	Opportunity for collaboration between groups	8	8
	Providing opportunities to do together	5	5
	Seeing the knowledge level of people in the group	3	3
	Improving written communication skills	3	3
	Creating corporate memory	2	3

### Assisting Professional Development

The findings highlighted that assisting professional development via group working is important opportunity to support professional development. Nine of interview participants reported considerable opportunity for assisting professional development with following sentences;

*Being able to follow how my colleagues work and the process while working together increases my professional knowledge and I learn. (P1)*

*Birlikte çalışırken arkadaşların nasıl çalıştığını ve süreci takip edebilmek mesleki bilgimi artırıyor ve öğreniyorum. (K1)*

*Each department has different parts from each other. When we work together, I can answer the colleague's questions or make comments, thus contributing to my development. (P5)*

*Her birimin birbirinden farklı kısımlar var. Beraber çalışınca kişinin sorularına cevap verebiliyorum veya yorum yapabiliyorum böylece gelişimime katkı sağlanıyor. (K5)*

*I learned which reports we benefit from and how we benefit from them. For this reason, we can say that it contributed to my knowledge and experience. (P12)*  
*Hangi raporlardan nasıl faydalandığımızı öğrenmiş oldum. Bu sebeple bilgi ve tecrübeme katkı sağladı diyebiliriz. (K12)*

*...It is useful both for accessing information faster and for collaborative work on the document. The person improves his/her own knowledge. (P11)*  
*... Hem bilgilere daha hızlı ulaşmak hem de dokümandaki ortak çalışmalarda faydalı oluyor. Kişi kendi bilgisini geliştiriyor. (K11)*

### **Opportunity for Collaboration between Groups**

The findings indicated that opportunity for collaboration between departments' groups should be used to accumulate professional development. Eight interview participants reported that;

*Participation is ensured when there is joint work with other departments. It enables working in competition. (P6)*  
*Katılım sağlanıyor diğer birimlerle ortak çalışma olunca. Rekabet içerisinde çalışmaya imkan sağlıyor. (K6)*

*... while working on goal card, I can see the data and actions collected not only from my department but also from my colleagues in other departments on online shared area. (P4)*  
*... hedef kartları verilerin sadece kendi hedef birimlerimden değil diğer arkadaşlarımın da topladığı verileri ve eylemleri ortak bir alanda görebiliyorum. (K4)*

### **Providing Opportunities to Do Together**

Five interview participants argued that opportunities for doing together is important to improve professional development in online communities of practice platform.

*We can say that many people with the same subject expertise working together contributed to the development of everyone in the team (P2)*  
*Aynı konu uzmanlığındaki bir sürü kişinin birlikte çalışma yapması ekipteki herkesin gelişimini katkı sağlamıştır diyebiliriz (K2)*

*It contributed to have and learn with my colleague the policies of the whole organization in general. It provided the opportunity to examine past studies. It contributed to my knowledge/experience by working together to transfer know-how (P7)*

*Meslektaşım ile genel olarak tüm kurumun politikalarına sahip olmak ve öğrenmek için katkı sağladı. Geçmiş çalışmalarını incelemeye imkan sağladı. Bilgi/deneyimlerime birlikte çalışarak know-how transferi yani bilgi/deneyime katkısı sağladı. (K7)*

### **Seeing the Knowledge Level of People in the Group**

According to content analysis three interview participants think that seeing level of professional knowledge is important for how support them in future study:

*When I was using it in my own unit, when my friends had questions, we saw what they knew and did not know about which subject. (P3)*

*Kendi birimim içerisinde kullanırken arkadaşların soruları olunca onların hangi konuda neyi bilip bilmediklerini görmüş olduk. (K3)*

### **Improving Written Communication Skills**

The findings indicated that opportunity for written communication should be used to improve their written communication and also professional development. Three interview participants reported that:

*Collaborative working opportunities on the platform contributed to my professional development. It also increased my ability to start discussions and comment online. (P10)*

*Platformda işbirlikçi çalışma imkanları Mesleki gelişimime katkı sağladı. Online ortamda tartışma başlatabilme ve yorum yapabilme yeteneğimi de artırdı. (K10)*

### **Creating Corporate Memory**

Two of participant emphasized that using community of practice platform supports to create corporate memory and also improve organizational development.

*It is positive and improves my experience. It provides information about the working standard and method of the relevant institution/department and then about the subject studied. (P7)*

*Olumlu ve tecrübemi geliştiriyor. İlgili kurumun/birimin çalışma standartı ve yöntemi ve sonrasında çalışılan konu hakkında bilgi sahibi olması sağlıyor. (K7)*

#### **4.3.1.4 Use of Shared Workspace**

Use of Shared Workspace is most popular category of theme Contribution of the Platform to Professional Development. Use of Shared Workspace category codes focused on assisting and providing opportunity group working with shared workspace to contribute professional development of public officers in community of practice platform. Use of Shared Workspace category has five codes.

Table 4.32 Codes of the category Use of Shared Workspace

Category	Code	n	f
Use of shared workspace	Providing secure storage space	12	23
	Providing in-group collaborative workspace	9	16
	Providing version history	9	15
	Providing hierarchical filing facility	9	10
	Providing opportunity for document archive review	6	8

## **Providing Secure Storage Space**

The findings indicated that providing secure storage space should be used to trust of public officers for community of practice platform and so on their usage of platform is increased. All of the interview participants noted their satisfaction about secure storage space following sentences;

*By keeping our files in a shared workspace (accessible to everyone), the risk of losing files has decreased. Having a single point of the document and being able to access it from anywhere is very important for us to work together with my colleagues when preparing a process or document. (P11)*

*Dosyalarımızı ortak bir alanda (Herkesin ulaşılabilir olduğu) dosyaların kaybolma riski azaldı. Dokümanın tek nokta durması ve buna her yerden erişebilmek bir süreç veya doküman hazırlarken meslektaşlarımız ile birlikte çalışmamız için çok önemli. (K11)*

*I used to have dozens of versions of a document to back it up. I overcame the fear of getting lost, I know that if I put a work on the portal, many eyes are looking at it. (P10)*

*Eskiden bir dokümanın onlarca versiyonu vardı yedeklemek için. Kaybolma korkusunu yendim, bir çalışmayı portala koyduysam birçok gözün çalışmayı incelediğini biliyorum. (K10)*

*We got rid of file and data losses. We can easily share our professional experiences with our colleagues. (P3)*

*Dosya ve veri kayıplarından kurtulduk. Mesleki Deneyimlerimizi kolayca meslektaşlarımızla paylaşabiliyoruz. (K3)*

*I really like the issue of authority. I like the authority management for the places where we need to enter some places and others need to enter other places. (P7)*

*Yetki konusunu ciddi beğeniyorum. Bazı yerlere bizim girmemiz bazı yerlere de başkalarının girmesi gereken yerler için yetki yönetimini beğeniyorum. (K7)*

## **Providing In-Group Collaborative Workspace**

Nine of participant emphasized that providing in-group specialized collaborative workspace is important to facilitate subject matter expertise the common domain, thus promotes to professional development and domain expertise with following sentences.

*We use it as a collaborative workspace where we organize documents related to our work and upload them for sharing. I use it as a storage space that I can access online. (P12)*

*Çalışmalarımız ile ilgili dokümanları düzenlediğimiz ve paylaşım için yüklediğimiz ortak çalışma alanı olarak kullanıyoruz. Online erişebileceğimiz depolama alanı amaçlı kullanıyorum. (K12)*

*It is our common shared workspace. We can see and follow what someone is doing and how they are doing it ... (P4)*  
*Ortak çalışma alanımız. Birilerin neyi nasıl yaptığını çalıştığını görebiliyoruz, takip edebiliyoruz ..... (K4)*

*It is usually used to work on a common plan or a common document for a common purpose. (P1)*  
*Genelde ortak amaca yönelik ortak plan veya ortak doküman üzerinde çalışmak amacıyla kullanılıyor. (K1)*

*... It is our common workspace for documents such as Word and Excel. Also, I used PowerPoint once to prepare a presentation with my friends. (P10)*  
*...Word, Excel gibi dokümanlar için ortak çalışma alanımız. Sunum hazırlamak içinde bir kez PowerPointi kullanmıştım arkadaşlarımla. (K10)*

## **Providing Version History**

The findings indicated that providing version history content of online community of practice platform is essential to access and examine the previous versions of comprehensive a document. Thus, opportunity to save it from accidentally replaced or deletion. Nine of the interview participants noted version history feature of document library with following sentences:

*I can say that the versioning feature and being able to work synchronously and simultaneously is what I like the most. When versioning is done, even by mistake, our file is not crushed and our efforts are not wasted. (P1)*  
*Versiyonlama özelliği ve senkronize eş zamanlı çalışabilmek en sevdiğim yanı diyebilirim. Versiyonlama yapılırken yanlışlıkla dahî olsa dosyamız ezilmiyor emekler boşa gitmiyor. (K1)*

*You can see who did what about the document and its history is a nice feature. (P7)*  
*Doküman ile ilgili kim ne yaptı görülebiliyor tarihçesi güzel bir özellik. (K7)*

*I especially like the versioning feature, we can see what it was like before and now we can see how comprehensive a document we have created and at the same time we can go back to the other version even if we accidentally saved over it. (P10)*  
*Özellikle de versiyonlama özelliğini beğeniyorum öncesinde nasıldı şimdi ne kadar kapsamlı bir doküman oluşturmuşuz görüyoruz ve aynı zamanda yanlışlıkla üzerin kaydetsek bile diğer versiyona geri dönebiliyoruz. (K10)*

*Versioning of documents is a nice feature, I can also see the versions of the old document. (P6)*

*Dokümanlarda Versiyonlama yapması güzel bir özellik, eski dokümanın versiyonlarını da görebiliyorum. (K6)*

## **Providing Hierarchical Filing Facility**

Nine of participant focus on importance of hierarchical filling to facilitate and support systematic collaborative work with colleagues in the documents.

*Hierarchical filing also makes a lot of sense in terms of grouping. The 2022 Strategy Plan is grouped logically, such as having relevant resources under the folder. (P12)*

*Hiyerarşik dosyalama da grüplama açısından çok mantıklı oluyor. 2022 Strateji Planı klasörü altında ilgili kaynakların olması gibi mantık çerçevesinde grüplanmış oluyor. (K12)*

*The fact that it is hierarchical and files can be shared with teams or individuals provides a good working environment. (P10)*

*Hiyerarşik olması ve dosyaların ekip veya kişiler ile paylaşılabilir olması güzel bir çalışma ortamı sağlıyor. (K10)*

*It made it easy to keep organized and easy to use in terms of categorizing files. (P6)*

*Düzenli çalışmayı ve dosyaların kategorileşmesi gibi konularda kolay kullanım imkan sağladı. (K6)*

## **Providing Opportunity for Document Archive Review**

Six of participant emphasized that providing opportunity for document archive is leading feature to find best practice version or older template for the study. This feature provides opportunity to prove its development by showing.

*The library is used as a kind of evidence. To present this document to my department or higher department and to prove where it came from. The library is used so that they can access this document at the same time. (P7)*

*Kütüphane bir nevi kanıt sunmak olarak kullanılıyor. Bu dokümanın hangi birimi veya üst birimime sunulması ve nereden geldiğini ispat amacıyla. Kütüphane, aynı anda bu dokümana erişebilmesi için kullanılıyor. (K7)*

*If necessary, you can go back 10 years and get document. (P4)*

*Gerekse 10 yıl öncesine ulaşip veri alabiliyorsun. (K4)*

#### 4.3.1.5 Providing Search and Filtering and Information Search Tools

Providing Search and Filtering and Information Search Tools is another category of theme Contribution of the Platform to Professional Development. Providing Search and Filtering and Information Search Tools focused on helping user to search past history or filter other resources to use as template or to accelerate operational process in working on common business domain. Providing Search and Filtering and Information Search Tools category has three codes.

Table 4.33 Codes of the category Providing Search and Filtering and Information Search Tools

Category	Code	n	f
Providing search and filtering and information search tools	Document filtering	5	7
	Search for content in documents	5	5
	Document previewing	1	1

#### Document Filtering

Five of interview participants emphasized that document filtering is necessary feature for finding resources or templates to accelerate their work. Two of them requested the document filtering features by default.

*When I'm not sure where to start, it's also nice to filter and access previously used files. (P1)*

*Nereden başlayacağımdan emin olmadığım da filtreleme yaparak daha önceki kullanılan dosyalara erişmek de güzel oluyor. (K1)*

*It would be nice to have a filtering feature according to document properties. It would be nice to search for documents in this format for this year, like on sales websites. (P5)*



*Doküman özelliklerine göre filtreleme özelliği olması güzel olabilir. Satış sitelerinde olduğu gibi şu yıl için şu formattaki dokümanları aramak için güzel olabilir. (K5)*

## **Search for Content in Documents**

Five interview participants focus on search tools for document or platform content to support them on their work. They reported that:

*With the feature of the search tool, we can find the person I cannot find by name, content, subgroups (P3)*  
*Arama aracının özelliği ile bulamadığım kişi adı, içerik, alt çalışma gruplarına göre bulabiliyoruz. (K3)*

*I also like the fact that I can access the relevant document thanks to the quick search box. When I am not sure where to start.... (P1)*  
*Hızlı arama kutusu sayesinde ilgili dokümana ulaşabiliyor olmasını da beğeniyorum. Nereden başlayacağımdan emin olmadığımda... (K1)*

## **Document Previewing**

One of interview participants requested documents preview feature after the search a document user can see the preview of the document content for true document or not.

*It would be much better if we could preview the search result without clicking on it. We wouldn't have to open it every time. (P3)*  
*Arama sonucunun tıklayınca tıklamadan ön izleme (preview) etsek çok daha iyi olur. Her seferinde açıp bakmamız gerekmemiş olur. (K3)*

### **4.3.2 Contribution of the Platform to Collaborative Work and Cooperation Skills**

Contribution of the Platform to Collaborative Work and Cooperation Skills theme is one of major sources the impact of community of practice platform how contribute to knowledge construction and professional development among public officers. Contribution of the Platform to Collaborative Work and Cooperation Skills has six

categories Providing Opportunities for Collaborative Work, Collaborative Document Creation, Providing Synchronous Operation, Improvement of Management Skills During the Opinion Exchange Process, Supporting the Decision-Making Process and Creating Opportunities for Cooperation.

According to content analyze, Table 4.34 shows the Contribution of the Platform to Collaborative Work and Cooperation Skills categories and codes emerging for the sub research question 3

Table 4.34 Categories and Codes of Contribution of the Platform to Collaborative Work and Cooperation Skills theme

Theme	Category	Code	f	
Contribution of the platform to collaborative work and cooperation skills	Providing opportunities for collaborative work	Realizing collaborative work	23	
		Supporting online group work	5	
		Ensuring efficient work in group	2	
		Motivating to work	2	
	Collaborative document creation	Providing a synchronous collaborative environment	15	
		Providing opportunity for the formation of a common language	3	
		See document development stages	3	
		Using synchronous operation tools	13	
	Providing synchronous operation	Ensuring team synchronization	5	
		Improvement of management skills During the opinion exchange process	Obtaining expert guidance/opinion	10
			Consultation	8
			Providing a different view	5
	Supporting the decision-making process	Emergence of a broad perspective	4	
		Co-Decision making	11	
		Offering options	4	
		Consulting the specialist/ supervisor	4	
		Helping other people	11	

Creating opportunities for cooperation	Asking questions and opinions about the problem	4
	Having ideas/opinions for the whole study	3

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Contribution of the Platform to Collaborative Work and Cooperation Skills theme has three categories, below Table 4.35 shows the frequencies and percentage in the theme.

Table 4.35 Categories of the theme Contribution of the Platform to Collaborative Work and Cooperation Skills

Category	n	f	%
1. Providing opportunities for collaborative work	11	32	23,70
2. Collaborative document creation	11	21	15,56
3. Providing Synchronous Operation	10	18	13,33
4. Improvement of management skills during the opinion exchange process	10	27	20,00
5. Supporting the decision-making process	12	19	14,07
6. Creating opportunities for cooperation	11	18	13,33

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#### 4.3.2.1 Providing Opportunities for Collaborative Work

Providing Opportunities for Collaborative Work is most popular category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Providing Opportunities for Collaborative Work category codes focused on collaborative work environments and supporting online group work to encourage

collaborative work and cooperation skills of public officers in community of practice platform. Providing Opportunities for Collaborative Work category has four codes.

Table 4.36 Codes of the category Providing Opportunities for Collaborative Work

Category	Code	n	f
Providing opportunities for collaborative work	Realizing collaborative work	11	23
	Supporting online group work	5	5
	Ensuring efficient work in group	2	2
	Motivating to work	2	2

### Realizing Collaborative Work

The findings indicated that online collaborative work environment should be used to encourage public officers for community of practice platform and support teamworking. Eleven of the interview participants noted their experience about online collaborative work environment following sentences;

*Collaborative work occurs, working as a team. At the same time, different work departments can edit the document in their own area of interest, saving time (P1)*

*İş birliği çalışma oluyor Ekipçe çalışılıyor. Aynı anda farklı çalışma birimleri kendisi ilgi alanında da dokümanda düzenleme yaparken zaman tasarrufu ortaya çıkıyor. (K1)*

*The work does not grow in my eyes, I can say that we can handle it together in our shared space. (P4)*

*İş gözümde büyümüyor ortak alanımızda hep beraber hallederiz diyebiliyorum. (K4)*

*Normally I like to work alone, but this way it is better to work together. Especially when working remotely, it adds a serious advantage. Working together with the platform adds value to us. (P8)*

*Normalde tek başıma çalışmayı seviyorum ama bu şekilde birlikte çalışmalar daha iyi oluyor. Özellikle Uzaktan olunca çalışırken ciddi avantaj katıyor. Platform ile birlikte çalışma bize artı değer katıyor. (K8)*

*If I do not have a good knowledge of the subject, definitely working together is very useful in terms of learning (P12)*  
*Eğer konuya çok hakim değilsem kesinlikle beraber çalışmak öğrenmek açısından çok faydalı (K12)*

### **Supporting Online Group Work**

The findings of content analysis indicated that co-authoring tools should be used to support group work of public officers for community of practice platform. Five of the interview participants reported their synchronous co-authoring experience and easily access the collaborative work environment by saying:

*The fact that it offers a simultaneous working environment through the document and that good examples are easily shared contributes to our work and development. (P12)*

*Doküman üzerinden eş zamanlı birlikte çalışma ortamı sunması ve iyi örneklerin kolayca paylaşılıyor olması, çalışmamıza ve gelişimimize katkı sağlıyor. (K12)*

*Everyone can easily access it at the same time and time is saved. Collaborative work is created. (P9)*

*Kolayca herkes aynı anda erişebiliyor ve zaman tasarrufu oluyor. İş birlikçi çalışma oluşuyor Ekipçe çalışılıyor. (K9)*

### **Ensuring Efficient Work in Group**

Two of interview participants focus on working speed increased in group works so on positive impact on efficient of work. They talked about the importance of providing online working facilities to save time and work efficiently.

*It speeds up work processes for in-groups, saves time, supports effective work and information exchange. (P8)*

*Grup içi için iş süreçlerini hızlandırıyor, zaman tasarrufu sağlıyor, etkili çalışma ve bilgi alışverişine destekliyor. (K8)*

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## **Motivating to Work**

Two of interview participants emphasized that importance of synchronous co-authoring to motivate users for working because they feel as a member of team.

*When we work on a document together simultaneously, I start at one end and other friends hold the other end. It is both collaborative work and it is time-saving and motivating to see others working actively thanks to simultaneous work. (P2)*

*Birlikte bir doküman üzerinde eş zamanlı aynı anda çalıştığımızdaki durumlarda ben bir ucundan başlıyorum diğer arkadaşlar diğer ucundan tutuyor. Hem işbirlikçi çalışma olmuş oluyor hem de eş zamanlı çalışma sayesinde başkalarının da aktif çalıştığını görebilmek zaman tasarrufu ve motive edici oluyor. (K2)*

*Obviously, it is also motivating to feel that I am a member of the team when I work synchronously and simultaneously. (P1)*

*Senkronize bir şekilde eş zamanlı çalışınca ekibin bir üyesi olduğumu hissetmek de motive edici açıkçası. (K1)*

### **4.3.2.2 Collaborative Document Creation**

Collaborative Document Creation is second category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Collaborative Document Creation category codes focused on create collaborative document and synchronous working environment in online group work to support collaborative work of public officers in community of practice platform. Collaborative Document Creation has three codes.

Table 4.37 Codes of the category Collaborative Document Creation

Category	Code	n	f
Collaborative document creation	Providing a synchronous collaborative environment	8	15
	Providing opportunity for the formation of a common language	3	3
	See document development stages	3	3

### **Providing a synchronous collaborative environment**

Eight of interview participants highlighted that synchronous collaborative environment on a document or a process is important opportunity for collaborative work to reduces mistake, motivate for group work. They mentioned following sentences;

*Working together is of course more successful. Because the fact that the parts of the system that I do not know are done by people who know and we are doing it together reduces the possibility of me making mistakes. (P9)*

*Beraber çalışma tabiki daha başarılı. Çünkü sistem üzerinde benim bilmediğim kısımları bilen kişilerin yapması ve birlikte yapıyor olmamız benim hata yapma ihtimali düşürüyor. (K9)*

*... Thanks to synchronous working, it is time-saving and motivating to see others working actively (P2)*

*... eş zamanlı çalışma sayesinde başkalarının da aktif çalıştığını görebilmek zaman tasarrufu ve motive edici oluyor (K2)*

*I follow the work in our own department and benefit from the knowledge of my colleagues. Working together on the same document is very important. (P6)*

*Kendi birimimizde iş takibi ve arkadaşlarımın bilgi birikiminden yararlanıyorum. Birlikte çalışmak aynı doküman üzerinde çok önemli. (K6)*

*... Working synchronously as a team is what we like the most feature. (P9)*



... Ekip olarak eş zamanlı çalışılması en beğendiğimiz tarafı. (K9)

### **Providing Opportunity for the Formation of a Common Language**

The findings highlighted the importance of the common/organizational language. Three interview participants agreed on the importance of Formation of a Common Language and disclosed their thoughts as follows;

*I think co-authoring proves exactly how to prepare a document in a common language. (P1)*

*Birlikte yazarlık tam olarak ortak dilde nasıl doküman hazırlanırın ispatı oluyor bence. (K1)*

*Because everyone makes their own corrections and it is important that the whole team benefits or has common knowledge. (P11)*

*Çünkü, herkes kendi düzeltmesini yapıyor ve tüm ekibin faydalanması veya ortak bilgisi olması önemli. (K11)*

### **See Document Development Stages**

Three interview participants agreed on the importance of seeing document development stages to follow and learn how to edited. They disclosed their thoughts as follows;

*It is nice to work together on the same document instantly and see the changes in the document. (P3)*

*Aynı dokümanda anlık olarak birlikte çalışıp dokümanın değişimleri görmemiz güzel oluyor. (K3)*

*It is also useful for me to follow its progress. (P4)*

*Gidişatını takip etmek için bana da fayda sağlıyor. (K4)*

### **4.3.2.3 Providing Synchronous Operation**

Providing Synchronous Operation is a category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Providing Synchronous Operation category codes focused on using synchronous working tools and team

synchronization to support collaborative work of public officers in community of practice platform. Providing Synchronous Operation has two codes.

Table 4.38 Codes of the category Providing Synchronous Operation

Category	Code	n	f
Providing synchronous operation	Using synchronous operation tools	9	13
	Ensuring team synchronization	3	5

### Using Synchronous Operation Tools

Nine interview participants agreed on the importance of using synchronous tools to support synchronous business operation for collaborative work. They disclosed their thoughts as follows;

*Library, Calendar, Co-authoring, Skype and other provided tools are very successful in terms of safe and synchronized working (P5)*

*Kütüphane, Takvim, Birlikte yazarlık, Skype ve bunun gibi araçlar Güvenli ve senkron çalışma imkanı açısından çok başarılı. (K5)*

*It is very nice that many people can work simultaneously. (P7)*

*Aynı anda birçok kişinin eş zamanlı çalışabilmesi çok güzel. (K7)*

*In a way, I am synchronized with other works. Both the merging and the language we work individually are very different. Thus, we have information about the overall work. (P10)*

*Bir nevi diğer çalışmalarla senkronize olmuş oluyorum. Bireysel çalıştığımız hem birleştirmesi hem de dili çok farklı duruyor. Böylece çalışmanın geneli hakkında bilgimiz oluyor. (K10)*

*... I invite you to work simultaneously on the document via Skype (P1)*

*... Skype üzerinden dokümanda eş zamanlı çalışmaya davet ediyorum. (K1)*

## **Ensuring Team Synchronization**

The findings highlighted the importance of team synchronization. Three interview participants focus on the importance of ensuring team synchronization to collaborative work and cooperation skills. They reported that;

*When there was a meeting or something, we were communicating via skype and synchronization is ensured. (P4)*

*Toplantı falan olduğunuda skype üzerinden mesajlaşarak haberleşiyorduk ve senkronizasyon sağlanıyor. (K4)*

*The calendar is good because it organizes and synchronizes working together. (P2)*

*Takvim birlikte çalışmayı organize ve senkronize ettiği için güzel. (K2)*

### **4.3.2.4 Improvement of Management Skills During The Opinion Exchange Process**

Improvement of Management Skills During the Opinion Exchange Process is second popular category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Improvement of Management Skills During the Opinion Exchange Process category codes focused on guidance, consultation and different perspectives for decision making in collaborative group work of public officers in community of practice platform. Improvement of Management Skills During the Opinion Exchange Process has two codes.

Table 4.39 Codes of the category Improvement of Management Skills During the Opinion Exchange Process

Category	Code	n	f
Improvement of management skills during the opinion exchange process	Obtaining expert guidance/opinion	7	10
	Consultation	6	8
	Providing a different view	4	5
	Emergence of a broad perspective	3	4

### Obtaining Expert Guidance/Opinion

The findings highlighted the importance of obtaining expert guidance or feedback for collaborative work in community of practice platform. Seven of interview participants noted that;

*It is very important that colleagues who know the parts that I do not know from my colleagues do or guide me. (1\_Participant\_M\_1, Location 66)*  
*Çalışma arkadaşlarımdan benim bilmediğim kısımları bilen kişilerin yapması veya yönlendirmesi çok önemli. (1\_Katilimci\_M\_1, Konum 66)*

*Our supervisor can also create an alternative with a different perspective. (2\_Participant\_M\_3, Location 67)*  
*Bizim süpervizörümüz farklı bir bakış ile alternatif de oluşturabiliyor. (2\_Katilimci\_M\_3, Konum 67)*

*The comments of the person who has a better command of the domain are more important. (12\_Participant\_S\_4, Location 68)*  
*Konuya daha hakim kişinin yorumu daha çok önem veriliyor görüş alınıyor. (12\_Katilimci\_S\_4, Konum 68)*

## Consultation

The findings indicated that consultation each other especially subject matter expert or more experience than oneself is improve decision making skills and opinion exchange management. Six interview participants mentioned following sentences:

*If we are going to do a new work, we gather the relevant people and discuss the possibilities available (9\_Participant\_G\_2, Location 69)*

*Yeni bir çalışma yapacaksak ilgili kişiler toplanıyor eldeki olanakları istişare ediyoruz. (9\_Katilimci\_G\_2, Konum 69)*

*In general, the team tries to consult and make joint decisions. (3\_Participant\_S\_1, Location 79)*

*Genelde personel istişare edip ortak karar vermeye uğraşılıyor. (3\_Katilimci\_S\_1, Konum 79)*

*If there is more than one opinion on a subject, it is consulted. (12\_Participant\_S\_4, Location 68)*

*Bir konuda birden fazla fikir varsa istişare ediliyor. (12\_Katilimci\_S\_4, Konum 68)*

## Providing a Different View

Four interview participants agreed on the contribution of community of practice platform on providing different view for the domain work or issue discussing in the platform. They disclosed their thoughts as follows;

*It is better to work together because a different perspective is always good and contributes (3\_Participant\_S\_1, Location 77)*

*Berber çalışmak daha iyi çünkü farklı bir bakış açısı her zaman iyidir ve katkı sağlar. (3\_Katilimci\_S\_1, Konum 77)*

*Opposing opinions can have a positive effect. Giving good examples contributes to me. (8\_Participant\_M\_2, Location 80-81)*

*Karşı fikirler olumlu etkileyebilir. İyi yönde örnekler verilmesi bana katkı sağlıyor. (8\_Katilimci\_M\_2, Konum 80-81)*

## Emergence of a Broad Perspective

Three of interview participants mentioned that opinion exchange process and consultation to subject matter expert provides them broad perspective for the domain. They noted their thoughts as follows;

*Collaborative work on the portal contributed positively to me. It improved and changed my perspective on different ideas. (P9)*

*Portalde işbirlikçi çalışma bana Olumlu yönde katkı sağladı. Farklı düşüncelere bakış açımı geliştirdi ve değiştirdi. (K9)*

*Actually, I work more comfortably on my own, but when I work with colleagues who have mastered the same domain, a broader perspective emerges. (P12)*

*Aslında tek başıma daha rahat çalışıyorum ancak aynı konuya hakim birileri ile birlikte çalışınca daha geniş bir bakış açısı ortaya çıkıyor. (K12)*

### 4.3.2.5 Supporting The Decision-Making Process

Supporting The Decision-Making Process is another category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Supporting The Decision-Making Process category codes focused on co-decision making, decision options and supervisor consulting in collaborative group work of public officers in community of practice platform. Supporting The Decision-Making Process has three codes.

Table 4.40 Codes of the category Supporting the Decision-Making Process

Category	Code	n	f
Supporting the decision-making process	Co-decision making	11	11
	Offering options	4	4
	Consulting the specialist/ supervisor	4	4

## **Co-Decision Making**

The findings highlighted the importance of collaborative decision making under supporting the decision-making process category to contribute professional development. Nearly all of interview participants mentioned that they take the decisions themselves with following sentences;

*We usually make decisions as a group with the guidance of experienced people. (P5)*  
*Genelde deneyimli kişilerin yönlendirmesi ile grup olarak karar veriyoruz. (K5)*

*Decisions are made together (as a team) and collective decisions are taken through persuasion (P6)*  
*Beraber karar veriliyor (ekip olarak) ikna edilerek ortak karar alınıyor. (K6)*

*We decide together how to proceed. (P1)*  
*Nasıl ilerleyeceğimize beraber karar veriyoruz. (K1)*

## **Offering Options**

The findings highlighted the importance of offering alternatives for the decision making with the colleagues or presenting alternatives for the approval of subject matter expert or supervisor. Four of interview participants noted that;

*To make a decision on a critical issue, we document (organize) our thoughts and then submit them to the Coordinator for approval. (P7)*  
*Kritik bir konuda karar vermek için düşüncelerimizi dokümante ederiz (düzene sokarız) sonrada Koordinatöre onaya sunarız. (K7)*

*If we cannot decide, the options are presented to the relevant field expert and the final decision is the one that is chosen. (P3)*  
*Karar veremezsek, ilgili alan uzmanına seçenekleri sunuluyor seçilen kesin karar oluyor. (K3)*

## **Consulting the Specialist/ Supervisor**

Four of interview participants highlighted consulting the subject matter expert or supervisor in the doubt of decision-making process for a document / work issue with the following sentences;

*When in doubt, a Subject Matter Expert and manager are consulted. (P6)*  
*Kararsız kalındığında, bir Alan Uzmanı ve yöneticiye danışılıyor. (K6)*

*... if we cannot agree, we go to the most expert person in the field or the Chairperson by creating alternatives (P10)*  
*... anlaşamazsak alternatifleri de oluşturarak alandaki en uzman kişiye veya Başkan hanıma gidiyoruz (K10)*

#### **4.3.2.6 Creating Opportunities for Cooperation**

Creating Opportunities for Cooperation is category of theme Contribution of the Platform to Collaborative Work and Cooperation Skills. Creating Opportunities for Cooperation category codes focused on helping colleagues, asking opinions and providing ideas about study in collaborative group work of public officers in community of practice platform. Creating Opportunities for Cooperation has three codes.

Table 4.41 Codes of the category Supporting the Decision-Making Process

Category	Code	n	f
Creating opportunities for cooperation	Helping other people	10	11
	Asking questions and opinions about the problem	4	4
	Having ideas/opinions for the whole study	3	3



## Helping Other People

The findings highlighted the importance of helping other people especially colleagues to cooperation skills in online community of practice platform. Ten of interview participants noted that;

*Working together synchronously provides cooperation between the teams and gives the opportunity for questions and answers. (P2)*

*Beraber senkron çalışmak ekipler arasında yardımlaşma sağlıyor, soru-cevap imkanı veriyor. (K2)*

*I couldn't make the table, but they do it, then I get help from them. There is cooperation. (P4)*

*Ben tabloyu yapamamışım ama onlar yapıyor o zaman onlardan yardım alıyorum. Yardımlaşma oluyor. (K4)*

*I think I can transfer what I know to more than one person. I have contributed to people using the portal and working together. (P9)*

*Bildiklerimi birden çok kişiye aktarabildiğimi düşünüyorum. Kişilerin portalini kullanmasına ve birlikte çalışmasına katkı sağlamışumdur. (K9)*

## Asking questions and opinions about the problem

Four of interview participants mentioned that asking question and getting opinions about the issues revealed the cooperation and collaborative for knowledge construction for documents.

*... being able to ask questions that will be answered contributes to the person. (P5)*

*... cevabının alacağın soru sorabilmek kişiye katkı sağlıyor. (K5)*

*When I was using it in my own department, when my colleagues had questions, we saw what they knew and did not know about which domain. (P3)*

*Kendi birimim içerisinde kullanırken arkadaşların soruları olunca onların hangi konuda neyi bilip bilmediklerini görmüş olduk. (K3)*

## **Having Ideas/Opinions for the Whole Study**

Three interview participants indicated that helping each other and giving feedback on each other's work provide an opportunity to control other works on the community of practice platform

*A newcomer can understand the unit and processes more clearly thanks to the Application Portal. I can understand more clearly what another unit does. (P6)*  
*Yeni gelen bir kişi birimi ve süreçleri daha net anlayabiliyor Uygulama Portalı sayesinde. Başka birimin ne iş yaptığını daha net anlayabiliyorum. (K6)*

### **4.4 Revisions in the Design and Implementation**

The researcher primarily sought an answer to fourth sub research question that What are the factors for consideration in the design and implementation of the Community of Practice Platform with revisions in design and implementation cycles. Content analysis of the interviews for two iterative cycles revealed difficulties and users' requests for Community of Practice Platform. The opinions of the supervisors as stakeholder and interview participants involved in the design process for next implementation process to decide whether to make these revisions or not.

The researcher identified the revisions made as two types as difficulties experienced or requests from the users of the platform and classified them under the themes that emerged from the content analysis. The researcher presents her findings regarding the revisions for each theme below.

#### **4.4.1 Revisions for Workplace Flexibility**

Most revisions were grouped under the theme of flexibility of the working environment. While some revisions were made as a result of the content analysis study, others were made as a result of the platform users' feedback.

Table 4.41 presents the types, issues, number and frequency emerging for revisions for Workplace Flexibility theme

Table 4.42 Major revisions for Workplace Flexibility Theme

Type	Issue	n	f
Difficulties	Screen freeze / slowdown	7	17
	Long name file upload and creation issue	5	9
	File size limit	4	7
	Checking permission	2	2
	Calculation feature problem in excel	1	3
Requests	Design editing	7	11
	Should have a customized menu	7	8
	Should be a task type meeting	3	3
	Making an announcement by selecting the department	2	2
	Should be my activities	2	2
	New content must be clear	2	2
	Should be familiar content entry screens	2	2
	Anonymous access from outside	1	2

#### 4.4.1.1 Performance Improvement for Freeze / Slowdown

In the first cycle of designing of cloud-based community of practice platform, researcher use only one office online instance for co-authoring tool. In the first iteration of content analysis, the findings highlighted the importance of co-authoring tool. Seven of interview participants mentioned about screen freeze or slowdown problem in co-authoring tools for synchronous editing on the same document in groupwork in community of practice platform.

*There are freezes in active use around 10 people when too many users connect. There are problems in document synchronization. I think the slowdown in co-authoring when the number of people increases is a critical problem. (P6)*

*Çok fazla kullanıcı bağlandığı 10 kişi civarında aktif kullanımda donmalar oluyor. Doküman senkronizasyonunda sıkıntılar yaşıyor. Kişi sayısı artınca birlikte yazarlıktaki yavaşlama bence kritik bir sorun. (K6)*

This was solved by turning on the dynamic server addition feature in the hybrid architecture, allowing almost as many people as the number of participants to have access at the same time. There was no negative feedback on this issue in the second interview cycle.

*We've been working seamlessly with co-authoring lately. Improved. (P6)*

*Birlikte yazarlık ile son zamanlarda sorunsuz çalışıyoruz. Düzelmış. (K6)*

#### 4.4.1.2 Upgrading for Long Name File Upload and Creation Issue

Five of interview participants mentioned that they had difficulties about long named file upload or creation a document too nested folders by saying;

*I would solve the problem of long names in file naming. It's a problem with nested folders. (P1)*

*Dosya isimlendirmedeki uzun isim sorunu çözerdim. İç içe klasör olunca sorun oluşuyor. (K1)*

This difficulty was caused by platform server version of the architecture. So, researcher consulted the supervisor of the related department to upgrade the server and fixed the too long path problem. After the upgrade from SP 2016 Server Version to SP 2019 version and increase path character limit to 400 with scripts, the issue has fixed. In the second interview cycle, there no mentioned about this difficulty.

#### **4.4.1.3 Increasing File Size Limit of Platform**

Community of practice platform have a file size limit and this limitation is a problem for the participants. It is not enough for the document size of public officers.

*There was a file size limit and it was low, this should be changed. I don't know if it has been changed but it can be a problem for me. (P9)*

*Dosya boyut sınır vardı ve düşüktü bu değiştirilmeli. Değiştirildi mi bilmiyorum ama bana sorun olabiliyor. (K9)*

After the researcher heard about this problem in the first implementation cycle, the file size upload limit was increased to 500 MB by analyzing the department's previous work history. It has been demonstrated to authorized staff that the file size upload limit on the community of practice platform is configurable.

#### **4.4.1.4 Checking Permission Feature**

In the first cycle of implementation of community of practice platform interview participants complained that over time they forgot what they had access to. They need a page to help them learn about what authorization where in the platform. One of participant reported the sentences;

*In the work of a department, when only one document is authorized for one person, it is difficult to follow up afterwards. There should be a place to learn who has what authorization where. (P6)*

*Bir birimin çalışmasında sadece bir dokümana bir kişi için yetki verildiğinde sonrasında bunun takibi zor oluyor. (K6)*

When this need emerged, a page called check permission was activated to the authorizations area, allowing participants to see a summary of where a user is authorized to work with colleagues.

In the second interview cycle there was positive feedback on where she has access and where she is expected to work.

*It was nice to learn which documents I could access, which were coming by e-mail but were being ignored. (P12)*

*E-posta ile geliyor ama unutuluyordu hangi dokümanlara erişebileceğimin öğrenilmesi güzel oldu. (K12)*

#### **4.4.1.5 Revision for Calculation Feature Problem in Excel**

One of interview participant who creates calculation tables in an excel document for most of his work, reported three times about calculation feature problem in online co-authoring excel document.

*Fields calculated in Online Excel are not working. I think it should be fixed. (P2)*

*Online Excelde hesaplanan alanlar çalışmıyor. Bence düzeltilmeli. (K2)*

Upon this sentence, the researcher realized that the calculation service of excel could not be enabled. Researcher activated this service and the calculation problem was eliminated. This situation was a problem because of some participant again save some excel documents in their local and they were starting to move away from the concept of working together. Thus, people did not need to use local excel.

#### **4.4.1.6 Revisions for Design Editing**

The nature of study, each person has their own perception of design and likes different interfaces. In the first cycle of implementation seven of interview participants some request like; mobile compatible, new post more attractive than older, simple categorization issue any other usability issues.

Some of their sentences;

*I would improve its design. I would like it to be more compatible with mobile. (P3)*  
*Tasarımını geliřtirirdim. Mobile daha uyumlu olsun isterdim. (K3)*

*I would make changes to the User experience and Interface by getting feedback from users. I would make simpler filtering and categorization away from complex structures to make it user-oriented. (P9)*

*Kullanıcılardan geri dönüş alarak Kullanıcı deneyimi ve Arayüzde deęişiklikler yapardım. Kullanıcı odaklı olmasını için Komplex yapılardan uzak daha basit filtreleme ve kategori yapardım. (K9)*

*It could be better designed visually. It can be attractive. New announcements can also be like the first 7 days of new posts. (8\_Participant\_M\_2, Location 45)*

*Görsel açıdan daha iyi tasarlanabilir. Dikkat çekici olabilir. Yeni duyuru da ilk 7 gün Yeni yazsın gibi olabilir. (8\_Katılımcı\_M\_2, Konum 45)*

Since the researcher could not make everyone absolutely happy in terms of design arrangement, the researcher made updates in the following headings by asking the requests received from the supervisors and in line with the literature.

- The user interface design of the community of practice platform has been made mobile-friendly.
- Newly entered announcements and content were placed at the top, and the announcements were removed from the home page after a period of time by adding a timeout option.
- Filtering and sorting options that can be used for search purposes, as in e-commerce sites, have been added to the Document Library.
- According to File extension, the file icon (like Word, Excel, PDF, Image etc) were enabled to be displayed in document library of community of practice platform.

After some enhancement and design editing issues for usability and accessibility, in the second implementation cycle, researcher has positive statement from interview participants with these sentences.

*The file format seems clear. I like the filtering feature and the file search feature. It is good to see the date and the people who edited it clearly. In terms of usage, being able to save a document with drag and drop is a really nice feature. (P11)*

*Dosya formatı açık görünüyor. Filtreleme özelliği ve dosya arama özelliği beğendiğim. Tarih ve düzenleyen kişilerin net görülmesi iyi yani. Kullanım açısından bir dokümanı sürekli bırak ile kaybedebilmek ciddi güzel bir özellik. (K11)*

Under the theme of workplace flexibility, each request was developed prior to the second implementation cycle to the extent that the platform allowed and consultation with supervisors of departments.

#### **4.4.1.7 Customized Menu**

The findings indicated that one of the considerations is the personalized menu or link for user individual. Seven of interview participants requested personally customized menu for quick access or their personal interest areas with the following sentences.

*It would be nice to be able to create quick access for the person. It provides easy access to the studies they visit and follow. (P9)*

*Kişiye yönelik hızlı erişim oluşturabilmesi güzel olabilir. Ziyaret ettiği takip ettiği çalışmalara kolay erişim sağlar. (K9)*

In the second design and implementation cycle, researcher activated the customized menu for personalization quick access. It is also another design revision for Workplace Flexibility. Secon interview cycle one of interview participants noticed the added feature and said the following sentence.

*A personalized menu has been added for favorites, I like it. (P11)*

*Sıkı kullanılanlar için kişiye özel menu eklenmiş, beğendim. (K11)*



#### 4.4.1.8 Integration for Task Type Meeting

After first design and implementation of communication of practice platform, three interview participants requested the task type meeting for assign to do task in online workspace the following sentence:

*A calendar can also be created for individuals or groups, such as a task. (P10)*

*Kiři veya gruplara görev gibi takvim de oluşturulabilir. (K10)*

In the second designing process for community of practice platform, by adding integration for e-mail software (Outlook) to the platform, the researcher enabled meeting requests to be added as tasks to user's calendars.

#### 4.4.1.9 Department Based Announcement

In the first cycle of design and implementation, every announcement was seen in the top work area, but after a while it became necessary to make announcements on a work group basis. It was requested to have an announcement only related to that working group or announcements related to the common interest of the people in the relevant department workplace.

*I don't know if it is selected in detail in other departments area. It would be good if the department is selected and there is an announcement for them (P4).*

*Bařka birimler içinde detay ile seçiliyor mu bilmiyorum. Birim seçilerek onlara yönelik duyuru olsa iyi olur (K4).*

The researcher in the design and implementation cycle add each department workplace announcement module for their own department usage. Also, all user can access general announcement area on the top-level workplace homepage. After second design and implementation cycle, one of interview mention about department-based announcement with the following sentences;

*It is very good. I don't know if it can be selected with detail in other departments. It is good that it is also department-based. (P12)*

*Gayet de güzel. Başka birimler içinde detay ile seçiliyor mu bilmiyorum. Birim bazlı da olması iyi oldu. (K12)*

#### **4.4.1.10 Revision for My Activities**

After first design and implementation cycle, two of interview participants reported their request about my activities module to access their task and notification.

*Task tracking application can be added to follow my own activities. For tracking actions. For job tracking. It can also be for routine and temporary jobs. (P6)*

*Kendi süreçlerimi takip için görev takip uygulaması eklenebilir. Aksiyonları takip için. İş takibi amacıyla. Rutin ve geçici olan işler için de olabilir. (K6)*

The researcher consulted the supervisor and development team to how to provide the opportunity for activity feed user centered. On the Community of Practice platform, users are given the opportunity to turn on my site feature. Thus, platform user can track their own activities and add individual modules like as my task in their own my site.

#### **4.4.1.11 Highlighting New Content**

In the first cycle of design and implementation, two of interview participants reported that new content cannot be noticed by saying;

*It is not clear which announcement is new. (P2) ... It can be attention-grabbing.*

*New announcements can be like the first 7 days of new posts. (P8)*

*Hangi duyuru yeni olduğu belli olmuyor. (K2) ... Dikkat çekici olabilir. Yeni duyuru da ilk 7 gün Yeni yazsın gibi olabilir. (K8)*

After this finding of first design and implementation cycle, If the content is the most recent in terms of creation date, it is placed at the top in the relevant group. In addition, in newly created content such as announcements or documents, an asterisk (\*) has been placed next to the title to indicate that it is new.

When the participants were asked again afterwards, they stated that the new content was obvious;

*When I enter the library, if there is a green star at the end of the document name, I understand that it is new, I think there are also announcements. (P7)*

*Kütüphaneye girdiğimde doküman isminin sonunda yeşil bir yıldız varsa onun yeni olduğunu anlıyorum sanırsam duyurularda da var. (K7)*

#### **4.4.1.12 Revisions for Familiar Content Entry**

In the first design and implementation iteration, Two of interview participants emphasized that familiar content entry screen in co-authoring tools especially Word processor is important for Workplace Flexibility. The requested familiar content entry screen like Undo list operation and Format Painter feature.

*When entering content in the system, there may be fields such as bringing a format painter into the rich text box as in Word. (P7)*

*Sistemde içerik girerken zengin metin kutusu içerisine Word de olduğu gibi biçim boyacısı getirme gibi alanlar olabilir. (K7)*

#### **4.4.1.13 Locked Documents**

One of interview participants emphasized on their work and about how their work is a template for future work. Therefore, participant opinion is that completed document can be locked or immutable by saying;

*Completed documents must be protected and cannot be deleted. I would like to have documents that cannot be changed. (P4)*

*Çalışması tamamlanan dokümanlar kesinlikle korunaklı olsun kaybolmasın. Değiştirilemeyen dokümanlar olsun isterim (K4)*

In the second cycle of design and implementation, Record Documents Feature is activated for locked document request. If users have completed work on a document, they can assign this document as a record to be unedited.

#### 4.4.2 Revision for Sharing

Sharing is the most important theme for transferring information, know-how and experience about the work process among colleagues in community of practice platform. Some revisions resulted directly from content analysis, while others were guided by subject matter experts as a result of the platform users' feedback.

Table 4.43 presents the types, issues, number and frequency emerging for revisions for Sharing theme.

Table 4.43 Major revisions for Sharing Theme

Type	Issue	n	f
Request	Sharing user manual	5	6
	Anonymous access from outside	1	2

##### 4.4.2.1 Revision for Sharing User Manual

When accessing the portal in general, the user receives a Welcome e-mail. With this e-mail, most of the users are informed about their permission to access the system and which studies they can take part in. In this e-mail, which serves the purpose of welcoming and encouraging participation, most of the users mentioned the necessity of sharing a user manual.

*I could not directly figure out how to use the practice platform. The User Manual can solve this situation. (P9)*

*Platformu nasıl kullanacağını direkt çözemedim. Kullanım Kılavuzu bu durum çözülebilir. (K9)*

*It would be nice to have something like a user manual. It could have been an attachment. There could also be a link (P3)*

*Kullanım Kılavuzu gibi bir şey olsa iyi olurdu. Ek olabilirdi. Link de olabilirdi. (K3)*

In the second design and implementation cycle, after receiving a request for a help document such as a user manual, the researcher ensured that the welcome emails sent to users included a link to the user manual information for the community of practice platform.

If the user was given a specific authorization, the email also included a link to the document to which the user was granted access. After the revision about sharing user manual and link of shared documents, there was no negative statement about this issue.

#### **4.4.2.2 Anonymous Access from Outside**

One of interview participants argued that external stakeholder may need to be able to access practice platform even if the documents include business process. He noticed that:

*When there is a need for participation from external stakeholders, we cannot add them. ... I would like it to be accessible from outside. (P3).*

*Dış paydaştan da katılım olması gerektiğinde katılımcılara ekleyemiyoruz. ...dışarıdan erişime de açılabilsin isterdim (K3)*

#### **4.4.3 Revisions for Communication**

The theme of communication underpins the social learning and knowledge sharing of participants that is at the heart of the online Community of Practice. For this reason, all challenges and requests have been addressed.

Table 4.44 presents the types, issues, number and frequency emerging for revisions for Communication theme.

Table 4.44 Major revisions for Communication Theme

Type	Issue	n	f
Difficulties	Automatic skype opening	2	3
Requests	Too many e-mail notifications	2	2
	Following document editing	2	2
	Creating announcements specific to target audiences	5	5

#### 4.4.3.1 Revisions for Automatic Skype Opening

In the first design and implementation cycle, three interview participants argued the automatic skype opening and showing the online status with the following sentences;

*I don't know if there is a setting for this, it can be annoying when the computer turns on automatically. There are times when I don't want them to see that I am online. For example, when I work at home in the evening, it is immediately seen that I am online. (P3)*

*Şunun ayarı var mı bilmiyorum, Bilgisayar açıldığında Otomatik açılması rahatsızlık verebiliyor. Benim Online olduğumu görmelerini istemediğim olabiliyor. Akşam evde çalışırken mesela online olduğumu hemen görülüyor. (K3).*

*I don't like the automatic Skype opening. (P12)*

*Otomatik açılıyor olmasını sevmiyorum. (K12)*

By making an edit about conferencing tool automatic online opening setting, it was ensured that it does not open as Online status by default. The feature of opening has been configured according to the last status of the user. In addition, participants were informed how they can turn it off by default starting.

#### 4.4.3.2 Revisions for Too Many E-mails Notifications

According to need analysis for initial design, researcher email notification for authorization, request for meeting, task assignment and mention about user and etc. After first design implementation cycle, according finding of content analysis, two of interview participants noted that getting an excessive amount of emails can be bothersome and lead to the omission of some crucial ones.

*Too many e-mails with different authorizations can tire the user and sometimes he/she does not pay attention to the incoming e-mail. (P6)*

*Farklı yetkilerde çok fazla e-psota gitmesi kullanıcı yorabiliyor ve gelen emaile bazen önem göstermiyor. (K6)*

After discussing the situation with supervisors, it was decided that e-mail notification was important but could be reduced in some modules. For the second design and implementation cycle, the researcher added options for users to choose the email notifications they receive. It was also optional to be notified when a document was shared or when additional authorizations were granted. After this revision there was no complaint about the too many e-mail in interview of second cycle.

#### 4.4.3.3 Adding Feature for Following Document Editing

Some documents are edited under the supervision and guidance of domain experts. According to content analysis findings, in order to request to be able to follow the development of the document at the end of the first design implementation, they provided feedback as follows.

*I would like to be informed when a change is made or a document is edited according to the topics, they are interested in. I can see the update date and who edited it, but I would like to be informed that this person is editing the document to follow the document. (P1)*

*İlgilendikleri konulara göre bir değişiklik yapıldığında veya doküman düzenlendiğinde haberdar olmak isterdim. Güncelleme tarihine ve kim düzenlemiş bunu görebiliyorum ama haberdar edilmek isterdim, sizin takip ettiğiniz dokümanı şu kişi düzenlemektedir diye. (K1)*

For the second cycle, researcher by adding follow document feature to follow developing of the documentation process and inform when occur any changes on document or version of it. After the second design and implementation cycle, one of interview participants noted that following sentence.

*Summarizing the changes in the documents as a table of who changed what, I felt that everything was under my control. (P1)*  
*Dokümanlardaki değişiklikleri bir tablo olarak kim neyi değiştirdi şeklinde özet iletmesi, her şey kontrolümde hissettim. (K1)*

#### **4.4.3.4 Creating Announcements Specific to Target Audience**

In the first cycle, five interview participants argued that announcements should be filtered according to target audiences or purposes. They requested announcements for the target audience by saying;

*I think announcements should be purposeful. There is no need to show me the military service announcement. (P2)*  
*Bence duyurular amacına yönelik olmalı. Askerlik duyurusunun bana gösterilmesine gerek yok. (K2)*

*I don't like seeing a list of announcements like a sheet when you enter the website, it can be sent to the relevant people. (P5)*  
*Siteye girildiğinde çarşaf gibi duyuru listesi görülmesi hoşuma gitmiyor ilgili kişilere gönderilebilir. (K5)*

In the second cycle, by adding a target audience field to the announcement module, the researcher was able to make announcements specific to the working groups or individuals in the portal. Thus, audience-based announcements can also be made in the general announcement area. In the second design and implementation process, there has been no request for the announcement module.



#### **4.4.4 Revisions for Contribution of the Platform to Professional Development**

Professional development is the one of major purpose of participating the online community of practice platform among public officers. For this reason, the theme of Contribution to Professional Development is a phenomenon in which colleagues construct knowledge collectively, discuss how it is done, learn from each other and create common documents.

Table 4.45 presents the types, issues, number and frequency emerging for revisions for Contribution of the Platform to Professional Development.

Table 4.45 Major revisions for Contribution of the Platform to Professional Development

Type	Issue	n	f
Request	No need for a classic forum	2	2
	Creating a discussion chain on a document	4	5
	Document filtering	5	7
	Document previewing	1	1

##### **4.4.4.1 Revision for classic Forum**

In the first design and implementation cycle, researcher configured a classic discussion forum module for asking question about domain and receiving asynchronous answer among public officers in community of practice platform. According to content analyze findings, two interview participants stated that they do not use the Forum, which is a classic chain thread, and therefore the portal is not needed.

*In Platform, there is not much I want to remove, but we do not use the Forum actively as we have our discussions online. It may be necessary to remove (P10)*  
*Çıkarmak istediğim çok bir şey yok ama tartışmalarımızı online olarak yaptığımız için Forumu çok aktif kullanmıyoruz. Çıkarmak gerekebilir. (K10)*

In the second design and implementation cycle, the researcher, in consultation with field experts and unit supervisors, planned to use the classic discussion forum as a frequently asked questions structure in order to find solutions to the problems experienced. Some interview participants mentioned about usage of frequently asked question module.

*We use the frequently asked questions section of the forum (P2)*  
*Forumun sıkça sorulan sorular kısmını kullanıyoruz. (K2)*

#### **4.4.4.2 Configuration Discussion Chain on a Document**

The findings of the content analysis indicated that when doing collaborative work towards a common goal, users prefer to discuss issues through documents and to ask questions and receive answers. However, in the first interview cycle, two interview participants mentioned about there is no discussion opportunity on document while editing the document. On the other side, four participants noted that discussion feature on the document chat is favorite opportunity for them.

*It would be nice to have the possibility of instant correspondence while working with the document. (P5)*  
*Doküman ile çalışırken anlık yazışma imkanı da olsa güzel olur. (K5)*

*We can open and discuss topics in the workshops, and you usually discuss online textually through the document. (P10)*  
*Çalıştaylarda konuları açıp tartışabiliyoruz ayrıca Doküman üzerinden de genelde metinsel tartışıyoruz. (K10)*

In the second design and implementation cycle, researcher configured chat tool on the documents and document review commenting tool in a more noticeable way. According to content analysis findings, in the second interview cycle two interview participants noted about document review commenting and documents chat feature in the co-authoring tool by saying;

*It is nice to have the opportunity to discuss and correspond with colleagues while working on the document. (P1)*  
*Doküman üzerinde çalışırken bir yandan tartışma ve yazışma imkanı olması güzel. (K1)*

#### **4.4.4.3 Revision for Document Filtering**

In the first cycle of design and implementation of community of practice platform, five of interview participants emphasized that document filtering is necessary feature for finding resources or templates to accelerate their work. Two of them requested the document filtering features by default in documents library.

*It would be nice to have a filtering feature according to document properties. It would be nice to search for documents in this format for this year, like on sales websites. (P5)*  
*Doküman özelliklerine göre filtreleme özelliği olması güzel olabilir. Satış sitelerinde olduğu gibi şu yıl için şu formattaki dokümanları aramak için güzel olabilir. (K5)*

In the community of practice portal, filtering and sorting options that can be used for search purposes, as in e-commerce sites, have been added to the Document Library. Researcher added some filtering pane for the document library to find and sort easily past document. After filter and sorting pane of library in the second design and implementation cycle, one of the interview participants stated that he used it and liked it with the following sentence.

*Thanks to the filtering feature, I can now find documents between these years (P10)*  
*Filtreleme özelliği sayesinde şu yıllar arasındaki dokümanları bulabiliyorum. (K10)*

#### **4.4.4.4 Document Previewing**

Another participant' request is document previewing feature for searching module of community of practice platform. In the first design and implementation cycle, one of interview participants noted that;

*It would be much better if we could preview the search result without clicking on it. We wouldn't have to open it every time. (P3)*  
*Arama sonucunun tıklayınca tıklamadan ön izleme (preview) etsek çok daha iyi olur. Her seferinde açıp bakmamız gerekmemiş olur. (K3)*

After the searching a document user should see the preview of the document content to find out it is the right document. Researcher activated the search preview for document result on the search result page, it was added the ability to preview the document without the need to download it.

#### **4.4.5 Revision in the Contribution of the Platform to Collaborative Work and Cooperation Skills**

The Contribution of the Platform to Collaborative Work and Cooperation Skills is the fifth theme according to content analysis. Opportunities and contribution to collaborative work and helping each other is necessary for group work, synchronous operation, collaborative document creation, opinion exchange process, collaborative decision making and helping each other among public officers. For this reason, some of request from supervisor for collaborative work process have been addressed by revisions.

Table 4.46 presents the request emerging for revisions for Contribution of the Platform to Collaborative Work and Cooperation Skills.

Table 4.46 Major revisions for Contribution of the Platform to Collaborative Work and Cooperation Skills

Type	Issue	n	f
Request	Approval workflow for decision making	-	-
	Access request for collaboration	-	-

#### **4.4.5.1 Approval Workflow for Decision Making**

Under the theme Contribution of the Platform to Collaborative Work and Cooperation Skills, The Decision-Making Process is a category and has codes for offering alternative and collaborative decision-making process. Supervisors requested to streamline the process when consulting supervisors in the decision-making mechanism and to be able to see which document is a request for approval or a request for review.

In the second design and implementation cycle, researcher have added the approval workflow for the submit for approval or review to supervisor or any other subject matter expert colleagues.

#### **4.4.5.2 Access request for Collaboration**

Department user or selected for work group automatically have access to the workgroup shared are and can create or edit documents. However, it was stated by the supervisors that there can be colleagues who want to be a member of the working group or edit the document but do not yet have access to the workgroup area. For this reason, it was requested that colleagues can submit their requests to join the document or the working group if they want. Moreover, in the second design and implementation cycle, it was requested that the workgroup owner or manager be able to approve these requests by supervisor.

In the second design and implementation cycle, researcher have activated access request form feature whole community of practice platform. Also, approval workflow activated for manage access requests to workgroup are or document editing.



## CHAPTER 5

### DISCUSSION AND CONCLUSION

This chapter provides a discussion of the findings according to research questions, research implications researchers, implications for practitioners, recommendations for future research, and limitations.

In order to reveal the design principles of Communities of Practice platform developed for the collaborative work of adults who are Public Officers, the researcher conducted a need analysis for initial-design and then content analysis of the interviews conducted for the two iterative design implementation cycles.

According to Content analysis for conducted interviews of two iterative design and implementation cycles, there are five themes and their categories. These themes and categories are presented in the below Figure 5.1 and Table 5.1.



Figure 5.1. Themes according to findings of content analysis

Table 5.1 Themes and categories according to findings of content analysis

Theme	Category
Workplace flexibility	Easy to use platform
	Easy to access platform
	Accelerating the process
	Welcome and participation
Sharing	Best practice sharing
	Experience sharing
	Document and know-how sharing
Communication	Online communication
	Engagement for participation
	Announcement
	Physical meeting
Contribution of the platform to professional development	Providing opportunities for discussion
	Learning from another
	Providing Opportunities for working groups
	Use of shared workspace
	Providing search and filtering and information search tools
Contribution of the platform to collaborative work and cooperation skills	Providing opportunities for collaborative work
	Collaborative document creation
	Providing synchronous operation
	Improvement of management skills during the opinion exchange process
	Supporting the decision-making process
	Creating opportunities for cooperation



In this chapter, each theme in terms of literature, findings of content analysis and revisions of design and implementation process are discussed. To answer the main research question, we will proceed by creating answers to sub-research questions. While determining the design principles of the Community of Practice platform developed for the collaborative work of public officers, the first discussion is the tools needed and the content analysis findings regarding the tools on the platform.

## **5.1 Components of Online Community of Practice Platform**

There are four sub research questions to support the main research question that what are the design principles of cloud-based community of practice platform for public officers to support collaborative work. The first sub research question is about what are suggested components of developed CoP platform. The design of components for an online Community of Practice platform is crucial for supporting collaborative work among adults, with a major focus on workplace flexibility of online platforms. Spagnoletti, Resca and Lee (2015) emphasize the importance of the architecture's components in supporting various types of social interaction structures within online communities. According to findings of need analysis for initial design in the study, Shared Library, Co-Authoring, Video Audio and Text Communication, Forum, Welcome Mail, Announcement, Shared Calendar are the major tool of online community of practice platform to provide collaborative workplace. It is important to recognize the specific needs of adult learners in the online professional development context, as they may face unique challenges and health issues (Thompson & Porto, 2014). Moreover, user-centered design is critical for the emergence and sustainability in online learning communities (Sarkar, O'Brien and Daniel, 2007).

### 5.1.1 Workplace Flexibility Theme

In the community of practice platform Workplace Flexibility is crucial for CoP maturity. Because, a community that can support itself is more likely to survive. Self-organization necessitates an awareness of the community's goals and the workplace flexibility to achieve them in the most beneficial way for its members. To make sure that the community's vision remains relevant, this will take place on a regular basis. The organization needs to reevaluate the goals if they changed or have been reached.

The Workplace in the online Community of Practice *should be easy to use platform*. To be easy to use platform can provide *meeting event creation tools, familiar file view facilities, easy report creation facilities, categorical forum creation, clear navigation, tracking work/activities* and *locked document*. The online CoPs platform should provide clear navigation and simple tools, reducing cognitive overload and allowing users to concentrate on learning and interaction among public officers. This includes features like meeting event creation tools on calendar, which were emphasized in conducted the interviews. Learners within online communities may perceive information overload, which can impact their cognitive load and learning experience. Additionally, the complexity of managing norms and the technical infrastructure within an online community can contribute to the challenges faced by its members. Furthermore, the use of information management systems, such as knowledge management systems, can play a role in shaping the nature of online communities and their interactions (Chen, Pedersen & Murphy, 2011; Petrič & Petrovčič, 2014; Shih, Nuutinen, Hwang & Chen, 2010). These challenges can hinder the effective functioning of the community and impact the experience of its members. In terms of opportunity, research has highlighted the significance of online platforms in facilitating seamless communication exchanges at an unprecedented scale, emphasizing the importance of user-friendly interfaces and tools (Perra & Rocha, 2019). Furthermore, the use of online platforms for knowledge sharing in the workplace has been explored underscoring the need for platforms that cater to diverse user needs (Nguyen & Malik, 2021). Additionally, the ubiquitous use of

computer-mediated communication technologies in workplace environments further emphasize the importance of user-friendly platforms that support effective collaboration and communication (Darics & Gatti, 2019). Moreover, the establishment of online communities of practice in the workplace has been recognized as an opportunity for adult learners to positively influence the formation of communities, highlighting the potential of social media platforms to mitigate barriers to community formation (Alrubian, 2022). These references collectively underscore the importance of easy-to-use online platforms in the workplace, aligning with the need for clear navigation, simple collaboration tools to reduce cognitive overload and enhance the learning and interaction experience within online Communities of Practice.

The Workplace in the online Community of Practice *should be easy to access platform*. To be easy to access platform can provide *being accessible, quick access menu, remote access opportunities, anonymous access from outside stakeholder*. Accessibility is not just about physical access to the platform but also includes its **usability across various devices** and for people with disabilities. **Remote access** to collaborative learning platform is crucial, especially during unforeseen circumstances like the COVID-19 pandemic, it is not without its challenges. A period of implementation of the developed community of practice platform among government employees occurred during the COVID 19 pandemic. During this period, the importance of remote access has become even more important. All interactions and discussions among government employees had to take place on a remote online platform during this period. In adult education, remote accessible asynchronous discussions were regarded by most preservice teachers as useful components for easy interaction (Kocaman-Karoglu, Ozden & Kiraz, 2011). Easy and fast access to shared resources, including documents, templates, and learning materials, is essential. Implementing **quick access menu**, efficient **search functionalities** and organizing resources in a user-friendly manner can greatly expedite the collaborative process. Also developed platform ensuring **mobile compatibility** and adherence to accessibility standards forms the backbone of this

category. Research by Basch, Covarrubias and Wang (2022) highlight the significance of flexible and collaborative practices in strengthening access to learning, aligning with the need for easy access in the platform. Furthermore, the study by Stenman & Pettersson (2020) emphasizes the importance of technological and pedagogical competence for equal and inclusive remote teaching, which resonates with the need for easy access to the **online platform**. Additionally, the work of Walter, Mousavi, Elnicki and Davis (2022) underscores the delivery of content through an online platform, supporting the notion of remote access as a vital component of the Community of Practice platform.

The Workplace in the online Community of Practice *should accelerate the process* of collaborative work. The design of an online Community of Practice platform, with an emphasis on *time-saving opportunities* and *process speed acceleration*, is critical in enhancing collaborative work among adults. By streamlining communication, co-authoring, shared workplace, and providing quick access to resources, these platforms can become more efficient and effective, leading to more productive and satisfying collaborative experiences. In traditional workplaces, they are working one by one, time is lost, and there are also losses while waiting for your turn. In the developed CoP platform, **co-authoring** and **shared library** tools support synchronous work and sharing the document via **cloud-based environment**. The strategic use of online communities contributes to both strategy and information systems literatures, offering empirical insights into their utilization (Wagner, Wenzel, Wagner and Koch, 2017). Furthermore, the use of synchronous and asynchronous activities in online learning is recommended, with synchronicity being highlighted as the best approach to alleviate time-related concerns expressed by participants, particularly in terms of communication and interaction delays (Robinson, Kilgore and Warren, 2017). This co-authoring and other synchronous approach aligns with the concept of speeding up processes and time-saving opportunities within online communities.

The Workplace in the online Community of Practice platform *should provide Welcome and Participation facilities* for collaborative work. *Providing opportunities for participation, sharing user manual and routing related workplace* with access authorization the critical components of fostering welcome and participation in online communities of practice, particularly among colleagues. These components are strategies to enhance inclusivity and engagement and provide facilities on learning and collaboration. An inclusive environment in online CoPs ensures that every member feels valued and respected. This can be achieved through policies and practices that promote diversity and inclusivity. Active participation is the cornerstone of a thriving CoP. Strategies to encourage this include recognition systems, interactive discussions, and ensuring that all voices are heard. For the encouraging active participation, the providing opportunities for participant like customized **welcome e-mail** is one of the major strategies to invite the different levels of participation. An invitation message in the sense of a welcome is good in terms of belonging to the process. Moreover, user **customized menu** or dashboard is another component of online community of practice platform to engage participation and also sustain the participation. According Wenger et al, (2002) there are three degrees of community participation core group, active group and peripheral as illustrated in Figure 5.2. With online workplace flexibility, the developed platform aims first to engage from outsiders to peripheral groups and then shift them into active or core participants groups. To this purpose, if the coordinator give access the user, platform direct the user to the given related workplace with access authorization. **Sharing user manual** and **routing related workplace** are critical to engage the participant active and to direct them to collaborative work. Thus, the person can learn where they need to reach and which team, they are a member of without asking. In addition to this, notification emails for worked subject synchronization can help build a sense of belonging and team consciousness. The engagement and participation in online communities of practice platforms is a critical issue that requires attention. The success of these platforms relies on the active involvement and contribution of their members. Mackey & Evans (2011)

emphasize the role participants play in determining their engagement and connections in and across boundaries between online learning communities and professional practice, extending the concepts of Lave and Wenger's communities of practice social theory of learning. This highlights the significance of understanding the dynamics of participation within these platforms.

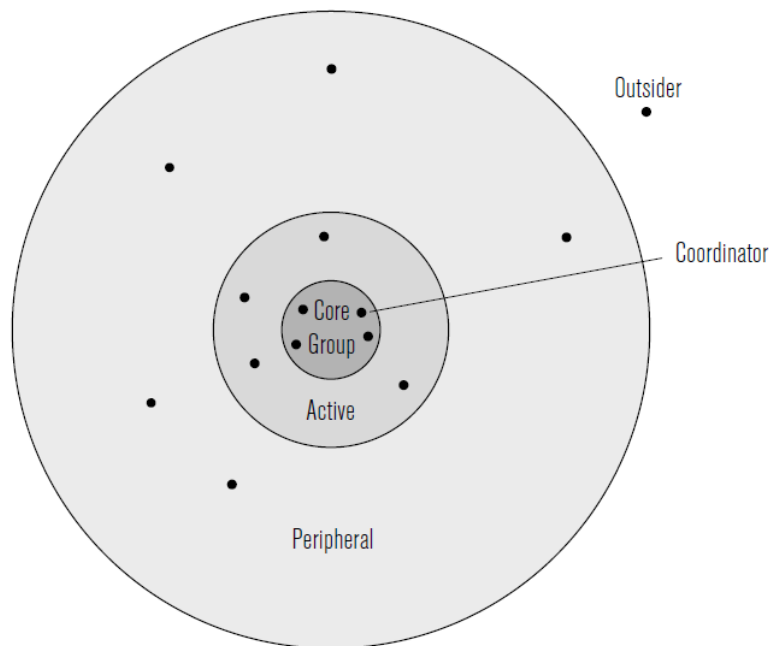


Figure 5.2. Degrees of Community Participation, Adapted Wenger, McDermott and Synder, 2002, p. 57

## 5.2 Support the Business Operation

There are four sub-research questions to support the main research question: What are the design principles of a cloud-based community of practice platform for public officers to support collaborative work? The second sub-research question is about how the online CoP platform can support business operations. According to the results of the content analysis, **Sharing** and **Communication** opportunities are directly related to the second sub-research question, with a major focus on how to support business operations with a developed cloud-based CoP platform.

### 5.2.1 Sharing Theme

In the context of the **Sharing** theme for communities of practice platform; the concept that people learn best when they can watch others, observe others, ask questions, and share knowledge is supported by social learning theory. This leads to a deeper comprehension and retention of information. Collaborative work has become increasingly important in supporting business operations, as it allows for the sharing of knowledge, resources, and expertise among employees. Easily *sharing best practices, experiences, documents and information* with colleagues through the online platform accelerates collaborative work in the business environment and implicitly reaches the common goal of business operation. Organizational knowledge management heavily depends on implicit knowledge, which is derived from people's experiences and perceptions. Powell (2023) highlights the significance of rich social interaction and motivation to enable the transmission of highly implicit knowledge. Sharing knowledge and experience is essential to any organization's learning process. The body of research highlights the value of sharing knowledge, best practice and experience techniques in the public sector, especially when it comes to improving organizational learning, creativity, and general effectiveness (Bibolli et al., 2021). Knowledge sharing and collaboration within an online platform is crucial for supporting business operations (Ikioda, Kendall, Brooks, Liddo, and Shum, 2013).

The online Community of Practice platform *should provide opportunities to best practice sharing* to enhance business operation. According to finding of content analysis there, are two strategies; the first one is *sharing good sample* with knowledge repositories and discussion boards and second is *adapting from best practices* with interactive workshops via co-authoring or video conference via skype. Best practice sharing in collaborative work is crucial for enhancing productivity and efficiency within organizations. Best Practice Sharing involves disseminating strategies and methods proven effective in various business scenarios. It's a key component in knowledge management especially knowledge sharing, aiding in the

transfer of valuable insights and solutions across different areas of business. According to Smith et al., (2018), collaborative work enables employees to work together on projects, share ideas, and solve problems collectively, leading to improved decision-making and innovation. This is supported by the findings of Johnson and Johnson (2017), who emphasize that collaborative efforts in the workplace lead to better problem-solving and the development of more effective strategies. Furthermore, best practice sharing in collaborative work can also support business operations by fostering a culture of continuous learning and improvement. As highlighted by Li and Lalani (2016), when employees engage in collaborative work and share best practices, they contribute to a culture of knowledge sharing and continuous improvement within the organization. This aligns with the concept of a learning organization, as proposed by Senge (1990), where knowledge is shared and disseminated throughout the organization to enhance overall performance. In addition, effective collaborative work supported by best practice sharing can also lead to increased employee satisfaction and engagement. According to a study by Jehn and Bezrukova (2010), collaborative work environments that encourage best practice sharing are associated with higher levels of job satisfaction and commitment among employees. This is crucial for business operations, as engaged and satisfied employees are more likely to contribute positively to the organization's goals and objectives.

Best Practice Sharing in online CoPs is a powerful tool for enhancing business operations. By leveraging digital platforms for this purpose, organizations can foster a more collaborative, innovative, and efficient work environment. Organizations that prioritize and facilitate best practice sharing among employees are likely to experience enhanced productivity and efficiency in their business operations.

The online Community of Practice platform *should provide opportunities to experience sharing* to contribute business operation and facilitate collaborative learning. The major findings of content analysis emerged the importance of *tracking how it works, providing feedback and sharing guide document for business process*



to support business operation. The online community of practice portal *should provide opportunities to track how the document prepared and how the process works* to contribute business operation and promote collaborative learning in workplace. In that purpose **co-authoring** tool and **document versions** history on shared document library components are used. Shared experiences foster a sense of community and collective learning, encouraging peer support and collaboration. The online community of practice portal *should provide opportunities to give feedback* to each other's work to enhance the operation of business process and improve their future works. To enhance collaborative work and improve participants' future business works, **discussion chain on a document** or **chat in co-authoring** component are used in the platform. Online document editing with comment chain and chat features allow for dynamic discussions, enabling members to delve deeper into shared experiences and extract valuable lessons (Strydom and Kempen, 2021). The online community of practice portal *should provide opportunities to share guide documents for business processes* via a **shared library** in a workgroup or among all members to follow the process. Experience Sharing in online CoPs offers a unique avenue for collaborative learning and problem-solving in business contexts. By sharing personal experiences, members can glean insights and practical solutions applicable to their business process operations. In the developed cloud-based CoP platform, real-life studies are powerful tools for conveying experiences, offering relatable and practical insights among public officers. Brunetto and Farr-Wharton, (2007) highlight the significance of feedback mechanisms in fostering effective collaborative relationships within a community of practice and improving business process. Online discussion opportunities and chat features have been recognized as valuable platforms for dynamic discussions, enabling participants to delve deeper into shared experiences and extract valuable lessons (Gill & Whisnant, 2012; Egreja & Lopes, 2021). Moreover, these platforms have been found to be valuable for educational purposes, providing opportunities for students to share ideas and extend classroom discussions (Olivier, 2016; Kılınç and Altınpulluk, 2021; Subramaniam, 2012). Knowledge and practice are intrinsically linked, according to Botha et al.

(2008), because learning occurs through doing, and the most effective learning environments occur when there are real implications for the learners and their Community of Practice.

Know-how and experience sharing is essential to any organization's learning process. Knowledge sharing among government institutions has been shown to be closely associated with innovation, evidence-based planning, and sustainable development, all of which increase the public good for the general public (Bibolli et al., 2021). Additionally, it has been discovered that the creation of purposefully designed Communities of Practices positively affects knowledge exchange and practice enhancement in administrative public sector organizations (Jorgensen et al., 2021). Experience Sharing in online CoPs is a vital component in fostering a collaborative and learning-oriented business environment. It aids in knowledge transfer, problem-solving, and the development of a robust professional community.

The online Community of Practice platform *should provide document sharing facilities* to contribute business operation and facilitate collaborative learning. In developed community of platform, there are various components used for document sharing, emphasizing ease of access and security. The developed portal offer including cloud storage, file sharing tools, and collaborative document editing via co-authoring tool. Especially in shared library, all authorized member of work group can access the documents in the library. Participants can share a folder with selected of users or groups. If there is a need to give access to only one file, only item-based sharing is available in the portal. According to findings of content analysis, all interview participants believed that the document sharing facilities help them doing common domain process. Cheung et al., (2013) highlight the limitation of current Web-based collaborative learning in terms of the restricted ability of students to create and share individual annotations with annotated documents, indicating the need for improved document sharing facilities (Su, Yang, Hwang and Zhang, 2010). In developed community of practice platform enhanced sharing facilities with authorization technology provide secure and tracible sharing options among public

officers. Firstly, it streamlines communication by providing a centralized repository for information. This minimizes the risk of miscommunication and ensures that all stakeholders are on the same document. Secondly, it promotes effective resource management by preventing duplication of efforts and resources. Lastly, it encourages a cohesive approach to business tasks, fostering collaboration and knowledge exchange among colleagues.

The online Community of Practice platform should provide know-how sharing facilities for performed business processes to contribute to effective collaboration and operational efficiency. The findings of content analysis highlighted knowledge transfer opportunities such as master-apprentice relationships, working with field experts on the same document, and collaborative work on *shared documents* contribute to the accumulation of knowledge about business processes. Know-how sharing is the exchange of useful information, abilities, and proficiency between members of a community of practice. All participants can use *integrated Skype Business* for video, audio or text-based communication tool anywhere and anytime to ask question or opinion. Also, in developed platform participant can use *chat in co-authoring* in also real time discussion platform based on document content. Employees who go through this process will gain the knowledge and abilities necessary to succeed in their positions. Finding of content analysis highlighted that Sharing and cooperation between subject experts and young friends contributes to the accumulation of knowledge. Powell (2023) highlights the significance of motivation and rich social interaction. Know-how and experience sharing is vital issue in any organization learning (Dubickis and Gaile-Sarkane, 2017).

Document and Know-How Sharing in online CoPs are not just tools; they are essential components that power effective business operations. Document sharing promotes transparency, resource management, and collaboration, while know-how sharing empowers a skilled workforce and fosters a culture of continuous learning. Embracing these practices is not merely an option but a strategic imperative for businesses seeking to thrive in the digital era.

### 5.2.2 Communication Theme

One of the main components of the CoP platform's development that supports public officers' business processes is the **Communication** theme. Communities of Practice (CoPs) are essential in modern business environments, serving as a platform for professionals to share knowledge, collaborate, and foster innovation. In these communities, as in this study, communication plays a pivotal role, significantly impacting how knowledge is shared and operations are conducted. The developed CoP platform provides many tools to support online communication for social interaction and both individual and group work activities in the business process. As mentioned in the findings in Chapter 4, communication tools like Skype, chat in co-authoring, announcements, document comment chains, welcome emails, shared calendars, notifications, etc. are used to strive to keep synchronized interaction active and strong. We will discuss how synchronous and asynchronous communication contributes to business operation and we will discuss interms of *online communication, interactions for engagement, announcements, physical meeting* need. Because formal education systems are unable to adequately meet the needs and demands of individuals, new forms of social learning are emerging based on changing communication paradigms (Zhou and Li, 2012; Davidson & Goldberg, 2009). The development of a socially embedded joint practice is facilitated by the rich conversations and mutual exchange of practice-rooted knowledge that characterize online communities of practice (Jørgensen et al, 2021). The significance of communication in online communities of practice is well-established in the literature. Bagozzi & Dholakia (2006) emphasize the importance of social influence in small group brand communities, highlighting the relevance of communication in such online settings (Bagozzi & Dholakia, 2006). Similarly, Cochrane (2017) suggests that the notion of community of practice can be effectively applied to asynchronous and written forms of communication, indicating its relevance in online discourse. Skousen et al., (2020) discuss the challenges of sustaining a thriving online patient community and the moderation practices employed to manage it

successfully, underscoring the crucial role of communication within online communities of practice. Sims, (2018) also points out the community-specific structure, rituals, continuity of communication, and common online meeting space within communities of practice, further supporting the importance of communication in such settings.

The online Community of Practice platform *should provide online communication facilities* to enhance business process operations. The major findings of content analysis emerged the importance of communication channels for collaborative working to support the business domain on developed practice platform. The online Community of Practice platform *should provide instant messaging facilities as real-time communication* to accelerate business process operations and support collaborative learning. In addition to instant messaging, the online Community of Practice platform *should provide online meeting and conference communication facilities* to support collaborative work process. This allows for large-scale meetings or conferences, essential for company-wide announcements, training sessions, or discussions that shape company strategies. Also, the online Community of Practice platform *should provide person accessibility status* to support quick and direct communication for asking or consultation via instant messaging. Knowing when colleagues are available optimizes the time for interactions, reducing delays in communication. Components for instant messaging and online meetings facilitate real-time collaboration, allowing for swift decision-making and problem-solving. The developed CoP platform has different communication media channels that **skype instant messaging**, office online document instant messaging via **chat in co-authoring** and **document comment chain** etc is a major communication method to support operation of business domain. Also, they support remote work environments by bridging geographical gaps between team members. Sun, Lin, Wu, Zhou, and Luo (2017) provide insights into the role of communication tools, such as instant messaging apps, in facilitating collaborative learning and knowledge sharing. Their findings underscore the significance of communication tools in supporting real-time

collaboration and communication within a community of practice, aligning with the importance of instant communication.

The online Community of Practice platform *should provide interaction facilities for engagement* to support business process operations. Interaction for user engagement in Community of Practice are crucial for effective collaboration. The online Community of Practice platform *should provide managed notification facilities for staying informed* to engage user participation in collaborative business process. **Timely notifications** ensure that team members are aware of updates, deadlines, and changes. Effective management of these notifications is crucial to avoid information overload and maintain productivity. In addition to staying informed, the online Community of Practice platform *should provide invitations to working groups opportunities* to help participant keep interacted in collaborative business process. Invitations to working groups opportunities help users stay interacted with the platform. Engaging employees in focused working groups fosters specialization and more effective problem-solving. **Notification systems and welcome e-mail**, when managed effectively, keep members active and informed without overwhelming them. **Invitations** to specialized working groups and features that allow document edits follow promote active participation and ensure everyone is on the same page, literally and figuratively. Choe (2018) emphasize the significance of notification systems and features promoting active participation in a community of practice. In addition, Stock, Pellegrino, Backes and Rossow (2018) suggest the success of notification systems may depend on the nature of the notifications and the context in which they are employed. Learning is a social process that happens when people engage in conversation and interaction in a setting that is as similar to the practice setting as is practical (Ataizi, 2000; Stein, 1998).

The online Community of Practice platform *should provide announcement facilities for general* to inform all participants about business operations. As a component of an online community of practice, **general announcements** can be used as a tool to support a shared business domain or a common interest within an organization. The

strategic use of announcements in CoPs can have a profound effect in terms of communication. During pandemic crisis, Sadiq (2020) highlighted the role of communities of practice in successful large-scale transitions to online environments, indicating the importance of effective communication and support, potentially including announcements. The online Community of Practice platform *should provide targeted announcement opportunity* to facilitate effective communication and knowledge dissemination. **Targeted announcements** ensure that relevant information reaches the appropriate audience, reducing information overload and ensuring efficient dissemination of critical updates (Bastiaens & Heymann, 2023).

The online Community of Practice platform *should provide a balance online and physical meeting facilities* to support employee engagement in business operations. Despite the emphasis on online platforms, **physical meetings** retain their significance. They are crucial for building deeper professional relationships, brainstorming sessions, and discussing complex issues (Akinyemi, Nkonki, Baleni and Mudehwe-Gonhovi, 2020). A balanced approach that integrates online and physical interactions can yield the best results in terms of collaboration and knowledge sharing. Also, according to findings of content analysis, there is definitely a need to come together at regular intervals to support social trust. These interactions contribute to professional development by allowing members to share experiences and ideas, fostering a sense of common purpose, and promoting recognition among practitioners.

The impact of communication in a Community of Practice is profound and multifaceted. Effective communication in CoPs directly impacts business operations. It leads to improved efficiency and productivity by reducing delays and ensuring quick access to information and expertise. Moreover, it enhances employee engagement by creating a sense of community and collaboration. It not only enhances operational efficiency and employee engagement but also plays a crucial role in fostering a culture of continuous learning and innovation. As businesses

continue to evolve in an increasingly digital world, the role of effective communication in CoPs will become even more critical.

### **5.3 Impact the Professional Development of the Public Officers**

The third sub-research question is about how does the online community of practice platform impact the professional development of employee especially public officers. In the literature review chapter, research shows how crucial it is for adult learners to receive effective, personalized online professional development. Successful online professional development programs depend on knowing the particular needs of adult learners, implementing appropriate instructional strategies, fostering collaboration with colleagues, and offering sufficient support. Also, according to the results of the content analysis, **Contribution of the Platform to Professional Development** and **Contribution of the Platform to Collaborative Work and Cooperation Skills** are the key themes to contribute professional development of public officers and encourage them collaborative work.

#### **5.3.1 Contribution of the Platform to Professional Development Theme**

In the context of the **Contribution of the Platform to Professional Development** theme for communities of practice platform supports professional development in adults by offering a dynamic, accessible space for continuous learning and collaboration. It enables sharing of knowledge and expertise, facilitating peer-to-peer learning and mentorship. The developed platform often incorporates various tools for communication, document sharing, and collaboration, enhancing skill development relevant to current professional contexts. Moreover, they provide a flexible learning environment that adults can integrate into their busy schedules, promoting lifelong learning and career advancement.

The online Community of Practice platform should provide online discussion opportunities for fostering a deeper understanding to promote professional



development. In the developed CoP platform, various discussion opportunities enable the exchange of best practices, innovative solutions, and critical insights, fostering a deeper understanding of complex public sector issues. **Chat in co-authoring, document comment chain, skype** and discussion **forum** are the major component for providing discussion facilities. Providing Opportunities for discussion focuses on brainstorming within the working group to ask questions and get answers and reach a common understanding about the process or document. According to findings of content analysis, participants stated that they did not have much need for classical asynchronous discussion forum, but that it was more useful to be able to chat synchronously and on the document being worked on in studies with a large audience. The online Community of Practice platform *should provide online context-based discussion opportunities* to enhance effective and more goal-oriented discussion among colleagues. In the developed CoP platform offers **chat in co-authoring, comment chain on document and skype meeting with document sharing** as synchronous discussion components to provide context-based discussion opportunities. Participants are more motivated when meaning of study and workplace setting are together. They foster a culture of collaborative learning, where officers can engage in problem-solving discussions, enhancing their critical thinking and analytical skills. Such interactions also nurture a sense of community and support, crucial for personal and professional growth in the often challenging public sector environment. One of the primary benefits of online discussion opportunities is the depth of discussion they facilitate. In the discussion participants have time to elaborate on their answers and reflect on what they want to post, which can lead to more in-depth conversations (de Lima, Gerosa, Conte, and de M. Netto, 2019). Through these discussions, officers not only exchange knowledge but also develop a network of professional contacts, contributing to their career progression and professional resilience.

The online Community of Practice platform *should provide opportunities to learn from other participants* to promote professional development and collaborative learning. In the developed CoP platform, collaborative working opportunities on

**shared libraries**, **co-authoring**, online **meetings** or **workshops** are the major opportunities to enable working together and knowledge accumulation among colleagues. Learning from other participants in Communities of Practice (CoP) is a central aspect of these collaborative environments. They operate on the premise that learning is a social process, where knowledge is co-constructed through interactions with others. Also, according to participants they learn about different areas where they are lacking. Even if it is not his/her field of interest, participant can get new information from there. Participants often come from diverse backgrounds, bringing a wealth of experiences. By sharing these experiences, participants can learn new approaches and strategies that they may not have encountered in their own practice. According to Bakar's (2021) research, students responded positively to using cloud-based word processors, which helped them write better thanks to productive group projects and peer and instructor feedback. Exposure to diverse experiences and viewpoints broadens understanding, encourages adaptability, and enhances problem-solving skills, crucial for public officers.

If, as in this study, the community of practice falls under the category of a knowledge stewarding community, processes and components that support apprenticeship and organizational learning should be included. The online Community of Practice platform *should provide opportunities for master apprentice relationship* to learn from more experienced colleague to contribute to the transfer know-how. This relationship is characterized by a one-on-one mentoring approach, where a highly skilled and experienced individual (the master) imparts knowledge, skills, and wisdom to a less experienced person (the apprentice). The apprenticeship model emphasizes learning through practical experience. Apprentices learn by engaging in the actual work under the guidance and supervision of the master via **shared libraries** and document **co-authoring** components of developed CoP platform. The relationship is deeply rooted in the transfer of tacit knowledge, which requires a certain level of personal intimacy for comfortable communication (Alwis & Hartmann, 2008). However, there is evidence suggesting that the novelty of new practices may lead to a contestation of the established master-apprentice relationship

and even challenge the basis of the community of practice itself (Mørk et al., 2010). The developed CoP platform contributes to the master-apprenticeship with its modules and tools. Master apprentice relationship focused on knowledge stewardship and organization or personal knowledge accumulation for professional development.

The online Community of Practice platform *should provide group working opportunities* to promote professional development and collaborative learning. Sharing experiences and solutions to common challenges within the community allows members to learn from each other, gaining practical insights and strategies that can be applied in their professional roles. Working in groups encourages individuals to approach problems from various angles. Group members bring different perspectives, leading to more comprehensive problem-solving strategies and critical thinking. In developed CoP platform, **online workshop** and **presentation meeting** about prepared report for the Public Sector Organization focus on group working with colleagues. In group working while creating a document like Strategic Plan for 2019-2023, mentorship and peer support within CoPs can lead to the development of leadership skills, policy understanding, and strategic thinking. CoPs encourage joint working and activities, fostering teamwork and collective knowledge building. Moreover, in implementation process of developed CoP some topics are between departments so platform has to provide workshop and online group work between departments. According to participant's view, engagement is ensured when there is joint work with other departments. Portal enables them to work in competition. It contributed to have and learn with their colleague the policies of the whole organization in general. According to Sætre and Zhukov, (2021) online group working can facilitate collaboration and collective knowledge building by providing opportunities for diverse perspectives and interdisciplinary problem-solving.

The online Community of Practice platform *should provide written communication facilities* to improve written expression ability and create corporate memory for

professional development. Opportunity for written communication should be used to improve their written expression and also professional development via **chat** in office online, discussion forum and **document comment chain** in group work activities. Also, document creation about their expertise and their insight with using components of community of practice platform supports to create corporate memory and also improve organizational development. This is in line with the Olesen (2020) highlighted co-authoring tools have provided a conducive environment for knowledge co-construction, collaborative writing, and interactive learning experiences. Also, In the online discussion, participants have more time to elaborate on written answers and reflect on what they want to post (de Lima et al, 2019), which can lead to promote written expression ability and create corporate memory.

The online Community of Practice platform *should provide secure shared repository facilities* to promote professional development and collaborative workspace. According to the findings, the provision of secure storage should be used to build public officers' trust in the developed community of practice platform, thereby increasing their engagement of the platform. All interview participants expressed their satisfaction with secure storage. Use of **shared workspace** is facilitating collaborative work in a secure and organized digital environment. Secure storage space should be used to trust of public officers for community of practice platform and so on their usage of platform is increased. According to findings all participants emphasize that keeping their files in a shared workspace (accessible to everyone), in this way the risk of losing files has decreased. They can easily share our professional experiences with our colleague via **secure shared library**. They use it as a collaborative workspace where we organize documents related to their work and upload them for sharing. Especially in-group specialized collaborative workspace is important to facilitate subject matter expertise the common domain, thus promotes to professional development and domain expertise. Nitschke, Hult and Bigolin, (2020) highlight the adaptability of shared workspace designs to the needs of the users. This adaptability facilitates collaborative projects and contributes to the improvement of digital literacy and technical skills. It is also important for newly

comer in the community or organization. Lack of easily accessible shared resources and opportunities for community learning makes it difficult for new hires or less experienced employees to integrate into the existing knowledge culture (Larson and Sanjay, 2022).

The online Community of Practice platform should provide version history for document and content to enhance traceability of document and secure storage in collaborative workspace. **Version history** for document or content in developed online community of practice platform is essential to access and examine the previous versions of comprehensive a document. Thus, opportunity to save it from accidentally replaced or deletion. According to the findings, a common shared workspace provides an opportunity to see what colleagues are doing and how they are doing it. Version history allows learners to see how a document or content has evolved over time, offering insights into the thought processes, revisions, and collaborative contributions. This can be a learning tool in understanding how complex ideas or projects develop and improve. It encourages reflective practice, enabling learners to review past versions, understand mistakes or changes, and learn from them. Version history can support learning as a valuable component, enabling learners to review past versions, understand mistakes or changes, and learn from them, ultimately contributing to professional development (Lai and Mcnaughton, 2016).

The online Community of Practice platform should provide search components for searching and filtering information to enhance accessibility of relevant information and allow exploration and the discovery of new subjects. In developed Community of Practice platform's search features greatly support adult professional development by providing quick access to relevant information, which reduces waiting times and increasing productivity. It facilitates continuous, self-directed learning by allowing easy retrieval of resources for immediate needs. Furthermore, it promotes learning through exploration and the discovery of new subjects, cultivating a culture of curiosity (Kelly, 2017). Moreover, the ability to filter information allows for the

customization and efficacy of professional development by adapting the learning process to each learner's interests and goals for development (Nguyen, 2022). The ability to archive and retrieve documents efficiently is critical in a public officer's role. Online CoPs offer advanced searching and archiving capabilities aid in better information management and accessibility. As mentioned in the finding chapter, when participants are not sure where to start, it's also nice to **search** and **filter** ability for accessing previously used files. The component focused on helping user to search past history or filter other resources to use as template or to accelerate operational process in working on common business domain.

### **5.3.2 Contribution of the Platform to Collaborative Work and Cooperation Skills Theme**

**Contribution of the Platform to Collaborative Work and Cooperation Skills** theme is another major source the impact of community of practice platform that contribute to collaborative knowledge construction and professional development among public officers. The theme focused on collaborative work environments and supporting online group work to encourage collaborative work and cooperation skills of public officers in community of practice platform. The theme contributes to professional development by fostering an environment conducive to collaborative work, enhancing communication skills, and encouraging the exchange of diverse viewpoints. Also, the developed CoP platform's contribution is evident in the way it facilitates collaborative document creation, decision-making, and cooperation among professionals, thereby improving management skills and broadening perspectives. This approach aligns with contemporary educational theories emphasizing the importance of collaborative learning and reflective practice for professional development.

The online Community of Practice platform should provide collaborative work facilities for group work to improve collaborative learning and cooperation skills. The developed CoP platform focused on enhancing collaborative work environments

to encourage collaborative work in online **shared workspace (subsite)** via components of **shared libraries** and **co-authoring**. This includes enabling collaborative work, supporting online group work, ensuring efficient group work, and motivating to work. According to participants of the developed CoP platform, they feel that this way is better than working alone. Especially when working remotely, it adds a serious advantage. Collaborative working together with the platform adds value to them. It is also motivating to feel that they are a member of the team when they work synchronously and simultaneously. According to McConnell et al. (2012), creating online communities of practice (CoPs) is an effective strategy to enhance professional development via collaborative work. This principle emphasizes creating and supporting online efficient environments conducive to collaborative work.

The online Community of Practice platform *should provide synchronous co-authoring for collaborative document creation facility* to enhance professional development and collaborative learning. The developed online CoP platform provide **cloud-based co-authoring with office online** services for collaborative document creation. Office Online service has familiar office apps; Word, Excel, PowerPoint, OneNote etc. for synchronous co-authoring. This facilitates real-time collaboration, allowing public officers to work simultaneously on documents, which is crucial for fast-paced decision-making and knowledge sharing. According to findings, participants think that synchronous co-authoring reduces the possibility of making mistakes or reworking because more experienced people are in the process. Moreover, collaborative document creation helps in developing a unified language or terminology, essential for clear communication and understanding across different departments or work groups. Co-authoring tools can save automatically and create a minor version of document. This feature allows users to track changes and contributions, providing transparency and a deeper understanding of the document's evolution and the thought processes behind it. Duncan-Howell (2010) highlighted the positive impact of synchronous collaborative efforts on teachers' perceptions of professional development. Uzun, Demirel Uzun and Medeni (2013) highlighted

Google Docs as co-authoring tool can enhance synchronous collaboration and knowledge co-construction, making them valuable for professional development in various fields, including education and government.

The online Community of Practice platform *should provide team synchronization facilities for real time collaboration* to support collaborative work and cooperation skills. The developed CoP platform provide synchronization components that **shared calendars**, **skype** (especially Microsoft Teams) and **notification** for meetings or task. These components focused on synchronous working and team synchronization to support collaborative work. According to findings, participants emphasize the importance of real-time collaboration tools for effective teamwork and communication. Using synchronous operation tools involves leveraging tools that facilitate simultaneous work, like shared calendars and skype meeting features, to enhance collaborative efforts and decision-making processes. In developed platform participants can invite the team mate to work simultaneously on the same documents via Microsoft Teams. With team synchronization components, all team members are on the same page, which is crucial for coordinated and efficient teamwork. Interactions such as organizing conversations for sharing thoughts, using real time communication tools for team synchronization effectively contribute to the development of common goals and professional identity (To, 2020) and support professional learning opportunities (Chauraya & Barmby, 2022).

The online Community of Practice platform *should provide obtaining expert opinions facilities* to gain diverse perspectives and refine decision-making skills. Seeking expert advice or feedback during collaborative work helps in making informed decisions and enhances learning. In the developed CoP platform participants can ask directly subject matter expert or supervisor via **skype** or **chat in co-authoring** also expert participants can make comment about part of the study via **comment chain on document** or chat in co-authoring. Thus, this principle involves consulting with peers or more experienced colleagues, which is essential for gaining diverse perspectives and refining decision-making skills. Developing a wider



viewpoint through the exchange of ideas and experiences is crucial for broadening understanding and improving management skills. Seeking advice boosts perceptions of competence, indicating that the act of seeking expert opinions contributes to individuals' confidence and decision-making skills (Brooks, Gino and Schweitzer, 2015). Moreover, Chauraya and Brodie, (2018) highlighted the importance of conversations and knowledge exchange, which can be facilitated by obtaining expert guidance, in supporting professional development within a community of practice.

The online Community of Practice platform should provide facilities for collaborative decision-making process to foster critical thinking and promote collaborative learning. In the developed CoP platform co-decision making focuses on collaborative decision-making, allowing public officers to contribute to and shape outcomes collectively. Review or **approval workflow** features enhances the collaborative decision-making process in developed CoP platform. In focus group working, participants are presenting alternatives for the approval of subject matter expert or supervisor. Presenting multiple options or alternatives in decision-making processes are fostering critical thinking and informed choices. Wahlstrom & Louis (2008) underscores the importance of collaborative decision-making within professional communities in shaping pedagogical practices and promoting student learning. Co-decision making enhances decision-making skills, promotes a collaborative approach to problem-solving, and supports the development of critical thinking abilities.

The online Community of Practice platform should provide cooperation opportunities for helping other participant to support continuous professional growth. Assisting other participants can improve teaching, mentoring, and communication skills. Schneider, Börner, Rosmalen and Specht (2015) emphasize the importance of carefully designed feedback to help individuals become aware of their nonverbal communication and improve their skills, highlighting the role of assistance in enhancing communication. Also, it often involves breaking down complex ideas into understandable concepts, which can clarify one's own

understanding. According to findings mentioned previous chapter, in the CoP platform, helping each other and giving feedback on each other's work provide an opportunity to control other works. In addition to this, assisting other participants encourages reflection on one's own practices and experiences, contributing to continuous professional growth. The developed CoP portal provides opportunities for cooperation through processes such as giving **feedbacks**, **instant communication**, answering questions in **chat** or **discussion** and mentoring. According to participants Working together synchronously provides cooperation between the teams and gives the opportunity for questions and answers. An individual can become a leader or mentor within the CoP by regularly helping others, which will improve leadership skills. Helping others within a CoP not only benefits those receiving assistance but also significantly enhances the helper's professional skills and knowledge (Wenger, McDermott and Synder, 2002).

#### **5.4 Factors for Consideration in the Design and Implementation of the CoP Platform**

There are four sub research questions to support the main research question that what are the design principles of cloud-based community of practice platform for public officers to support collaborative work. The last sub research question is about What are the factors for consideration in the design and implementation of the CoP platform.

Participants' requests and challenges with the Community of Practice Platform were identified through content analysis of the interviews conducted during the two iterative cycles. In order to determine whether or not to make these changes, the supervisors' perspectives as stakeholders and interview participants were considered during the design phase of the upcoming implementation process. In design and implementation phases, the design principles that emerged during the revisions are discussed below.

Under Workplace Flexibility theme, many revisions were made during two iterative cycles. The first consideration in design and implementation of the CoP portal is that the online Community of Practice platform *should be reliable and responsive for collaborative working process of all active participants*. In the study especially co-authoring components performance issues are fixed by **scalable feature** of designed CoP portal. The platform should be fast and responsive, allowing participants to access and interact with content without significant delays. According to findings of content analysis and mentioned during think aloud techniques, slow loading times or frequent downtimes can hinder user engagement and disrupt the learning process. Adding dynamic **office online service server** allowed all active participants to have access at the same time portal contents especially co-authoring tool. The CoP Portal should be able to accommodate a growing number of participants and increased activity without performance degradation. To ensure the reliability and responsiveness of the platform, it is essential to address scalability and performance concerns, allowing for fast and seamless access to content and tools without significant delays (Maloney-Krichmar and Preece, 2005). The online Community of Practice (CoP) platform plays a crucial role in facilitating collaborative work among active participants. Therefore, to support the collaborative working process and co-authoring activities within the online CoP platform, it is imperative to prioritize the reliability, responsiveness, and scalability of the platform, as evidenced by the studies on online community dynamics and trust in online communication (Tong & Chan, 2022; Maloney-Krichmar & Preece, 2005). The platform should be able to handle an increasing number of participants and activities without compromising performance.

The online Community of Practice platform *should be adjustable file size limit facilities* to promote best practice sharing and collaborative work. The file size upload limit in the online Community of Practice (CoP) platform is an important technical aspect that impacts user experience and the platform's functionality. A lower file size limit can restrict the type and amount of information that members can share, potentially limiting the depth of discussions and knowledge sharing. The

researcher had to increase the file size limit due to requests received prior to the second cycle of design and implementation. Participants may need to share large sample documents, sources or data sets. However, larger file sizes can also demand more bandwidth and storage, possibly affecting the platform's performance, especially for users with limited internet access. Therefore, finding a balance is key to ensuring that the platform remains accessible and functional while supporting robust knowledge sharing and collaboration. Bergman, Israeli and Whittaker (2020) highlight the effects of various factors related to collection size, properties of the target file, and user workload on the scalability of different file-sharing methods. This underscores the importance of considering the file size limit within the CoP platform to ensure that it aligns with the diverse needs of the community members and supports the sharing of varied content.

The online Community of Practice platform *should be visible who the relevant content is being shared with* to support collaborative work and cooperation. According to the content analysis, participants need to know who has access to the relevant document and where the user has access. In developed platform participants can use sharing facilities in departments' workplace for collaborative work. In addition, based on participants' requests, in second design and implementation phase check permission page has been added to learn where the user has access. This issue is important to support collaborative work and trust the portal about sharing. Knowing who has access to shared content fosters a sense of trust among members. It encourages openness and frankness in discussions, as members are aware of their audience. Also, it allows members to tailor their communication to the intended audience, whether it's the whole community or specific work groups. Baldé, Ferreira and Maynard (2018) discuss the role of team trust and intrinsic motivation in driving SECI (Socialization, Externalization, Combination, Internalization) driven creativity, emphasizing the importance of trust in fostering collaborative knowledge construction processes. This underscores the relevance of visibility in content sharing to support the trust and motivation necessary for effective collaboration and knowledge exchange within the CoP. Understanding who is involved in discussions

or has access to related documents facilitates more effective and relevant collaboration and cooperation.

The online Community of Practice platform *should provide mobile accessible design* to enhance continuous learning and collaboration. Having mobile access to CoP platforms guarantees that professionals, who are frequently on the go in today's hectic world, can interact with their community at any time and from any location. This guarantees continuous learning and collaboration while also improving convenience. The platform's reach is further increased by its mobile accessibility, which appeals to a larger audience that might rely on mobile devices for internet access. Owen (2015) emphasized the significance of leveraging mobility in virtual mentoring and education practitioner professional development, highlighting the increasing connection between collaborative learning and mobile accessibility. In addition, Lin, Huang and Tsai (2023) emphasized that mobile learning enables students to access learning content and engage in discussions with peers regardless of their location or time, underscoring the value of mobile accessibility in facilitating continuous learning and collaboration. Overall, mobile accessibility is crucial factors for the effectiveness and inclusivity of online CoP platforms.

The online Community of Practice platform *should provide more clear visibility for new content* to foster dynamic and interactive collaboration. According to the findings, participants' feedback on announcements or other content is that it is more visible or attractive if it is new. For the visibility of new content researcher, a feature was activated to add green star. When a new announcement or document is created/uploaded green star is displayed. By default, new content was located at the top of list of content and green star showed for 3 days but it can be changed if needed. The visibility of new content in an online community of practice is pivotal for fostering a dynamic and interactive learning environment. The findings from educational studies emphasize the significance of new content visibility in online communities for continuous professional development and informal learning (Duncan-Howell, 2010; Fischer, Klein, Borchers and Morina, 2023). It ensures that

fresh ideas and insights are shared broadly, enhancing knowledge dissemination and fostering active participation among members. This visibility is key to maintaining an engaged community, as it not only facilitates continuous learning and professional development but also stimulates discussion and feedback for new content. It also serves as a motivational factor for participants, providing recognition and encouragement for ongoing participation and contribution

The online Community of Practice platform *should provide familiar icons for document type* to improve participants' user experience. Providing familiar icons (like Word, Excel, Image, PDF, PowerPoint etc) for different document types is crucial for enhancing the user experience in online CoP platform. Familiar icons serve as visual cues that help users quickly identify the nature and format of documents, improving navigation and efficiency. They reduce the cognitive load on users by providing an intuitive understanding of the platform's content. This visual familiarity is especially important in diverse and interdisciplinary CoPs, where participants may come from various backgrounds and have different levels of technical expertise. Alrubian (2022) supports the importance of familiar icons in the CoP platform, as it underscores the role of user experience and knowledge sharing in fostering innovation and community development. Familiar icons contribute to a more user-friendly and accessible environment, encouraging greater engagement and participation in the community.

The online Community of Practice platform *should provide customization for menu or screen design* to create tailored and effective learning workplace. Customization in an online community of practice (CoP) is crucial for creating a tailored and effective learning environment. It allows participants to personalize their experience, aligning it with their individual learning needs, preferences, and goals. This leads to increased engagement, as members can focus on content that resonates with their interests and expertise, resulting in a more meaningful and efficient learning process. Customization also enhances accessibility and inclusivity, catering to a diverse range of learning styles and backgrounds. The literature emphasized the need for

personalized learning experiences to cater to diverse learning styles and preferences (Shemshack and Spector, 2020; Capuano, Mangione, Pierri and Salerno, 2014). Moreover, user **customized menu** or dashboard is another component of online community of practice platform to engage participation and also sustain the participation. The ability to adapt the platform to evolving needs not only provides valuable insights for continuous improvement but also plays a key role in retaining participants and ensuring the long-term viability of the online CoP.

The online Community of Practice platform *should provide user manuals sharing facilities* to enhance active engagement in collaborative workplace. Sharing user manuals in an online community of practice (CoP), particularly in an academic setting, plays a critical role in enhancing the user experience and the overall effectiveness of the platform. These manuals provide essential guidance, helping users of varying technical expertise to navigate the platform efficiently, understand its features, and engage effectively. Evans, Yeung, Markoulakis and Guilcher (2014) mentioned about the need for user manuals sharing facilities in the online Community of Practice (CoP) platform to enhance active engagement. They serve as a valuable resource for onboarding new members, offering clarity on processes and best practices, which is crucial in maintaining consistent and high-quality participation. In order to get participants involved and point them in the direction of collaborative work, *sharing user manuals* and *workplace routing information* is essential. As a result, the individual can discover who they are on and where they need to go without having to ask. This empowerment is key to fostering a sense of ownership and commitment within the community. Participation and engagement in online communities of practice platforms are a crucial issue that needs to be addressed.

The online Community of Practice platform *should provide document editing follow opportunities* to enhance active engagement in collaborative workplaces. Opportunities to follow document edits help users stay interacted with the platform. Engaging employees in focused working groups fosters specialization and more

effective problem-solving. Tracking document edits with **alert me** and **follow documents** helps in maintaining version control and understanding the evolution of a process. Alert me **notifications**, when managed effectively, keep members active and informed without overwhelming them. According to Stock et al. (2018), the type of notifications sent and the context in which they are used may have an impact on how effective notification systems are. Features that allow **document edits follow** promote active participation and ensure everyone is on the same page, literally and figuratively. According to Ataizi (2000), learning is a social process that takes place when individuals converse and interact in an environment that is as close to the practice setting as is realistic.

The online Community of Practice platform *should provide search refinements and document preview* to accelerate operational process in working on common business domain. Demands for being able to preview the search result without downloading it and during thinking aloud also it was revealed that they had difficulties in this regard. It was observed that the ability to **preview the searched document** without downloading and opening it would speed up the processes. In addition, the **search refinements pane** allows participants to search and find the content they need faster. Search refinements and document preview functionalities are crucial in online communities of practice, greatly enhancing the efficiency and effectiveness of information retrieval. In pandemic times, according to Fernandes-Marcos (2022) Search result refinements enable users to quickly and accurately locate specific resources, critical in academic environments where precise, targeted information is essential. These refinements save time and improve the relevance of search results, allowing for more focused and productive research. Document previews further add to this efficiency by allowing users to quickly scan the content of a document without the need for full downloads, ensuring that the material is relevant before committing more time to it. These features can enhance the efficiency and precision of information retrieval, improve resource management, and contribute to a more engaging and satisfying user experience.



The online Community of Practice platform *should provide workflow facilities for the approval and review process* to promote collaborative decision-making. In the developed CoP platform, participants sometimes have to make decision in doubt so they need to consult the supervisors or subject matter experts about their works. According to researcher observation and think aloud session, the developed CoP platform need workflow process for approval or review the created documents. **Publishing Workflow features** accelerate the collaborative decision-making process in developed CoP platform. Online recorded Workflow processes can help both in future critical decisions and in discovering where the process is blocked. The significance of collaborative decision-making in professional communities for influencing instructional strategies and improving participants learning is emphasized by Wahlstrom & Louis (2008). By involving multiple stakeholders in the decision-making process, it cultivates a collaborative environment where decisions are not unilaterally made but are the result of collective reasoning and consensus. The collaborative nature of the **review/approval workflow for a document or item** ensures that decisions are well-considered, reflecting the collective wisdom and expertise of the community, thereby enhancing the overall effectiveness and integrity of the CoP platform.

The online Community of Practice platform *should provide access requests for enrollment* to enhance engagement in collaborative workplace. The developed online CoP platform has seven major subsites and many working group areas. In the second design implementation cycle, according to content analysis and researcher observation participant need to send request access via e-mail or phone call. The ability to send an access request has been added to the CoP platform. This process ensures that new members align with the community's objectives, expertise level, and academic interests. By vetting members through access requests, the community upholds a standard of engagement and expertise, essential for fostering a productive and professional environment conducive to academic and research-oriented discussions. With the requests for access to the platform being submitted online, participation and cooperation in the platform also increased. This selective approach

to membership enhances the overall interaction quality, as it ensures that contributions are meaningful and relevant to the community's goals (Moore and Marra 2005). It also aids in creating a trusted environment where participants feel comfortable sharing insights, seeking feedback, and engaging in collaborative workplaces.

When designing and implementing an online Community of Practice (CoP) platform, especially in an academic setting, several key factors must be considered to ensure its effectiveness and relevance. The body of research on this subject highlights the necessity of providing adult learners with effective and customized online professional development opportunities in CoP online platform. Comprehending the distinct requirements and attributes of adult learners is imperative in creating significant online learning environments (Ng and Baharom, 2018).

## **5.5 Conclusion**

Society 5.0 emphasizes the need for a workforce skilled in technology, interpersonal relations, and problem-solving. This era highlights the importance of collaborative learning and knowledge sharing for organizational and professional development. Online communities of practice are crucial for facilitating this, helping organizations adapt to Society 5.0's demands, including integration challenges for new employees and enhancing connectivity. Online community of practice platforms are key in fostering continuous learning and skill development necessary for thriving in an interconnected, digital society.

The purpose of this study is to present the design principles of a cloud-based community of practice platform designed and developed to support the collaborative work of public officers. A design-based research design was used in the study and 12 participants provided their opinions and suggestions for both design and implementation cycles. For the first design, a needs analysis was conducted with the participation of 13 employees of the organization. In addition, the opinions of four

supervisors working in the organization before and after the design were used to improve the study. It can be concluded that it was important to include such participants contributors to the design and development process of the cloud supported online community of practice platform to increase the effectiveness and usefulness of it.

In the study, which continued as iterative design cycle, the data analyzed after one implementation served as input for the next implementation. After two design cycles with the participants, participant satisfaction was generally achieved and the improvements were finalized. At the end of the study, the principles to be considered in the design of a cloud-supported online community of practice platform based on the findings were grouped under five themes. The themes were flexibility in the workplace, sharing, communication, contribution of the platform to professional development and contribution of the platform to collaboration and cooperation skills. When a cloud-based community of practice platform is developed in accordance with the design principles expressed under each theme, it is thought that a more useful platform will be created for public officers to support continuing professional development and carry out collaborative business processes within a community of practice. The design principles of the platform can be leveraged by public officers to enhance their work practices, foster professional development, and create a more effective and collaborative working environment. Also revealed and refined design principles provide guidance for designers and developers who produce community of practice platform for the public sector organizations.

The following five figures show that revealed and refined design principles of a cloud-based community of practice platform.

Theme	Design Principles (11)
Workplace Flexibility	<p>The Workplace in the online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <u>should be easy to use platform.</u></li> <li>• <u>should be easy to access platform.</u></li> <li>• <u>should accelerate the process</u> of collaborative work.</li> <li>• <u>should provide Welcome and Participation facilities</u> for collaborative work.</li> </ul> <p>The Online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <u>should be reliable and responsive for collaborative working process of all active participants.</u></li> <li>• <u>should be adjustable file size limit facilities</u> to promote best practice sharing and collaborative work.</li> <li>• <u>should be visible who the relevant content is being shared with</u> to support collaborative work and cooperation.</li> <li>• <u>should provide mobile accessible design</u> to enhance continuous learning and collaboration.</li> <li>• <u>should provide more clear visibility for new content</u> to foster dynamic and interactive collaboration.</li> <li>• <u>should provide familiar icons for document type</u> to improve participants' user experience.</li> <li>• <u>should provide customization for menu or screen design</u> to create tailored and effective learning workspace</li> </ul>

Figure 5.3. The design principles of Workplace Theme

Theme	Design Principles (8)
Sharing	<p>The Online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <i>should provide opportunities to best practice sharing</i> to enhance business operation.</li> <li>• <i>should provide opportunities to experience sharing</i> to contribute business operation and facilitate collaborative learning.</li> <li>• <i>should provide opportunities to track how the document prepared and how the process works</i> to contribute business operation and promote collaborative learning in workplace.</li> <li>• <i>should provide opportunities to give feedback</i> to each other's work to enhance the operation of business process and improve their future works.</li> <li>• <i>should provide opportunities to share guide documents for business processes</i> via a shared library in a workgroup or among all members to follow the process.</li> <li>• <i>should provide document sharing facilities</i> to contribute business operation and facilitate collaborative learning.</li> <li>• <i>should provide know-how sharing facilities for performed business processes</i> to contribute to effective collaboration and operational efficiency.</li> <li>• <i>should provide user manuals sharing facilities</i> to enhance active engagement in collaborative workplace.</li> </ul>

Figure 5.4. The design principles of Sharing Theme

Theme	Design Principles (11)
Communication	<p>The Online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <u>should provide online communication facilities</u> to enhance business process operations.</li> <li>• <u>should provide instant messaging facilities as real-time communication</u> to accelerate business process operations and support collaborative learning.</li> <li>• <u>should provide online meeting and conference communication facilities</u> to support collaborative work process.</li> <li>• <u>should provide person accessibility status</u> to support quick and direct communication for asking or consultation via instant messaging.</li> <li>• <u>should provide interaction facilities for engagement</u> to support business process operations.</li> <li>• <u>should provide managed notification facilities for staying informed</u> to engage user participation in collaborative business process.</li> <li>• <u>should provide invitations to working groups opportunities</u> to help participant keep interacted in collaborative business process.</li> <li>• <u>should provide announcement facilities for general</u> to inform all participants about business operations.</li> <li>• <u>should provide targeted announcement opportunity</u> to facilitate effective communication and knowledge dissemination.</li> <li>• <u>should provide a balance online and physical meeting facilities</u> to support employee engagement in business operations.</li> <li>• <u>should provide document editing follow opportunities</u> to enhance active engagement in collaborative workplace.</li> </ul>

Figure 5.5. The design principles of Communication Theme

Theme	Design Principles (10)
Contribution of the Platform to Professional Development	<p>The online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <u>should provide online discussion opportunities for fostering a deeper understanding</u> to promote professional development.</li> <li>• <u>should provide online context-based discussion opportunities</u> to enhance effective and more goal-oriented discussion among colleagues.</li> <li>• <u>should provide opportunities to learn from other participants</u> to promote professional development and collaborative learning.</li> <li>• <u>should provide opportunities for master apprentice relationship</u> to learn from more experienced colleague to contribute to the transfer know-how.</li> <li>• <u>should provide group working opportunities</u> to promote professional development and collaborative learning.</li> <li>• <u>should provide written communication facilities</u> to improve written expression ability and create corporate memory for professional development.</li> <li>• <u>should provide secure shared repository facilities</u> to promote professional development and collaborative workspace.</li> <li>• <u>should provide version history for document and content</u> to enhance traceability of document and secure storage in collaborative workspace.</li> <li>• <u>should provide search components for searching and filtering information</u> to enhance accessibility of relevant information and allow exploration and the discovery of new subjects.</li> <li>• <u>should provide search refinements and document preview</u> to accelerate operational process in working on common business domain.</li> </ul>

Figure 5.6. The design principles of Contribution of the Platform to Professional Development Theme

Theme	Design Principles (8)
Contribution of the Platform to Collaborative Work & Coop. Skills	<p>The Online Community of Practice platform;</p> <ul style="list-style-type: none"> <li>• <i>should provide collaborative work facilities for group work</i> to improve collaborative learning and cooperation skills.</li> <li>• <i>should provide synchronous co-authoring for collaborative document creation facility</i> to enhance professional development and collaborative learning.</li> <li>• <i>should provide team synchronization facilities for real time collaboration</i> to support collaborative work and cooperation.</li> <li>• <i>should provide obtaining expert opinions facilities</i> to gain diverse perspectives and refine decision-making skills.</li> <li>• <i>should provide facilities for collaborative decision-making process</i> to foster critical thinking and promote collaborative learning.</li> <li>• <i>helping other participant</i> to support continuous professional development.</li> <li>• <i>should provide workflow facilities for the approval and review process</i> to promote collaborative decision-making.</li> <li>• <i>should provide access requests for enrollment</i> to enhance engagement in collaborative workplace.</li> </ul>

Figure 5.7. The design principles of Contribution of the Platform to Collaborative Work and Cooperation Skills Theme

Additionally, the document showing the relationship of design principles with the themes and categories determined as a result of content analysis is included in Annex D.

## 5.6 Implications of the Study

In this section, implications for practitioners and designers are included in the subheadings in line with the results obtained in the research.



### **5.6.1 Implications of the Designers**

In line with the findings obtained within the scope of the study, the following recommendations can be offered to designer who develop an online community of practice for adults especially public employee. Design principles that emerged during this study may guide the design and development processes of online community of practice platform for public officers.

Besides, this study includes the opinions and experience of several participants with diverse expertise level in strategy development domain, such as department heads, supervisor, subject matter experts, assistant expert and expert academicians.

It is vital to understand the needs of public officers on strategy development domain from various points of view. Therefore, instructional designers can review the findings gathered from these participants and design their own solutions to the issue in light of emerged design principles.

At the end of the study, it is thought that developing community of practice portals for adults by taking into account the design principles for communities of practice developed for online collaborative work among public officers revealed by the findings will guide the portal to produce effective, efficient and satisfying products. Therefore, online communities of practice have the potential to make positive contributions to the business processes and professional development of adults if the principles put forward in this study are followed in platform design.

### **5.6.2 Implications of the Practitioners**

In line with the findings obtained within the scope of the study, the following recommendations can be offered to practitioners and managers who structure, conduct and supervise the implementation process for online community of practice for adults especially public employee. The design and implementation of an online

community of practice (CoP) platform for public employees has significant implications for department managers and practitioners.

First of all, it offers a centralized platform for collaboration and knowledge exchange, both of which are essential in public administration. Managers can utilize the CoP platform designed based on these design principles to disseminate policies, share best practices, and streamline communication across different departments and levels.

Second, a well-designed CoP platform turns into an essential resource for practitioners' collaborative learning and professional development. Within the revealed design principles, online CoP platform offers an avenue to stay updated with the latest trends, regulations, and methodologies in public administration. Maintaining high standards of service and making adjustments to meet the needs of a changing society and government depend on this continuous learning.

Additionally, a workforce that is more engaged and connected is facilitated by an online community of practice platform that is designed based on findings. It encourages an organizational culture where ideas and experiences are openly shared, leading to innovative solutions and improved public service delivery. For managers, this means a more dynamic and responsive team, capable of addressing complex challenges more effectively.

Lastly, these finding design aspects collectively create a flexible workplace environment that fosters dynamic collaboration, efficient knowledge exchange, and ongoing skill development, vital for the effective functioning of public officers in a modern, digital workspace. Overall, the CoP platform serves as a strategic asset in enhancing the capabilities and performance of public service departments.

## **5.7 Recommendations for Future Research**

This study revealed a comprehensive design and development process for online community of practice platform for adult learners. At the end of this study, design

principles for designing and developing online collaborative workplace emerged to be used in community of practice platform to support collaborative work and professional development of public officers. Even though this study used a broad approach, further research would concentrate different areas. Future research recommendations for this study could include:

- The study explored design principles for online community of practice platform for the PSO with nearly 150 public officers. Future studies could involve a more diverse range of public officers, including those from different levels of government and various regions, to assess the applicability and effectiveness of the design principles across a wider spectrum.
- Future studies could investigate the long-term effects of implementing these design principles in various public sector environments. This would provide insights into sustainability and adaptability of the platform over time.
- Future studies could explore the integration of emerging technologies such as AI and machine learning to enhance the platform's capabilities, particularly in areas like personalized learning and predictive analytics. For example, the contribution of CoPilot or RPA to the process could be explored.
- In the study design principles emerged during iterative design and implementation process, but the developed portal effect on organization performance was not assessed. Future study could assess how the implementation of such a platform impacts overall organizational performance, efficiency, and employee satisfaction in the public sector.
- Future research may conduct comparative research with existing platforms to evaluate the relative effectiveness of the proposed design principles. This could also involve cross-sectoral comparisons to explore applicability in different industries.
- One of future study could be a focused study on user experience and usability to refine and optimize the interface and interaction design for enhanced user engagement and satisfaction.

- Future research may examine the effectiveness of built-in feedback and collaborative decision-making process in guiding continuous professional development and user engagement.

## **5.8 Limitation of Study**

This study was conducted within the framework of the following limitations:

- The developed Community of Practice platform was designed as an online environment for the studies of the PSO of the government.
- The participants of the research are public employees working in titles such as assistant specialist, specialist, engineer, chief engineer, branch manager, department head in the PSO.
- The first development period lasted 1 year and six months. After analyzing the outcomes review period lasted six months, covid 19 pandemic occurred. It was difficult to collect data from participants during the pandemic, especially in the healthcare sector.

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## APPENDICES

### A. Semi Structered Interview Questions

#### Uygulama Portali (UP)- Araçlar

1. Tasarlanan portalda aşağıdaki araçlar ile ilgili,
  - **Kütüphane**
    - Sizce ne amaçla kullanılıyor?
    - Tasarım ve kullanım açısından beğendiğiniz yanları neler? Örnek göstererek nedenini belirtir misiniz?
    - Tasarım ve kullanım açısından beğenmediğiniz yanları neler? Neden? Sizce nasıl geliştirilebilir?
  - **Birlikte Yazarlık**
    - Sizce ne amaçla kullanılıyor?
    - Beğendiğiniz yanları nelerdir? Kısaca nedenini belirtir misiniz?
    - Beğenmediğiniz yanları neler? Neden? Bu kısım sizce nasıl geliştirilebilir?
  - **Video, Ses ve metin ile iletişim**
    - Sizce ne amaçla kullanılıyor?
    - Beğendiğiniz yanları neler? Kısaca nedenini belirtir misiniz?
    - Beğenmediğiniz yanları nelerdir? Neden? Bu kısım sizce nasıl geliştirilebilir?
  - **Forum**
    - Sizce ne amaçla kullanılıyor?
    - Beğendiğiniz yanları neler? Kısaca nedenini belirtir misiniz?
    - Beğenmediğiniz yanları neler? Neden? Bu kısım sizce nasıl geliştirilebilir?
  - **Hoş geldin maili**
    - Sizce ne amaçla kullanılıyor?

- Beğendiğiniz yanları neler? Kısaca nedenini belirtir misiniz?
  - Beğenmediğiniz yanları neler? Neden? Bu kısım sizce nasıl geliştirilebilir?
  - **Duyuru**
    - Sizce ne amaçla kullanılıyor?
    - Beğendiğiniz yanları neler? Kısaca nedenini belirtir misiniz?
    - Beğenmediğiniz yanları neler? Neden? Bu kısım sizce nasıl geliştirilebilir?
  - **Takvim**
    - Sizce ne amaçla kullanılıyor?
    - Beğendiğiniz yanları neler? Kısaca nedenini belirtir misiniz?
    - Beğenmediğiniz yanları neler? Neden? Bu kısım sizce nasıl geliştirilebilir?
2. Tasarlanan Uygulama Portalında yukarıdakilerin dışında diğer araçları kullanırken,
- a. Beğendiğiniz yanları nelerdir? Kısaca nedenlerini paylaşır mısınız?
  - a. Kullanım sırasında Hangi zorluklar ile karşılaştınız? Bu zorluklar sizce nasıl giderilebilir?
3. Tasarlanan Uygulama Portalında yukarıdaki araçlar dışında sizce ne gibi araçlar geliştirilebilir? Bu araçlar hangi ihtiyaç (lar)a çözüm olabilir?

## **UP- İşbirliğine Dayalı Çalışma (İşbirlikçi ve Yardımlaşma)**

4. Uygulama Portalı üzerinde meslektaşlarınız ile beraber yaptığınız grup çalışmalarını hakkında ne düşünüyorsunuz?
- a. Uygulama Portalı üzerinde meslektaşlarınızla birlikte çalışmanın size ne gibi katkıları oldu? Neden?

- b. Uygulama Portalı üzerinde meslektaşlarınızla birlikte çalışırken ne gibi zorluklar yaşadınız? Neden?
5. İşbirliğine dayalı yaptığınız çalışmanın başarılı olduğunu düşünüyor musunuz? Neden? Tek başıma yapsam daha iyi olurdu diyor musunuz? Neden?
6. İşbirliğine dayalı çalışmanız sırasında bir karar almanız gerektiğinde, nasıl karar verdiniz? Kararları grup olarak mı aldınız, yoksa gruptaki bir kişinin kararını diğerleri kabul mu etti? Grup kararlarını verme sürecinden biraz bahsedebilir misiniz?
7. İşbirlikçi çalışmamanız sırasında uygulama portalı üzerinde meslektaşlarınızla nasıl çalıştınız?
- a. Ortak doküman oluştururken nasıl iletişim kurdunuz? Açıklar mısınız? Forum, anlık mesajlaşma, sesli veya görüntülü iletişim kurabildiniz mi?
- b. Birlikte çalışmak için bir araya geldiniz mi (fiziksel ya da portal dışı herhangi bir çevrimiçi ortamda)? Neden ihtiyaç duydunuz? Sizce birlikte çalışmak bu portalda ne ile ve nasıl sağlanabilir?
- c. İşbirlikçi çalışma bilgi birikiminize nasıl katkı sağladı?
- d. Bilgi birikiminizin ve tecrübelerinizin Uygulama Portalında birlikte çalıştığınız kişilere katkı sağladığınızı düşünüyor musunuz? Nasıl?
- e. Bulduğunuz kaynakları veya eski çalışma örneklerini birbirinizle nasıl paylaştınız?

## Genel Sorular

8. Tasarlanan uygulama portalında gerçekleştirdiğiniz grup-İçi çalışmaların sahip olduğunuz bilgi birikiminize nasıl katkı sağladığınızı düşünüyorsunuz? Neden, açıklar mısınız?
9. Tasarlanan uygulama portalında gerçekleştirdiğiniz gruplar-arası çalışmaların sahip olduğunuz bilgi birikiminize nasıl katkı sağladığınızı düşünüyor? Neden, açıklar mısınız?

10. Portalı (grup-içi ve gruplar-arası) kullanmak sizde nasıl bir izlenim yarattı? Neden (pozitif, negatif, eğlenceli, yorucu, sıkıcı, kendimi geliştirici, etkileşim, vs.)?
11. Hazırlanan portalin diğer birimlerde de kullanılmasını önerir misiniz? Neden?
12. Diyelim ki bu portalı siz geliştiriyorsunuz bu durumda portalda ne gibi değişiklikler yapardınız/neler ekleyip neler çıkarırdınız? Nedenini açıkla mısınız?

## B. METU Human Subjects Ethics Committee Permission Letter

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ  
APPLIED ETHICS RESEARCH CENTER



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31 MAYIS 2016

Gönderilen: Doç.Dr. Ömer DELİALIOĞLU

Uluslararası İlişkiler Bölümü

Gönderen: Prof. Dr. Canan SÜMER

İnsan Araştırmaları Komisyonu Başkanı

İlgi: Etik Onayı

Sayın Doç.Dr. Ömer DELİALIOĞLU' nun danışmanlığını yaptığı doktora öğrencisi Cemil UZUN' un "K-12 Öğretmenlerine Yönelik Bulut Tabanlı Uygulama Topluluğu Destekleyici Platformunun Tasarım ve Geliştirilmesi" başlıklı araştırması İnsan Araştırmaları Komisyonu tarafından uygun görülerek gerekli onay 2016-EGT-103 protokol numarası ile 01.06.2016-01.09.2017 tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SUMER

İnsan Araştırmaları Etik Kurulu Başkanı

Prof. Dr. Meliha ALTUNIŞIK

İAEK Üyesi

Prof. Dr. Ayhan SOL

İAEK Üyesi

Prof. Dr. Mehmet UTKU

İAEK Üyesi

Prof. Dr. Ayhan Gürbüz DEMİR

İAEK Üyesi

Yrd. Doç. Dr. Pınar KAYGAN

İAEK Üyesi

Yrd. Doç. Dr. Emre SELÇUK

İAEK Üyesi

**BU BÖLÜM, İLGİLİ BÖLÜMLERİ TEMSİL EDEN İNSAN ARAŞTIRMALARI  
ETİK ALT KURULU TARAFINDAN DOLDURULACAKTIR.**

Protokol No: 2016-ETİK-103

**İAEK DEĞERLENDİRME SONUCU**

Sayın Hakem,

Aşağıda yer alan üç seçenektan birini işaretleyerek değerlendirmenizi tamamlayınız. Lütfen "Revizyon Gereklidir" ve "Ret" değerlendirmeleri için gerekli açıklamaları yapınız.

Değerlendirme Tarihi: 23.09.2016

Ad Soyad: Metin gizmek için tıklayın

<input checked="" type="checkbox"/> Herhangi bir değişikliğe gerek yoktur. Veri toplama/uygulama başlatılabilir.
<input type="checkbox"/> Revizyon gereklidir <ul style="list-style-type: none"> <li><input type="checkbox"/> Gönüllü Katılım Formu yoktur. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> <li><input type="checkbox"/> Gönüllü Katılım Formu eksiktir. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> <li><input type="checkbox"/> Katılım Sonrası Bilgilendirme Formu yoktur. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> <li><input type="checkbox"/> Katılım Sonrası Bilgilendirme Formu eksiktir. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> <li><input type="checkbox"/> Rahatsızlık kaynağı olabilecek sorular/maddeler ya da prosedürler içerilmektedir. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> <li><input type="checkbox"/> Diğer. Gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u></li> </ul>
<input type="checkbox"/> Ret Ret gerekçenizi ayrıntılı olarak açıklayınız: <u>Metin gizmek için tıklayın</u>



### **C. Informed Consent Form**

Bu çalışma doktora öğrencisi Cemil Uzun tarafından, Doç. Dr. Ömer Delialioğlu gözetiminde yapılmaktadır. Bu çalışmayı Orta Doğu Teknik Üniversitesi Fen Bilimleri Enstitüsü Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü'nde yapmakta olduğum doktora tezi çalışması kapsamında yapılmaktadır. Çalışmanın amacı, yetişkinler arasında uygulama topluluklarını destekleyen bulut bilişim tabanlı ortamın tasarım ve geliştirme sürecini araştırmaktır. Çalışmaya katılım tamamen gönüllü olacaktır. Herhangi bir rahatsız olma, sıkılma, isteksizlik vb. durumlarında katılımcı anında çalışmadan çekilebilecektir. Size yönetilen soruların doğru ya da yanlış cevabı yoktur. Görüşleriniz çalışmamız için çok değerlidir. Bu nedenle sizi ve düşüncelerinizi yansıtmaya için her bir soruya objektif olarak cevap vermeniz oldukça önemlidir. Görüşmeden elde edilen veriler sadece ilgili araştırmacılar tarafından kullanılacak olup çalışma sonunda imha edilecektir.

Çalışma süresince elde edilen bilgiler ve gözlemler sadece bilimsel yayınlarda kullanılacaktır. Herhangi bir kişisel bilgi paylaşılmayacaktır.

Görüşmeler, kişisel bilgiler, meslektaşlarınız arası paylaşım ve kurum iş yükünüz konuları kapsamakta olup görüşme tahmini 30 dakika sürmesi beklenmektedir. Hazırlanan platform kurum personelleri arasında uygulama topluluklarını desteklemek ve iş yükü süreçlerinizi azaltmayı amaçlamaktadır. Bu çalışmada vereceğiniz cevaplar size herhangi bir sorumluluk getirmeyecektir. Çalışmaya katılım gönüllülük esasına dayalı olup çalışmanın herhangi bir aşamasında onayınızı çekebilirsiniz. Bu çalışmaya katıldığınız/katılıma izin verdiğiniz için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için ODTÜ- Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü'nde olan aşağıdaki isimlerle iletişim kurabilirsiniz.

- Öğretim Üyesi, Doç. Dr. Ömer Delialioğlu Tel:  
Eposta:
- Doktora öğrencisi, Cemil Uzun Tel:  
Eposta:

***Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum.*** (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad

Tarih

İmza

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#### D. Design Principles with Themes and Categories

Theme	Design Principles (11)	Related Category
Workplace Flexibility	The Workplace in the online Community of Practice <i>should be easy to use platform.</i>	Easy to use platform
	The Workplace in the online Community of Practice <i>should be easy to access platform.</i>	Ease of access
	The Workplace in the online Community of Practice <i>should accelerate the process</i> of collaborative work.	Accelerating the process
	The Workplace in the online Community of Practice platform <i>should provide Welcome and Participation facilities</i> for collaborative work.	Welcome and participation
	The online Community of Practice platform <i>should be reliable and responsive for collaborative working process of all active participants.</i>	Easy to use platform
	The online Community of Practice platform <i>should be adjustable file size limit facilities</i> to promote best practice sharing and collaborative work.	Easy to use platform
	The online Community of Practice platform <i>should be visible who the relevant content is being shared with</i> to support collaborative work and cooperation.	Easy to use platform
	The online Community of Practice platform <i>should provide mobile accessible design</i> to enhance continuous learning and collaboration.	Easy to use platform
	The online Community of Practice platform <i>should provide more clear visibility for new content</i> to foster dynamic and interactive collaboration.	Easy to use platform
	The online Community of Practice platform <i>should provide familiar icons for document type</i> to improve participants' user experience.	Easy to use platform
	The online Community of Practice platform <i>should provide customization for menu or screen design</i> to create tailored and effective learning workspace	Easy to use platform

Theme	Design Principles (8)	Related Category
<b>Sharing</b>	The online Community of Practice platform <i>should provide opportunities to best practice sharing</i> to enhance business operation.	Best Practice Sharing
	The online Community of Practice platform <i>should provide opportunities to experience sharing</i> to contribute business operation and facilitate collaborative learning.	Experience Sharing
	The online Community of Practice platform <i>should provide opportunities to track how the document prepared and how the process works</i> to contribute business operation and promote collaborative learning in workplace.	Experience Sharing
	The online Community of Practice platform <i>should provide opportunities to give feedback</i> to each other's work to enhance the operation of business process and improve their future works.	Experience Sharing
	The online Community of Practice platform <i>should provide opportunities to share guide documents for business processes</i> via a shared library in a workgroup or among all members to follow the process.	Experience Sharing
	The online Community of Practice platform <i>should provide document sharing facilities</i> to contribute business operation and facilitate collaborative learning.	Document and Information Sharing
	The online Community of Practice platform <i>should provide know-how sharing facilities for performed business processes</i> to contribute to effective collaboration and operational efficiency.	Document and Information Sharing
	The online Community of Practice platform <i>should provide user manuals sharing facilities</i> to enhance active engagement in collaborative workplace.	Document and Information Sharing

Theme	Design Principles (11)	Related Category
Communication	The online Community of Practice platform <i>should provide online communication facilities</i> to enhance business process operations.	Online Communication
	The online Community of Practice platform <i>should provide instant messaging facilities as real-time communication</i> to accelerate business process operations and support collaborative learning.	Online communication
	The online Community of Practice platform <i>should provide online meeting and conference communication facilities</i> to support collaborative work process.	Online communication
	The online Community of Practice platform <i>should provide person accessibility status</i> to support quick and direct communication for asking or consultation via instant messaging.	Online Communication
	The online Community of Practice platform <i>should provide interaction facilities for engagement</i> to support business process operations.	Engagement for participation
	The online Community of Practice platform <i>should provide managed notification facilities for staying informed</i> to engage user participation in collaborative business process.	Engagement for participation
	The online Community of Practice platform <i>should provide invitations to working groups opportunities</i> to help participant keep interacted in collaborative business process.	Engagement for participation
	The online Community of Practice platform <i>should provide announcement facilities for general</i> to inform all participants about business operations.	Announcement
	The online Community of Practice platform <i>should provide targeted announcement opportunity</i> to facilitate effective communication and knowledge dissemination.	Announcement

	The online Community of Practice platform <i>should provide a balance online and physical meeting facilities</i> to support employee engagement in business operations.	Physical meeting
	The online Community of Practice platform <i>should provide document editing follow opportunities</i> to enhance active engagement in collaborative workplace.	Engagement for participation

Theme	Design Principles (10)	Related Category
Contribution of the Platform to Professional Development	The online Community of Practice platform <i>should provide online discussion opportunities for fostering a deeper understanding</i> to promote professional development.	Providing opportunities for discussion
	The online Community of Practice platform <i>should provide online context-based discussion opportunities</i> to enhance effective and more goal-oriented discussion among colleagues.	Providing opportunities for discussion
	The online Community of Practice platform <i>should provide opportunities to learn from other participants</i> to promote professional development and collaborative learning.	Learning from another
	The online Community of Practice platform <i>should provide opportunities for master apprentice relationship</i> to learn from more experienced colleague to contribute to the transfer know-how.	Learning from another
	The online Community of Practice platform <i>should provide group working opportunities</i> to promote professional development and collaborative learning.	Providing opportunities for working groups
	The online Community of Practice platform <i>should provide written communication facilities</i> to improve written expression ability and create corporate memory for professional development.	Providing opportunities for working groups
	The online Community of Practice platform <i>should provide secure shared repository facilities</i> to	Use of shared workspace

	<p>promote professional development and collaborative workspace.</p>	
	<p>The online Community of Practice platform <i>should provide version history for document and content</i> to enhance traceability of document and secure storage in collaborative workspace.</p>	<p>Use of shared workspace</p>
	<p>The online Community of Practice platform <i>should provide search components for searching and filtering information</i> to enhance accessibility of relevant information and allow exploration and the discovery of new subjects.</p>	<p>Providing search and filtering and information search tools</p>
	<p>The online Community of Practice platform <i>should provide search refinements and document preview</i> to accelerate operational process in working on common business domain.</p>	<p>Providing search and filtering and information search tools</p>

Theme	Design Principles (8)	Related Category
Contribution of the Platform to Collaborative Work & Coop. Skills	The online Community of Practice platform <i>should provide collaborative work facilities for group work</i> to improve collaborative learning and cooperation skills.	Providing opportunities for collaborative work
	The online Community of Practice platform <i>should provide synchronous co-authoring for collaborative document creation facility</i> to enhance professional development and collaborative learning.	Collaborative document creation
	The online Community of Practice platform <i>should provide team synchronization facilities for real time collaboration</i> to support collaborative work and cooperation.	Providing synchronous operation
	The online Community of Practice platform <i>should provide obtaining expert opinions facilities</i> to gain diverse perspectives and refine decision-making skills.	Improvement of management skills During the opinion exchange process
	The online Community of Practice platform <i>should provide facilities for collaborative decision-making process</i> to foster critical thinking and promote collaborative learning.	Supporting the decision-making process
	The online Community of Practice platform <i>should provide cooperation opportunities for helping other participant</i> to support continuous professional development.	Creating opportunities for cooperation
	The online Community of Practice platform <i>should provide workflow facilities for the approval and review process</i> to promote collaborative decision-making.	Improvement of management skills During the opinion exchange process
	The online Community of Practice platform <i>should provide access requests for enrollment</i> to enhance engagement in collaborative workplace.	Providing opportunities for collaborative work



## CURRICULUM VITAE

Surname, Name: Uzun, Cemil

### EDUCATION

Degree	Institution	Year of Graduation
BS	METU Computer Education and Instructional Technology	2009
High School	75. Yıl DMO Anadolu Technical High School, Ankara	2003

### FOREIGN LANGUAGES

Advanced English, Beginner German

### PUBLICATIONS

1. Uzun C., Demirel Uzun F., Medeni T. D. " Social Knowledge Co-Construction" Conceptual framework and Google Applications ", International Journal of Ebusiness and Egovernment Studies, 5(1), 68-77 (2013)
2. Uzun, C. Delialiođlu, Ö, "Opinions of Public Officers about Design and Development of Cloud-Based Community of Practice Platform for Professional Development", 12 th International Computer & Instructional Technologies Symposium, Türkiye (2018)
3. Demirel Uzun F., Uzun C., Çakır H., Çađiltay K., Karasu N., Kaplan G " Beden Hareketleriyle Kontrol Edilen Kinect Teknolojisinin Zihinsel Engelli Öđrenciler Açısından Eğitimde Kullanım Potansiyeli ", 7. Uluslararası Bilgisayar ve Öđretim Teknolojileri Sempozyumu (ICITS), Erzurum, Türkiye, (2013)
4. Uzun C., Uçak S. Ş., Demirel Uzun F., Bahçekapılı Özdemir T., Arslan O., Yıldırım İ. S. "Yükseköđretimde öđretim üyelerinin öđretim teknolojileri farkındalık düzeyi, kullanımı ve yaygınlaştırılması", 6th International Computer and Instructional Technologies Symposium, Elazığ, Türkiye (2012)

5. Uzun C., Demirel Uzun F., Özden M. Y. “Yeni bir teknoloji ve geleceğin web standardı: HTML5”, XVI. Türkiye’xxde İnternet Konferansı, Uşak,Türkiye, (2011)

6. Uzun, C., Kaya, K.Y., Kurşun, E., Çağıltay, K. “Critical points and dynamics of instructional design and Development process in the creation of learning material for teaching basic concepts tostudents with mental disabilities via multitouchscreen” 5 th International Computer & Instructional Technologies Symposium, Türkiye (2011)

**Hobbies:** Tennis, Computer Technologies, Movies, Digital games

### **Licenses & Certifications**

-MCSE: Productivity - Microsoft

-MCSA: Office 365 - Microsoft

-MCT: MCT Enrollment - Microsoft

-Project Management Professional (PMP)® - Project Management Institute (2176230)

-PSM I - Scrum.org (116084)

-RPA Developer – UiPath (2598020450385044)

-ITIL Foundation Level - PeopleCert