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AGILITY IN PUBLIC ORGANIZATIONS: THE ROLE OF TEMPORARY ROUTINES

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**AGILITY IN PUBLIC ORGANIZATIONS:
THE ROLE OF TEMPORARY ROUTINES**

by

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December 2023

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Organizations need to be able to react and respond to external events in an agile manner. Those that are unable to often fail. Public sector organizations face many barriers to being agile. Public organizations are often considered rigid, slow-moving, and hierarchical, contradicting the principles of agility. To be agile, organizations must generate new routines, which research and practice acknowledge is challenging. This research, an exploratory qualitative, multi-case analysis, answers the question, "How did a public organization provide an agile response to changes in the external environment, despite known barriers?" The analysis shows that a bureaucratic organization was able to provide an agile response to the COVID-19 pandemic through the generation of temporary routines, highlighting the importance of routine champions, and introduces the concept of knowledge cyclones. The research contributes to literature on bureaucratic organizations and organizational routines.

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AGILITY IN PUBLIC ORGANIZATIONS: THE ROLE OF TEMPORARY ROUTINES

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ABSTRACT

Organizations need to be able to react and respond to external events in an agile manner. Those that are unable to often fail. Public sector organizations face many barriers to being agile. Public organizations are often considered rigid, slow-moving, and hierarchical, contradicting the principles of agility. To be agile, organizations must generate new routines, which research and practice acknowledge is challenging. This research, an exploratory qualitative, multi-case analysis, answers the question, "How did a public organization provide an agile response to changes in the external environment, despite known barriers?" The analysis shows that a bureaucratic organization was able to provide an agile response to the COVID-19 pandemic through the generation of temporary routines, highlighting the importance of routine champions, and introduces the concept of knowledge cyclones. The research contributes to literature on bureaucratic organizations and organizational routines.

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LIST OF ACRONYMS AND ABBREVIATIONS

BPR	Business Process Reengineering
C2	command and control
COhVID-19	coronavirus disease 2019
DOD	Department of Defense
DON	Department of the Navy
JD	Juris Doctor
MS	Master of Science
NIWC Pacific	Naval Information Warfare Center Pacific
OMT	organization and management theory
P4P	Parents for Parents forum
Ph.D.	Doctor of Philosophy
TQM	Total Quality Management

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EXECUTIVE SUMMARY

Organizations need to be able to react and respond to external events in an agile manner in order to survive. Scholars have described the public sector as "command-and-control," "rigid," "risk-averse," and "hierarchical," terms which seemingly contradict the principles of agility (Mergel, 2016; Mergel et al., 2018; Walsh et al., 2002; Liang et al., 2018). Organizational agility has yet to be thoroughly explored by the leaders and researchers of public sector organizations (Walsh, 2002; Soe & Dreschler, 2018), and thus, an exploratory, qualitative case analysis is an appropriate design (Yin, 2010; Eisenhardt, 1989).

Although research from many disciplines concurs that organizations need to respond to external events by adapting (Berente, 2016; Cohendet & Simon, 2016), and that the generation of new routines drives agile adaptation (Crick & Chew, 2021; Orlikowski, 2021; Davies, 2018), researchers have only recently focused on how routines emerge and evolve (Rerup & Feldman, 2011; Zbaracki & Bergen, 2010). Further research is required to explain how a public organization provides an agile response to changes in the external environment despite known barriers. This dissertation contributes to the literature on bureaucratic organizations by focusing on a public organization and exploring how it responded to the external environment.

The coronavirus disease 2019 (COVID-19) pandemic provided an extreme example of the need for organizations to rapidly adapt to external change. As such, it created a research opportunity to better understand how organizations react in an agile manner to their external environment, and how these patterns of action and a semblance of normality emerge during a crisis. An examination of routine creation in response to the pandemic will contribute to the growing body of work on bureaucratic organizations, agility, and organizational routines.

The research setting was Naval Information Warfare Center Pacific (NIWC Pacific). This organization is a research and technology laboratory affiliated with the

Department of the Navy. It is a government bureaucracy and a public organization that responded with agility to the COVID-19 crisis.

This study made use of a qualitative, multiple-case research design, and utilized a process perspective to study routines, allowing for detailed observations. As Parmigiani and Howard-Grenville state, "Seeing routines in the wild, identifying and tracing them and their consequences, can be exciting to those from any theoretical tradition and can offer insights that transcend specialized language and assumptions" (Parmigiani & Howard-Grenville, 2011, p. 415). Three cases of routines emerged from the preliminary analysis: Teleworking, COVID Safety, and Collaboration and Rewards. The Telework routine encompasses processes facilitating virtual operations, such as teleconferencing, virtual meetings, and new employee onboarding. The COVID Safety routine focuses on measures like wearing masks and performing health checks to ensure a safe workplace during the pandemic. Lastly, the Collaboration and Recognition routine involves processes such the formation of a Parents for Parents (P4P) collaborative forum, and communication of weekly highlights, emphasizing teamwork and acknowledging achievements in virtual settings

The researcher utilized a qualitative comparative case analysis approach. This involved collecting interview, archival, and observational data. Three cycles of interviews were undertaken: an initial cycle of conversational interviews, followed by two cycles of semi-structured interviews. The research cycled iteratively through three stages of data collection and analysis, consistent with the inductive approach, and the research design evolved through the preliminary analysis (Maxwell, 1996).

The organization responded with agility by generating temporary routines from bureaucratic processes in response to changes in the external environment. The COVID-19 pandemic created drivers, such as policy changes and performance gaps, which led the organization to generate and implement new, temporary organizational routines. The organization created temporary routines from the building blocks of bureaucratic processes. Temporary routines transformed the organization, often changing people, processes, strategy, structure, and rewards, when they were accepted and diffused throughout the organization, allowing for an agile response. The organization continued its

mission despite a substantial environmental change that made previous routines no longer viable. Routine champions were critical to the generation and evolution of routines. A knowledge cyclone[1] facilitated this process.

This research makes three significant contributions to multiple areas within the scholarly domain. These insights enrich the existing literature on the bureaucracies, routines, and knowledge flows, and provide a foundation for further exploration and theoretical development. First, the research finds that bureaucratic organizations can achieve agility by creating temporary routines, and it provides a processual model. Additionally, this research provides valuable insights into effective strategies for overcoming agility barriers, contributing to a deeper understanding of how organizations can enhance their agility amidst challenges. Second, it introduces the concept of the knowledge cyclone, highlighting that bureaucratic organizations, typically considered slow in implementing, adopting, and accepting new solutions, can accelerate when the context and situation demands. Lastly, the study highlights the importance of routine champions in public organizations. For an organization to be agile, its leaders should be aware of and responsive to the thoughts and needs of those champions.

Future research endeavors are encouraged to adopt a more inclusive approach, encompassing a more comprehensive array of departments and more of the organization's routines to ensure a more holistic understanding of the organization's practices. Furthermore, delving into the characteristics of leaders and routine champions in public organizations could provide valuable insights into the mechanisms underpinning organizational agility.

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[1] I thank Dr. Mark Nissen, my dissertation co-supervisor, for the collaborative conversation about my research findings during which the term "knowledge cyclone" emerged.

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I. INTRODUCTION

The modern business environment changes quickly and unpredictably; for organizations to be successful, they must be agile and adaptive. Scholars have recently defined agility as an organization's "ability to sense and respond to opportunities and threats with ease, speed, and dexterity" (Nazir & Pinsonneault, 2012, p. 151), adapting to changes in the environment, such as shifts in customer needs, technological advancements, or market disruptions (Nazir & Pinsonneault, 2012; Overby et al., 2006; Vervest et al., 2004; Sambamurthy et al., 2003). Agility is not typically associated with bureaucratic organizations, and bureaucracy is typically associated with public organizations more than with private organizations.

Bureaucratic organizations are associated with a high level of administrative burden, involving formalized procedures, rigid policy, and standardization. They are typically stable and predictable, but this also leads to them being rigid and slow-moving (Mergel, Gong, & Bertot, 2018; Walsh, Bryson, & Lonti, 2002). Scholars have described the public sector as "command-and-control, "rigid," "risk-averse," and "hierarchical," which seemingly contradict the principles of agility (Mergel, 2016; Mergel et al., 2018; Walsh et al., 2002; Liang et al., 2018).

In order to become agile, companies have created organizational routines. Routines help organize an employee's day, maintain normal business operations, alleviate stress, and regulate work tasks into repetitive and repeatable patterns of action (Zollo & Winter, 2002; Parmigiani & Howard-Grenville, 2011). Although research from many disciplines concurs that organizations need to respond to external events by adapting (Berente, 2016; Cohendet & Simon, 2016) and that the generation of new routines drives agile adaptation (Crick & Chew, 2021; Orlikowski, 2021; Davies, 2018), researchers have only recently focused on how routines emerge and evolve (Rerup & Feldman, 2011; Zbaracki & Bergen, 2010). Further research is required to explain new routines emerge reactively, in response to external events (Jiang, Ritchie, Verreynne, 2019; Orlikowski, 2021), and how novel routines change and diffuse throughout organizations (Wenzel, 2021; Davies, 2018).

The coronavirus disease 2019 (COVID-19) pandemic provided an extreme example of the need for organizations to rapidly adapt to an external change. As such, it created a research opportunity to better understand how organizations react in an agile manner to their external environment, and how these patterns of action and a semblance of normality emerge during a crisis. An examination of routine creation in response to the pandemic will contribute to the growing body of work on bureaucratic organizations, agility, and organizational routines. Routine dynamics will help organizations adapt and resume normal operations during and after a crisis, particularly when external change demands new ways of doing things (Wenzel, 2021).

A. RESEARCH QUESTION

This qualitative research will take advantage of the opportunity presented by the COVID-19 crisis to answer a question: how did a public organization provide an agile response to changes in the external environment despite known barriers? This dissertation contributes to the literature on bureaucratic organizations by focusing on a public organization and exploring how it responded to the external environment. To answer this question, this inductive, multiple-case research study analyzed qualitative data using process and case analysis techniques (Langley, 1999; Yin, 2010).

The research explored three organizational routines that enabled an organization to respond in an agile manner to challenges caused by the external environment. The research involved analyzing documents and interviews using three sense-making strategies for analyzing cases and process data: matrices, coding, and visual mapping (Langley, 1999; Yin, 2010). The analysis resulted in a process theory that explains how one public organization became agile in response to changes in the external environment.

B. CHAPTER ORGANIZATION

The remainder of this dissertation is organized as follows. Chapter II consists of a further review of the literature on bureaucratic agility and organizational routines, and of related research that helped to frame and guide the analysis. Chapter III describes the research design and method. Chapter IV describes the preliminary analysis, leading to the cases. Chapter V presents a comparative case analysis. Chapter VI engages in theory

building and presents a preliminary model. Chapter VII provides the findings. Chapter VIII, the final chapter, examines the implications and limitations of this dissertation research, makes recommendations for practice, and discusses the contributions this research makes to the existing field of study.

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II. LITERATURE REVIEW

The literature on agility is vast and varied. This chapter provides a historical context for understanding what is known and what needs to be better understood, discussing how organizational agility has previously been explored and the areas that would benefit from further study. I then focus on agility in bureaucratic organizations in both the private and public sectors, discuss differences between public and private sector organizations, and identify and discuss barriers to agility in the public sector. The existing research on agility within public organizations concentrates on identifying the obstacles hindering the adoption of agile practices. Limited studies have analyzed strategies for overcoming these agility barriers in public organizations. Previous researchers have filled similar gaps, focusing on the implementation of an agile methodology (Taubenberger, 2020), but to fill the gap in the existing literature on agility as an organizational capability, researchers still need to determine how public sector organizations can provide an agile response to changes in the external environment despite known barriers. Research on routines and knowledge flows provides a possible lens.

A. ORGANIZATIONAL AGILITY

In the dynamic and rapidly evolving landscape of contemporary business, organizations must demonstrate agility to effectively respond to emerging challenges and capitalize on opportunities in order to achieve their goals. Many of our prominent theories of organizations seek to explain organizational performance in the face of change, including, at the extreme, the failure to survive. Organizational theories, such as competitive advantage (Porter, 1980), strategic conflict (Shapiro, 1989), punctuated evolution (Tushman & Romanelli, 1985), institutional theory (Meyer & Rowan, 1977), threat rigidity (Staw et al., 1981), the resource-based view of the firm (Barney, 1991), and, more recently, dynamic capabilities (Eisenhardt & Martin, 2000; Teece et al., 1997) recognize the need to adapt in the face of change. This prominence highlights long-held concern with organizational agility amongst organizational leaders.

Agility has many different definitions. Scholars have recently defined agility as an "organization's ability to sense and respond to opportunities and threats with ease, speed, and dexterity" (Nazir & Pinnsonneault, 2012, p. 151) to changes in the environment, such as shifts in customer needs, technological advancements, or market disruptions (Nazir & Pinsonneault, 2012; Overby et al., 2006; Vervest et al., 2004; Sambamurthy et al., 2003). Yusuf et al. (1999) proposed a definition of agility as "a successful exploration of competitive bases (speed, flexibility, innovation proactivity, quality, and profitability) through the integration of reconfigurable resources, and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast-changing market environment" (p. 37). Building on Yusuf's definition, Dove (1996) identified two fundamental pillars of agility, namely, response ability and knowledge management. He explains (1999, 2005a, 2005b) that for systems to be both proactive and reactive, they must be ready to respond to changes even if they are unexpected. To be agile, organizations must be flexible, adaptable, and innovative (Roberts & Grover, 2012; Hovorka & Larsen, 2006). Dunford et. al. (2013) further elaborate that agile organizations are flexible in their ability to respond to foreseeable changes in external environments, adaptable in their ability to adjust to new situations or circumstances, and innovative in their use of creative methods and novel, practical designs for products and services (Roberts & Grover, 2012; Hovorka & Larsen, 2006).

Agility research has evolved over the last fifty years. The concept of agility was derived from organizational systems theories in the 1950s (Parsons, 1979). Nagel and Dove (1991) "envisioned agile manufacturers to develop new products quickly, adapt to customer needs, flexibly change production systems and, thereby, increase speed to market" (Taubenberger, 2020, p. 6), propelling research and interest in agility by suggesting it as a strategic remedy to restore global competitiveness in the manufacturing sector. They collected inputs from over one hundred companies and the Department of Defense to propose a strategy that would allow U.S. industries to transition from mass production to agile manufacturing and regain competitiveness against Japan and Europe. They suggested that a common infrastructure was needed (no matter the industry) to tie production processes to other parts of the organization; the organization needed to act as a

single, united system. In response, Sharifi and Zhang (1999) created the first conceptual model for manufacturing agility. They developed a questionnaire survey and did interviews with approximately one thousand manufacturing companies. They explored the question of how different organizations should respond in different ways to the changing business environment. Their findings provided two conceptual factors for agility. First, organizations need to be able to respond quickly to anticipated or unexpected change in proper ways: through responsiveness, competency, flexibility, and speed, described as agility capabilities. Second, organizations need to be able to exploit changes and take advantage of them as opportunities. The model describes the source of change, which requires an organization to reconfigure its organizational setup, as an agility driver. To respond to these changes, organizations need agility capabilities that are supported by agility providers (technology, innovation, people, and organization) as tools to attain agility.

In the twenty-first century, organizational agility research emerged out of this early focus on manufacturing agility. Numerous case studies have measured the agilities of different organizations, thus reproducing and affirming Sharifi and Zhang's study. Many of these follow-on studies (Taubenberger, 2020; Lin et al., 2006; Tseng & Lin, 2011; Van Oosterhout et al., 2006; Wendler, 2013) effectively used maturity models to measure and communicate each organization's strengths and weaknesses relative to agility and suggest areas of improvement. Following the early research on manufacturing agility, research clustered into two focal areas, agile software development and organizational agility.

More recently, scholars of organizational agility have focused on agile characteristics and the agile mindset of the workforce. Alavi and Wahab (2013) argue that "[t]he characteristics of workers that can become agile are determined as learning and self-development; problem-solving ability" (p. 4196) and they also reference being comfortable with change, new ideas and new technologies. An agile mindset constitutes a pivotal enabler for achieving organizational agility: referencing Dyer and Shafer (2003), they claim than "an agility-oriented mindset and behavior of workers mediate the influence of organizational agility on the marketplace and improve organizational financial position" (p. 4196).

Organizational culture also emerges as a critical element in achieving agility. Pal and Lim (2005) conclude that "[o]rganizations have no choice but to reexamine their value creation and delivery models to recreate their vision and value propositions. Developing a breakthrough culture that can withstand change should support this. Careful consideration should be given to form teams with members having an appropriate mixture of innovative and adaptive skills that will vary from process to process" (p. 31). Wendler (2013) compares twenty-eight frameworks of agility and identifies five common clusters that help address the concept of agility — culture, workforce, technology, abilities, and customers. Taubenberger (2020) best summarizes the transformation toward agility: referencing Häusling and Kahl (2018), she states, "[A]gility demands a holistic approach integrating leadership, HR, organizational culture, strategy, structures, and processes" (p. 12).

B. AGILITY IN BUREAUCRATIC ORGANIZATIONS

Agility is not typically associated with bureaucratic organizations, while bureaucracy is typically associated with public organizations more so than with private organizations. A bureaucracy is a form of work organization. Previously, bureaucracy referred to "a body of non-elected government officials" (Merriam-Webster, n.d.), but more recently it has referred to the "administrative system used by corporations and public institutions." Max Weber defines it best: a bureaucracy is a "form of general organization characterized by the preponderance of rules and procedures that are applied impersonally by specialized agents" (Legal Information Institute, n.d.). Three of the five organization archetypes listed by Mintzberg (1989) are associated with bureaucracy: machine bureaucracy, professional bureaucracy, and divisional organizations. These organizations have a hierarchical structure in which power is delegated downward, and they have standardized work processes, skills, and outputs.

Bureaucratic organizations are associated with a high level of administrative burden, involving formalized procedures, rigid policy, and standardization. They are typically stable and predictable, but they can also be rigid and slow-moving (Mergel et al., 2018; Walsh, Bryson, & Lonti, 2002). In addition to a hierarchical structure, bureaucratic organizations are often characterized by a focus on rules and regulations and a culture of

risk aversion, making organizational agility difficult, and meaning that these organizations are unprepared to respond when changes arise (Dahmardeh & Pourshahabi, 2011; Liang et al., 2018).

Government organizations, which are one kind of bureaucratic organization, serve the public, which can delay the rate of change. Scott and Bardach (2008) argue that innovation within government organizations involves long developmental processes, distinguishable sub-processes, and feedback mechanisms. These organizations need to address the public as a stakeholder; therefore, any changes are subject to long review and implementation cycles to address a myriad of viewpoints. Public organizations offer services to the public, are focused on addressing public needs, and they contribute by finding practical and sustainable solutions. They are typically large and have access to resources that smaller, private organizations do not.

1. Public and Private Organizations

Scholars have previously detailed the differences between public and private organizations to include differences in environments, constraints, incentives, and cultures (Rainey, 1976, 1989) and, more recently, "environmental, transactional, and process distinctions that elaborate and highlight public-private differences" (Nutt, 1999, p. 210). Table 1 summarizes additional characteristics that differentiate public from private organizations.

Table 1. Public and Private Characteristics. Adapted from Nutt (1999) and Rainey (2003)

Public Organizations	Private Organizations
Equality	Efficiency
Justice	Maximize profits
Equal and fair distribution of services	Survival
Make no profit	Increase profits
Derive power from the law	Responsible to owner, board of directors, stakeholders
Funds provided by taxes	Flexible, pivot based on demands
Strategy, vision, objectives	

Public Organizations	Private Organizations
Answer to the president	
Apolitical	
Hierarchy- and rule-abiding	
Permanent	
Institutional	

Research shows that change in public organizations is often a formalized and lengthy process, and public organizations thus face extreme challenges to agility. Scholars typically agree that public organizations struggle more than private organizations to cope and adapt to high levels of change (Robertson & Seneviratne, 1995). More recently, scholars have asserted that change in public sector organizations tends to fail more often than change in private sector organizations (Checinksi et al., 2017). Additionally, penalties for failure, particularly in terms of media attention, can be greater for public organizations. (Behn, 1998, p. 15; Altshuler, 1997, pp. 39, 47). When public organizations make changes to address technological, financial, environmental, and organizational needs, they also need to protect and consider quality of life for citizens both at home and abroad (Quao et al., 2017). Consequently, the typical process cycle for change and implementation within a public organization is lengthy and follows these steps: identify a need, create or update a policy, and develop routines and processes. Figure 1 provides an example of the slow, and lengthy, change and development cycle in a public organization, as described by Lasswell (1957).

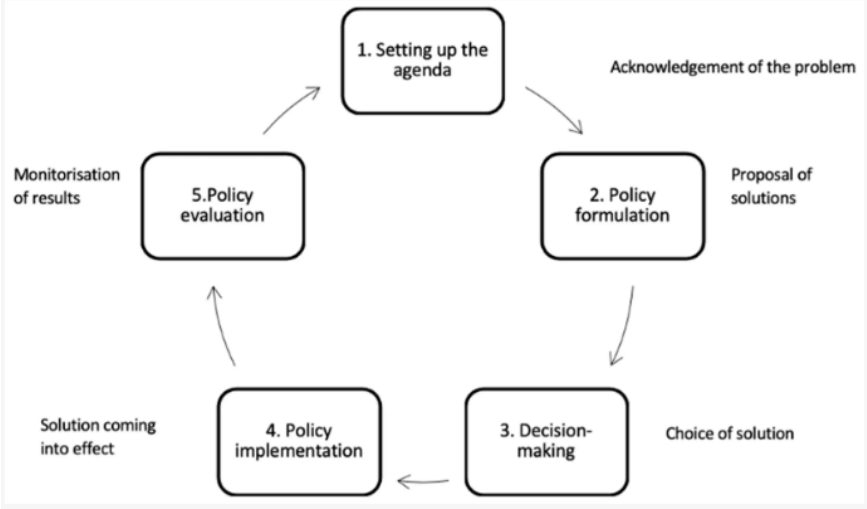

Figure 1. Public Policy Cycle. Source: Lasswell (1957).

Agility is hard for public organizations to achieve because of their hierarchical structure and rigorous series of approvals. Barriers to organizational agility in the public sector are often attributed to hierarchical structures and organizational environment. Scholars (Mergel, 2016; Mergel et al., 2018; Walsh et al., 2002; Liang et al., 2018) have described the public sector in terms such as "command-and-control," "rigid," "risk-averse," and "hierarchical," which seemingly contradict the principles of agility. Several scholars have identified additional characteristics that impede agility within public sector organizations. Shah and Stephens (2005) suggest that "budgeting, human resource practices, turnover of leadership, large-scale projects, regulations and laws, and organization 'stove pipes'" (p. 297) are barriers unique to government organizations. This is expanded upon by Nuottila et al. (2016), who reference formal documentation requirements as an agility barrier, explaining that "the optimal balance between formal documentation and informal communication [is] difficult" (p. 80).

The public sector has been observed (Shah & Stephens, 2005) to move more slowly, to prioritize training and development less, to exhibit higher levels of hierarchy and formality, to be more risk-averse, and to be more constrained by legal requirements compared to the private sector. Mergel et al. (2018) argue that "[b]ureaucracies in general are not designed for shared leadership or open collaboration approaches across ad hoc teams" (p. 295), which suggests that bureaucratic organizations are not well structured for

agility. The organizational structure, rigidity, and formal documentation associated with public organizations are cited as barriers to agility (Liang, 2018; Shah & Stephens, 2005; Nuottila, 2016, Burton & Nissen, 2011). They impede an organization's ability to respond quickly and effectively to changes in the external environment, that is, to be agile.

Analysts studying excessive regulation and documentation (red tape) in government have found that personnel and purchasing rules tend to be highly formalized and restrictive in government settings (Bozeman & Feeney, 2011). In terms of management approaches, lean management, which evolved from total quality management (TQM), has been applied to improve agility. However, TQM diminished in the federal government after the emergence of the "reinventing government" movement in the 1990s (Hackman, 1995). The "reinventing government" movement was a set of proposed reforms or solutions central to changing administrative aspects of government and addressing bureaucratic problems (Frederickson, 1996). While TQM was concerned with increasing productivity by focusing on incremental change and gradual improvements, Business Process Reengineering (BPR) sought drastic improvements with a focus on radical process redesign of business processes to achieve improvements in operations, efficiency, and performance (Hammer & Champy, 2009; Davenport & Prusak, 1998).

2. Agility Barriers

The literature highlights various barriers to agility in the public sector, including organizational structures, legal constraints, hierarchical systems, and formalized rules. Understanding the distinct characteristics and challenges of agility in the public sector can guide future research and inform strategies to promote agility in this context. Albert and Hayes (2006) focus on agility in public organizations, emphasizing the need for agile command and control (C2), arguing that "the mission challenges of the 21st century place a premium on being agile" (p. 3). Alberts and Nissen (2009) further extend this line of argument by developing a theoretical model that maps approaches to C2 on the archetypes discussed in organization and management theory (OMT), acknowledging that operationalizing agility is one of five key challenges for C2 researchers in the public sector. Numerous authors (Dahmardeh & Pourshahabi, 2011; Liang et al., 2018; Shah & Stephens,

2005) underline organizational agility's relevance for public organizations and advocate for its applicability and for further research.

Studies on organizational agility in the public sector are limited. Much of the existing literature (Ribeiro & Domingues, 2018; Nuottila et al., 2016) focuses on the challenges of implementing an agile methodology). Ribeiro and Domingues (2018) focus on the difficulties public sector organizations face when implementing agile software development. They discuss their implementation of the Scrum methodology in a Portuguese public company and test its acceptance within the organization. Nuottila et al. (2016) identify and categorize the "challenges that may hinder efficient adoption and use of agile methods in public IT projects that include private software vendors." They conducted a case study of a government organization, identifying challenges "related to a) documentation, b) personnel education, experience and commitment, c) stakeholder communication and involvement, d) roles in an agile set-up, e) location of the agile teams, f) legislation, and g) complexity of SW architecture and system integration" (p. 82). These authors focus on enumerating the barriers to agility and identifying the root causes of a lack of agility.

Recent studies (Liang, 2018; Walsh, 2002; Soe & Drechsler, 2018) on organizational agility encourage further research, request empirical examples, and suggest that collaboration and the characteristics of an organization can be leveraged to overcome the many challenges to agility. Liang et al.'s case study of the Finnish public sector (2018) utilizes survey data to propose "that action should be taken in four areas—commitment, competencies, communications, and climate—involving actors at different levels both internally and externally" (p. 1), suggesting that internal and external collaboration can promote greater agility in public organizations. Walsh et al. (2002) conducted a comparative case study of HR systems in New Zealand's public and private sector organizations. They suggest that there is a "greater degree of formalization of the HR systems in the public sector organizations and a greater emphasis upon control" (p. 177). They find that "organizational agility acquires a different character" in the public sector compared to the private sector (p. 190), drawing greater attention to the differences in organizational characteristics between the two sectors. Soe and Drechsler (2018)

demonstrate the possibility of agility in government organizations. They suggest that collaboration between the Finnish and Estonian governments can provide agile and adaptive solutions to their joint transportation service, by focusing on digitalization and experimentation trials. While there are numerous studies that focus on impediments to agile transformation in public organizations, only a very few explore how public organizations can provide an agile response and overcome agility barriers.

C. ROUTINES IN PUBLIC ORGANIZATIONS

The evolution of public organizations hinges upon their ability to develop new organizational routines (Behn, 1987), which are ingrained patterns of action involving people, technology, and practices, executed by multiple actors and technology (Feldman & Pentland, 2003). Teece and Pisano (1994), Hodgson (1998), Feldman (2000), and Zollo and Winter (2002) recognize the significance of routines as vehicles of organizational knowledge. Temporal aspects play a pivotal role in agile crisis responses, where timing and performance influence routine effectiveness (Turner & Rindova, 2018). By delving into the interplay of routines, with a focus on knowledge and temporality, this research seeks to shed light on an uncharted territory that holds the potential to shape organizational responsiveness and agility.

Public organizations can change but to do so requires them to develop new organizational routines (Behn, 1987). Organizational routines are a fundamental aspect of bureaucratic organizations, as they are the stable and predictable patterns of activity that enable these organizations to function effectively, and yet they may also help an organization react to externally driven changes. Routines can provide stability, predictability, and efficiency (Feldman, 2003), which can be important for maintaining consistency and quality in operations. When new challenges and opportunities arise, organizations need to reconfigure and develop new routines. Organizations that are unable to adapt to external change by generating new routines tend to fail (Amankwah-Amoah & Syllias, 2020; Cook & Barrett, 2020; Mellahi & Wilkinson, 2004; Silverman et al., 1997).

An environment of stability that nonetheless allows for change is required for the development of new routines. Scholars have established that routines can support agility

by providing stability, predictability, and a shared understanding of how work is done, while also allowing for the development and establishment of reconfigured and new routines. Zollo and Winter (2002) examine how deliberate learning can lead to the development of dynamic capabilities, which organizations need to adapt to changing environments. They argue that organizational routines provide a stable framework for experimentation and knowledge creation.

Routines play a role in enabling both exploration and exploitation, as outlined by March (1991). March argues that "[e]xploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution," and suggests that "maintaining an appropriate balance between exploration and exploitation is a primary factor in system [or organizational] survival and prosperity" (p. 71). Exploring the development of new routines—while utilizing or reconfiguring old routines—is key to adapting to changing environments. The goal is to seize opportunities, whether they are existing or emerging, as highlighted by Holmqvist (2004), March (1991), and Teece (2006). Järvinen and Tuominen (2012) study how organizational routines balance exploitation and exploration in Finnish software firms. They find that organizations that can create a balance between these two types of routines are better able to adapt to changing environments and innovate. O'Reilly and Tushman (2007) refer to organizations that can take advantage of new opportunities in addition to exploiting their existing capabilities as "ambidextrous" organizations. They propose senior leaders achieve this ambidexterity through the design and management of their processes. Leaders of public organizations often speak of being prepared to respond to emergent changes; however, these events require rapid responses, and therefore rapid routine development, which is not typically associated with public organizations.

Adopting a practice perspective, researchers explore how routines are continually reconfigured as they are enacted in different contexts (Bertels, 2016; Berente, 2016; D'Adderio, 2014; Feldman & Orlikowski, 2011). The practice perspective research supports that routines are necessary resources that enable organizations to succeed; it notes that routines can become rigid and embedded, thus diminishing an organization's ability to

change in response to external events (Orlikowski, 2021; Berente, 2016). However, much of the literature on routines does not consider the phenomenon of emergent change (Orlikowski, 2021, Leonardi & Barley, 2010).

Most studies investigating how new routines emerge focus on how organizations strategically reconfigure existing routines. To remain viable during emergent change, organizations must learn from information (Desai, 2011), then generate and enact new routines (Jiang et al., 2019; Berente, 2016, Cohedent & Simon, 2016). Organizations that are unable to adapt to external change by generating new routines tend to fail (Amankwah-Amoah & Syllias, 2020; Cook & Barrett, 2020; Mellahi & Wilkinson, 2004; Silverman et al., 1997). Emergent changes, initiated in response to environmental, technological, and organizational drivers, do not include prescribed, strategic, or intentional change. The bureaucratic organization's ultimate goal is to resume normal operations and provide the stable environment that the mission demands.

D. TEMPORALITY IN AN AGILE RESPONSE

An agile response to a crisis includes the element of time, that is, a timely response to the presented situation. Time in organizational routine creation and diffusion is a recently studied phenomenon and is very relevant to the responsiveness and survival of an organization when emergent change is required. Time is important to study as it is central to strategy, performance, and survival (D'Aveni et al., 2010; Eisenhardt & Martin, 2000). Previously, scholars have studied time from a strategic perspective, namely, the rapidity of change (Eisenhardt, 1989; Huy, 2001), changes over time (Albert, 1995; Lawrence et al., 2001), and the order of events (Ancona & Chong, 1996; Huy, 2001; Huy & Mintzberg, 2003). When considering temporality within the literature on routines, both clock and event time help to better isolate when changes occurred and when actions took place. Kaplan and Orlikowski (20130 discuss time orientation and suggest organizational actors need "different understandings of what has happened in the past, what is at stake in the present, and what might emerge in the future" (p. 965). Time considerations have also included time lag, clock time versus the timing of an event (Ancona et al., 2001a; Bergh, 1993; Bergh & Fairbank, 2002; Van de Ven & Huber, 1990).

Time is also very relevant to less strategic and more reactive situations. Crisis is a severe type of emergent change, fraught with global repercussions, and the development of new routines helps bureaucratic organizations respond to these situations. Researchers (Healey & Hodgkinson, 2014; Simard & LaBerge, 2018, 2013; Zott et al., 2011; Christensen et al., 2006; Birkinshaw & Gibson, 2004) have argued that crisis generates organizational innovation. They have claimed that crises can create opportunities for organizations to innovate and develop new practices, processes, and business models. They highlight the importance of being flexible and adaptable during times of crisis and suggest that organizations can use crises as a catalyst for change and growth. More recently, scholars have studied how crises create opportunities for new organizational routines in their adaptation to new circumstances (Duchek, 2017; Foss, 2020; Wenzel, 2021), and which new routines are better suited to the new realities (Sciascia & Alberti, 2011). These researchers find that organizations successfully innovate during times of crisis because they typically use preparatory, adaptive, and inclusive strategies in times of upheaval. They offer examples of organizations that successfully innovated during times of crisis, providing insights into the strategies and approaches that these organizations used to overcome their challenges and drive innovation. Duchek (2017) suggests three successive stages (anticipation, coping, and adaptation) for organizational resilience in response to a crisis. Foss (2020) discusses organizational design and management processes as important strategic resources. Wenzel (2021) considers "strategic responses to crises based on varying time horizons, directing our attention to temporal dynamics in the process of responding to a crisis" (p. 14). Expanding on prior research on windows of opportunity (Huy, 2001; Tyre & Orlikowski, 1994), they suggest that during specific timeframes, a particular response may outperform others, and the timing for implementing certain strategic responses to a crisis could be either premature or belated. Nevertheless, a significant portion of recent literature on organizational crises is either theoretical or concentrated on private entities rather than public organizations.

Turner and Rindova (2018) explore the impact of timing in repeated action and its replication on the efficiency of routine performance in garbage collection. They also argue and demonstrate that the diversity in both the performative and ostensive aspects of the

routine plays a role in determining the intensity of timing-related patterns and their consequences. They suggest that repetition of a routine speeds up its performance, that highlighting that the timing and performance of a routine aid with agility. Cacciatori and Prencipe (2021) begin the conversation regarding the ad-hoc and temporary nature of routines, acknowledging that "characteristics of projects are shared by routines, which have a defined objective as well as a clear beginning and end" (p. 16). These temporality-related characteristics provide an opportunity for advancing the scholarship on routines.

E. AGILITY DRAWS ON KNOWLEDGE

Routines are essential repositories of knowledge within organizations, and drawing on that knowledge can help an organization recover from a crisis. Nelson and Winter (1982) emphasize the importance of routines in storing an organization's operational knowledge (p. 99). Winter (1995) further highlights routines and supporting skill packages as key repositories of knowledge within organizations (p. 152). Dosi et al. (1992) assert that routines represent successful solutions to specific problems (pp. 191–192). Other scholars, such as Levitt and March (1988), Miner (1990), Teece and Pisano (1994), Hodgson (1998), Feldman (2000), and Zollo and Winter (2002), also recognize the significance of routines as carriers of organizational knowledge.

Routines are seen as "a behavioral option that comes to mind when the decision-maker is confronted with a certain decisions *[sic]* problem" (Betsch et al., 1998, p. 28), constituting a repertoire of responses. Winter (1987b, 1994), Teece et al. (1994), Hodgson (1998), and Lazaric (2000) argue that routines embody tacit knowledge. Nonaka et al. (2000) describe explicit knowledge as being "expressed as in formal and systematic language and shared in the form of data, scientific formulae," and tacit knowledge as "highly personal [:] subjective insights, intuitions and hunches" (p. 5). Cohen and Bacdayan (1994) and Szulanski and Winter (2002) further that argument by providing an empirical demonstration that routines encompass tacit knowledge, and that there is value in documenting tacit knowledge that can be shared throughout the organization. Routines enable initial guesses in decision-making, allowing for spontaneous reactions even in constrained situations (Betsch et al., 1998). Empirical research supports the view that

routines contain knowledge, including tacit knowledge, and emphasizes the importance of practical knowledge represented by routines (Nissen, 2014). Agility can therefore be aided by a better understanding of knowledge flow through an organization. The extant scholarship (Teece & Pisano, 1994; Inkpen & Crossan, 1995; Cohen et al., 1996; Dosi, as cited in Cohen et al., 1996, p. 660; Madhok, 1997; Teece et al., 1997; Morosini et al., 1998). argues that both routines and knowledge are deeply ingrained in an organization and are very contextual, making them hard to replicate in other organizations. If routines are removed from their original context, much of their meaning (Elam, 1993) and effectiveness may diminish during the transfer (Grant, 1991). Challenges in transferability arise as much may be lost in translation (Lippman & Rumelt 1982; Nelson 1994). Compatibility issues might emerge in the new context (Madhok, 1997), and transferring tacit knowledge could be problematic, rendering some routine elements difficult to replicate (Szulanski & Winter, 2002; Hill et al., 1990; Grant, 1991; Langlois & Robertson, 1995; Nonaka & Takeuchi, 1995). The ability to transfer knowledge and routines increases when conducted within the same organization (Hodgson, 1988; Hill et al., 1990; Kogut & Zander, 1992; Kogut & Zander, 1993). Routines act as crucial repositories of knowledge within organizations, particularly concerning tacit knowledge, but a better understanding of how this knowledge is utilized in response to emergent change is needed. Several questions surrounding the role of routines in various aspects of knowledge management and organizational dynamics remain unanswered.

F. CONCLUSIONS

In conclusion, the research shows that agility plays a crucial role in organizations being able to respond to their external environment. The existing research on public organizations focuses on the barriers that prevent agile transformation and few studies have explored how public organizations can overcome agility barriers. Research on organizational routines suggests that a focus on routines, knowledge flow, and temporality may help answer the question of how public sector organizations can become agile in response to changes in the external environment despite known barriers.

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III. RESEARCH DESIGN AND METHODS

This chapter provides an overview of the research design and methods employed to investigate the agile response of an organization to external challenges, focusing on the Naval Information Warfare Center Pacific (NIWC Pacific) during the COVID-19 crisis. This chapter describes the research design and methods used to investigate the process and is organized to first present the research setting and focal cases, then provides an overview of the data collection process, closing with a description of the three stages of data analysis. Data analysis follows three distinct phases: preliminary analysis, comparative analysis, and theory building. The research made use of a qualitative, multiple-case research design, and utilized a process perspective to study routines, allowing for a detailed study of routines. Organizational agility has yet to be thoroughly explored by leaders and researchers of public sector organizations (Walsh, 2002; Soe & Dreschler, 2018), and thus, an exploratory, qualitative case analysis is an appropriate design (Yin, 2010; Eisenhardt, 1989). Consistent with a qualitative case analysis approach, the researcher collected and analyzed interview, archival, and observational data, which allowed for comparison of multiple sources. The research cycled iteratively through data collection and analysis, consistent with the inductive approach, and the research design evolved through the preliminary analysis (Maxwell, 1996).

The research progressed through three stages of analysis in a generally linear fashion. The initial stage of preliminary analysis focused on documented NIWC Pacific processes, resulting in the identification of three organizational routines. The second stage was a comparative analysis of the three organizational routines. It included identifying phases of the routines and generating and comparing phases and timelines. The third, final stage of analysis focused on theory building, resulting in a conceptual process model and theory describing how temporary routines are created and support bureaucratic organizations with an agile response to change. Figure 2 provides an overview of the data collection, analysis, and theory-building process.

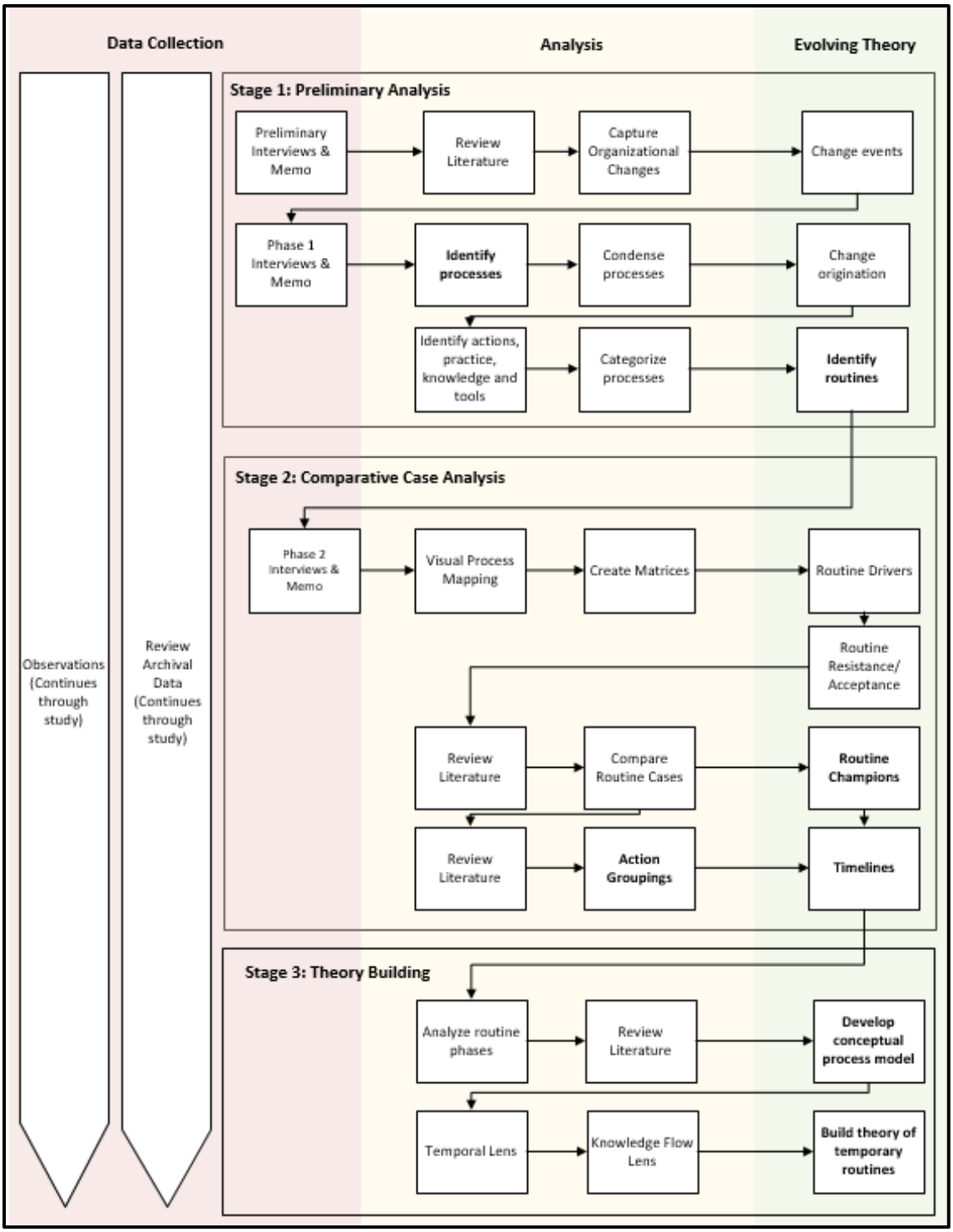

Figure 2. Data Collection, Analysis, and Theory Building Process

The Naval Postgraduate School's Institutional Review Board reviewed and approved the research design.

A. RESEARCH SETTING

NIWC Pacific was the setting for this research. This organization is a research and technology laboratory affiliated with the U.S. Department of the Navy. It is a government bureaucracy that responded to the COVID-19 crisis with agility. NIWC Pacific plays a critical role "conduct [ing] research, development, prototyping, engineering, test and evaluation, installation, and sustainment of integrated information warfare capabilities and services across all warfighting domains with emphasis on Basic and Applied Research and Tactical Systems Afloat and Ashore in order to drive innovation and warfighter information advantage" (NIWC Pacific, "Mission," n.d.). NIWC Pacific provides deployment and sustainment of command, control, communications, computers, intelligence, surveillance, and reconnaissance systems; cyber systems; and space systems that support warfighters around the world. NIWC Pacific has a presence in California, Philadelphia, Hawaii, Guam, and Japan.

1. NIWC Pacific Characteristics

NIWC Pacific is a bureaucratic organization. Bureaucratic organizations have a hierarchical structure supported by a trained workforce. Their need to adhere to rigid policies, rules, and regulations often requires formalized procedures and standardization. In addition, public organizations must satisfy the public and are often risk averse. They focus on the mission rather than the need to make profits like private organizations (Mergel et al., 2018; Walsh et al., 2002).

Government organizations are typically considered "machine bureaucracies" (Mintzberg, 1989). However, NIWC Pacific more resembles a professional bureaucratic organization. Machine bureaucracies typically have a "tall" hierarchical structure or chain of command, with many layers of supervision and management, all reporting to a leader. In contrast, professional bureaucracies have a flatter hierarchical structure and a highly educated and skilled workforce that can manage their tasking with little managerial oversight. NIWC Pacific has layers of management but is relatively flat in structure; project

employees, scientists, and engineers typically work for a first-line supervisor, overseen by a Division Head, who is overseen by a Department Head, who is directed by a Commanding Officer in conjunction with the Executive Director. There are twelve departments, five of which are technical, delivering products specialized to a specific function, such as Command and Control and Enterprise Engineering, Communications and Networks, and Intelligence, Surveillance, and Reconnaissance. One department, Fleet Installation Engineering and Logistics, focuses on the installation of our products and services on ships. The Indo-Pacific department focuses on Command and Control and Enterprise Engineering, Communications and Networks, and Intelligence, Surveillance, and Reconnaissance in the Indo-Pacific area of responsibility. Another department focuses on research in the science and technology and cybersecurity arena, and the others provide lead engineer and program management expertise. The Finance, Legal, Contracts, and Corporate Operations departments support the other departments.

Most of the workforce are highly educated professionals, many of whom are scientists and engineers, aligning with a professional bureaucracy. According to internal NIWC Pacific documentation released to the workforce, in 2023, the workforce comprises about 5,000 highly educated, diverse professionals (bearers of approximately 200 Ph.D. and JD degrees, and over 1,500 MS degrees) in core domains focused on science and technology, engineering, acquisition, and program/project management. The focus of the organization is on the specialty and education of its employees.

In a machine bureaucracy, the tasking is very standardized and repetitive, similar to that of a car manufacturing plant or a fast food chain. In a professional bureaucracy, tasking is less standardized. Rules and regulations from higher-echelon commands guide how business is conducted, so some of the administrative tasking consists of standardized tasking. However, the majority of the work is self-directed. The organization consists of a large core team of knowledgeable scientists and engineers. They are self-sufficient and need little direction. This organization is not focused on profit like many private organizations but on its mission to support the warfighter. It is not tasked with increasing profits; instead, it aims to balance its budget.

2. NIWC Pacific during COVID-19

During the COVID-19 pandemic crisis, there was tremendous uncertainty, and the organization's employees were afraid for their safety and health and uncertain how to adapt. Eighty percent of the workforce transitioned to working from home to prevent being infected by the virus and to ensure their own safety.

There were no rules or guidance for this type of situation, and the leaders became more critical as they needed to regulate how work was organized in this new and precarious situation. For these reasons, NIWC Pacific offered an attractive empirical setting to study agility in a public sector organization.

B. DATA COLLECTION AND SOURCES

This research involved collecting and analyzing three types of data: interviews, archival data, and observations. The researcher collected data by conducting in-depth interviews. The interviews generated narratives of the topic studied (see Yin, 2014, for example). Coordination with critical informants began in early 2021 and continued throughout the research. The researcher began analyzing the data during data collection and continued to move back and forth between data collection and analysis throughout the research.

1. Interviews

The researcher focused on conducting interviews in three cycles, which occurred in conjunction with data analysis, such that analysis informed subsequent interviews. The first cycle of interviewing was completed in September 2021. The next cycle of interviewing was completed in September 2022, and the final cycle of interviewing was completed in December 2022. Three preliminary conversational interviews were completed in the first interview cycle, followed by eight semi-structured interviews in the second interview cycle, followed by an additional ten semi-structured interviews completed in the third interview cycle. Table 2 provides an overview of the interviews completed during each cycle.

Table 2. Interview Overview

Data Source	Type	# Completed	Hours	Pages	Role/# of Participants
Interview Cycle 1	Preliminary, conversational	3	2.75 Hours	32	Individual contributor: 1 Division head: 1 Operations manager: 1
Interview Cycle 2	Semi-structured	8	7.5 Hours	94	Individual contributors: 4 Operations managers: 2 Managers: 2
Interview Cycle 3	Semi-structured	10	11.5 Hours	138	Individual contributor: 4 Managers: 2 Operations managers: 2 Senior leaders: 2
Post-Interview Memo		21		25	

To select relevant interview participants, the researcher sent an email requesting participation across the organization and then selected individuals from each department to ensure that all perspectives were captured. Individuals were interviewed from all levels of the organization, from employees to branch heads, division heads, and department heads. Interviewees included scientists, engineers, operations managers, and business managers to ensure a diverse selection of practitioners were included.

According to Basch et al. (2010), face-to-face interviews are recommended because they help better study the interviewee's responses, allowing the interviewer to better socially engage and interpret body language and behaviors. However, due to the COVID-19 pandemic, the majority of interviews could not be conducted in person. When in-person meetings were not possible, the researcher utilized Microsoft Teams videoconferencing as a medium of communication as this still allowed for visual cues, tone of voice, and reaction to questions.

The researcher conducted a total of twenty-one interviews with employees, operations managers, supervisors, and senior leaders. The interviews lasted between one and one and a half hours and were voice-recorded after interviewees had provided their consent, allowing the researcher to concentrate on the conversation and the reactions of the interview participants (Taubenberger, 2020; Yin, 2010; Langley, 1999). All interviews

were recorded and transcribed with the help of a transcription service to facilitate review and analysis.

Research memos are detailed notes that the researcher takes throughout data collection and analysis to capture thoughts, examine, and reflect on one's engagement, and develop ideas (Taubenberger, 2020; Yin, 2010; Langley, 1999). After each interview, memos were drafted to note which topics interviewees found particularly relevant, which changes were most significant, and how they related to findings from other interviewees. The memos were reviewed in preparation for the subsequent phase of interviews. The memos were also coded and utilized during the data analysis process.

2. Archival Data

The researcher reviewed many documents, including all policies that influenced changes in the organization during this time frame so that organizational behavior and the performance of work could continue. Quick reference guides and processes that were created or updated, emails, and online communications with employees were also collected and reviewed. Table 3 details the archival data that was reviewed.

Table 3. Data Sources (Archival Data)

Data Source	# Completed	Pages
Process documents	16	24
Quick reference guides	22	63
Policy documents	24	372
Emails	207	207
Hub services database searches	35	
Hub (intranet site) searches	132	132

3. Observation

The researcher observed the changing processes and practices from March 2020 through March 2023. Participants involved in the routines were observed completing online processes and participating in the programs. The researcher also received emails, communications, and demonstrations from people completing the processes and

participating in the routines. Feedback and online forums were reviewed throughout this period to capture the changes taking place and the process through which these changes were created, implemented, and disseminated. Observations were documented and added to existing memos.

C. DATA ANALYSIS APPROACH

The stage one preliminary analysis focused on documented organizational processes that were drastically changed as a result of the COVID-19 pandemic. The major changes captured through the interviews and memos were organized. Process maps were developed for how the changes evolved. Details of the knowledge, actions, and events that took place were documented. The processes were categorized, sorted, and condensed. This resulted in the identification of three organizational routines that became the focal cases of the subsequent stage of analysis: Telework, COVID Safety, and Collaboration and Recognition. Organizational routines are repetitive and recognizable patterns of action that require resources (people, technology, and practices), are enacted by multiple actors (Feldman & Pentland, 2003), and carry organizational knowledge (Teece & Pisano, 1994; Hodgson, 1998; Feldman, 2000; Zollo & Winter, 2002). Telework allowed the organization to continue operations by mandating employees to work in a maximum telework environment. COVID Safety ensured the health and safety of the employees, and the Collaboration and Recognition routine allowed employees to collaborate, communicate, and feel engaged and appreciated. The stage one preliminary analysis is presented in Chapter IV. Stage two—comparative analysis—detailed performative and ostensive aspects of the three routines, in addition to capturing artifacts associated with each of the routines. Process maps were developed for each of the routines. Coding and categorization, in addition to the development of matrices, allowed for comparison of the data. This resulted in phases being identified for the creation, development, and implementation of routines, and timelines were recognized as a focal area. The stage two comparative analysis is presented in Chapter V.

In the third and final theory-building stage, routine phases and timelines were further analyzed, and the literature was further reviewed, resulting in a conceptual process

model. The researcher revisited the existing literature through the lens of the conceptual process model, temporality, and knowledge flows. The researcher iterated between the analysis, the literature, and the developing theory to develop a process theory that describes how an organization created temporary routines and their role in organizational agility. Stage three, theory building, is presented in Chapter VI.

D. CONCLUSIONS

The researcher collected and analyzed interview, observational, and archival data. These steps were conducted in iterative cycles, and the research design evolved throughout the research. The stage one preliminary analysis, focused on documented organizational processes and resulted in three focal cases of routines. The stage two comparative case analysis focused on the three cases of routines: Telework, COVID Safety, and Collaboration and Recognition. The final theory-building stage involved the development of an initial conceptual model, which served as a lens through which to revisit the existing literature and develop a final process theory.

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IV. STAGE ONE: PRELIMINARY ANALYSIS AND FINDINGS

This chapter provides details of the first stage of analysis. In the preliminary analysis, the researcher systematically examined forty-five documented organizational processes, condensing and categorizing the data, resulting in the emergence of three distinct routines: Telework, COVID Safety, and Collaboration and Recognition. The researcher describes how the data was collected. Interview data was collected over two cycles of interviews; conversational interviews, followed by semi-structured interviews. Additional data was collected from observations and archival data. Actions, knowledge, and tools were documented for each process, and then visual process maps were created to allow for comparison. The data was further analyzed, condensed, and categorized, and details captured in matrices. This stage of the analysis resulted in the identification of three routines. An overview of the preliminary analysis is depicted in Figure 3.

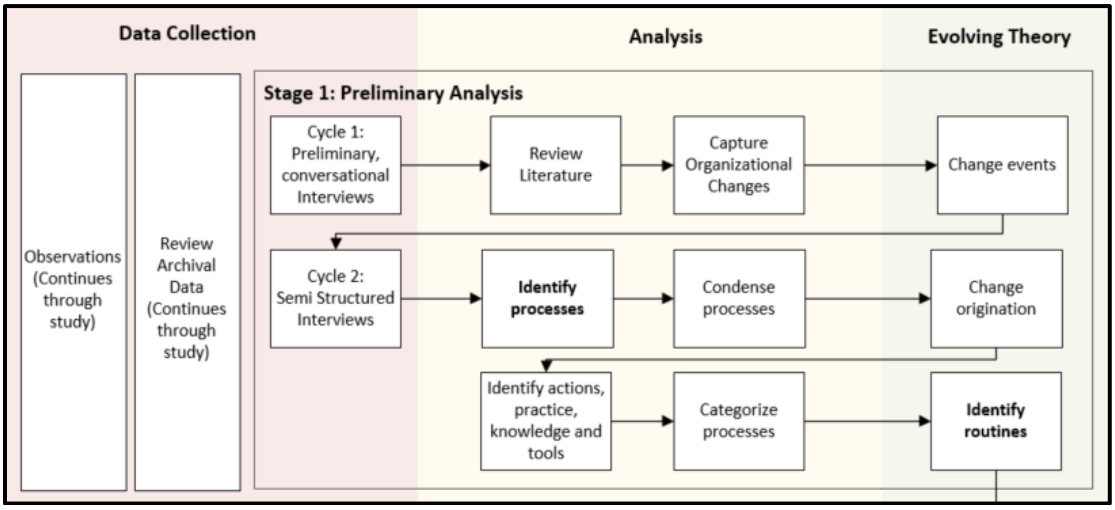

Figure 3. Stage One – Preliminary Analysis

A. CONDENSING AND CATEGORIZING THE DATA

The researcher began by organizing the data, which is consistent with an inductive approach. Forty-five organizational processes were identified through the analysis of the first cycle of interviews, as shown in Table 4.

Table 4. Identification of Processes during the Phase One Interviews

Process
Onboarding/Hiring/RPA Process
Teams/Hybrid Meetings/Flank Speed
Vaccine Requests/ Reporting
Check In
Checkout
Internal Awards
Mission-Essential Travel
End Strength
Locksmith
Weekly Highlights
Health Check Tool
Hoteling
Purchasing Tool
Communications
Approving Officer Nominations
Purchase Card
Facilities
Rotations
Cell Phones
On The Spot Awards
Delegation of Authority
COVID Deferral
Testing Remotely
Department Approval Dashboard
Unapproved Time
P Card Office
Incoming Funding Documents
Service Entry Sheets
Help Desk
Service Desk
Fleet Installation Office (FIO) Academy
Unmatched
Contract Close Out
Non Labor Cost Transfer (NLCT)
Operating Material & Supply/Accountable Property Office
Security
Business Financial Manager Help Desk
Badge/Common Access Card
Release of Scientific Technical Information

Process
Awards Call
Flexible Work Schedule
Leave Requests
Comp Time/Overtime Requests
Fireside Chats
News You Can Use

After identifying the processes, the researcher combined duplicate processes (same process but different names) to generate a condensed list. For example, Request for Personnel Action (RPA), onboarding, and hiring were combined. The RPA tool is used during the hiring process, and onboarding of employees also refers to the hiring of personnel. Hybrid meetings, Microsoft Teams, and Flank Speed were combined into Teleconferencing. Microsoft Teams is one of the applications in the Microsoft Office 365 environment which NIWC Pacific calls Flank Speed and was used for teleconferencing. The vaccine request tool evolved into vaccine reporting, so these were combined as well.

The analysis of the first cycle of interviews identified organizational changes and the events preceding them for a selected group of processes. The frequency and number of processes mentioned by the interviewees were counted and the following processes were selected for further analysis, as they were mentioned several times during each interview by different participants, as reflected in Table 5.

Table 5. Condensed Processes

Process
Awards
Check In
Checkout
Contact Tracing
Health Check
Hoteling
Mission Essential Travel
New Employee Onboarding/Hiring/RPA
Parents for Parents (P4P)
Teleconferencing
Vaccine Requests/Reporting
Weekly Highlights

Information about each of the condensed processes was captured. Related quick reference guides, standard operating procedures, and policy documents were reviewed to familiarize the researcher with details of the processes. In addition to the people being interviewed, the knowledge, process, and tools supporting the organization's functions were documented, and the information was arranged in different arrays to clarify and summarize the data (Project Management Institute, n.d.). Table 6 details the actions, knowledge, tools, hardware, and software for each of the processes.

Table 6. Process Actions, Knowledge, and Tools

Process	Actions	Knowledge	Tools/Hardware/Software
Awards	Attending meetings virtually. Attending award ceremonies online.	Remembering how to access the Teams application, connect the headset and camera, and join a meeting. Must turn on the camera, look at the camera rather than the screen. Must click the button to come off mute. Organizers encouraging participation; supervisor and employee remembering to attend the virtual presentation ceremony.	Computer Hub intranet Site Jira application MS Teams application License Account Login Headset Camera Meeting invite on calendar Metrics for attendance Supervisor receiving email notification. Employee receiving award ceremony invite.
Check In	Check in when onsite to ensure capacity limits are not exceeded.	Employee remembering that action is needed upon their arriving onsite. Employee knowing how to complete the online form and tools.	Computer Hub intranet Site Jira application Departments/supervisors receiving notifications of employee check-in and verifying action completion.
Checkout	Check out of the organization without needing in-person contact.	Employee remembering that action is needed prior to their checking out of the organization. Employee knowing where and how to access and complete the online form and tools.	Computer Hub intranet Site Jira application Departments/supervisors receiving notifications of employee checkout and verifying action completion. Employee receiving email notifications as approvals are received.
Contact Tracing	Completing form to track all interactions with other employees when onsite. Form will be used for the purpose of notifying close personal contacts following a positive COVID case.	Employee remembering that action is needed upon them arriving onsite. Employee knowing how to complete the form and providing it to their supervisor should they come down with COVID symptoms.	Computer Hub intranet Site COVID Tracing Form Departments/supervisors receiving notifications of employee symptoms and forms documenting people they have been in contact with. Email notification to leadership Metrics and reports to OPNAV

Process	Actions	Knowledge	Tools/Hardware/Software
Health Check	Supervisors reminding employees to notify them of sickness. Employee notifying Supervisor or Chain of Command of infection, symptoms, or sickness. Reviewing the policy to determine what category they fall in to in terms of COVID-19 symptoms,	Remembering to notify supervisor of infection, symptoms, or sickness. Staying home if sick; not coming to the workplace for 5–10 days afterwards.	Computer Hub intranet Site Jira application Departments/supervisors receiving notifications of employee sickness. Computer MS Teams application License Account Login Headset Camera Meeting invite on calendar Metrics for attendance Email notification to leadership Metrics and reports to OPNAV Dashboards for visibility
Hoteling	Reserving a desk space when onsite.	Remembering what space was reserved and for what date and time. Knowing how to reserve a hotel space and where the tool was located or how to find the answers to tool specific questions.	Computer MS Teams application License Account Login Quick Reference Guide Video Tutorial Employee receiving email notifications as reservations are made
Mission Essential Travel	Making sure of the need, critical nature of travel, and health status of the employee prior to travel. Requesting and receiving approval prior to travel. Receiving the vaccine. Confirming vaccine completion date.	Remembering how and where to complete the Mission-Essential Travel request form on the Hub. Chain of Command remembering to verify and approve request. Remembering to check for approval prior to travel.	Computer Hub intranet Site Jira application Departments/supervisors receiving notifications of employee travel and verifying they meet requirements. Computer MS Teams application License Account Login Headset Camera Metrics for travel Email notification to leadership Metrics and reports to OPNAV Dashboards for visibility
New Employee Onboarding	New employees attending employee onboarding session virtually.	Remembering how to access the Teams application, connect the headset and camera, and join a meeting. Must turn on the camera, look at the camera rather than the screen. Must click the button to come off mute. Organizers encouraging participation.	Computer MS Teams application License Account Login Headset Camera Meeting invite on calendar Metrics for attendance

Process	Actions	Knowledge	Tools/Hardware/Software
Parents for Parents (P4P)	Parents and employees with dependents logging in to schedule meeting. Voicing concerns. Making suggestions for how to resolve issues.	Knowing that a P4P forum exists. Attending scheduled meetings. Being able and willing to ask questions that were not anonymous and hoping someone would respond in the online forum. Responding to questions in the online forum.	Computer Hub intranet Site Application License Account Login Headset Camera Meeting invite on calendar
Teleconferencing	Using collaboration tools to connect with other employees and their supervisors. Attending meetings virtually.	Remembering how to access the Teams application, connect the headset and camera, and join a meeting. Must turn on the camera, look at the camera rather than the screen. Must click the button to come off mute. Organizers encouraging participation. Knowing to use MS Teams to connect with others.	Computer MS Teams application License Account Login Headset Camera Meeting invite on calendar Metrics for attendance
Vaccine Request/ Reporting	Using online tool to request the COVID-19 vaccine. Reviewing the policy to determine what category they fall in to for receiving the vaccine. Confirming receipt of the vaccine in the online tool	Employee knowing how to complete the online form and tools. Receiving notifications from the tools that action was needed. Remembering to attend vaccine appointments and report completion.	Executive Order 14042 Computer Hub intranet Site Jira application Employee receiving email notification that vaccine was available. Meeting invite on calendar Metrics for vaccine completion Supervisor receiving email notification.
Weekly highlights	Using collaboration tools to report project activities.	Remembering how to access the weekly Highlights tool. Submitting a report. Portfolio Managers knowing to check their queue and approve submissions. Chain of Command encouraging submissions. Organizers encouraging participation.	Computer Hub intranet Site Jira application Account Login Metrics and reports Dashboards for visibility Approval of highlight

The researcher relied on visual mapping throughout the analysis process and used it in conjunction with coding to identify links between codes and phases of the routine creation process (Miles & Huberman, 1994). A visual map displays the data as a graphic representation of the researcher's interpretations and findings throughout the analysis

process. The researcher initially constructed simplified visual process maps for elements of each case. Figure 4 displays an example.

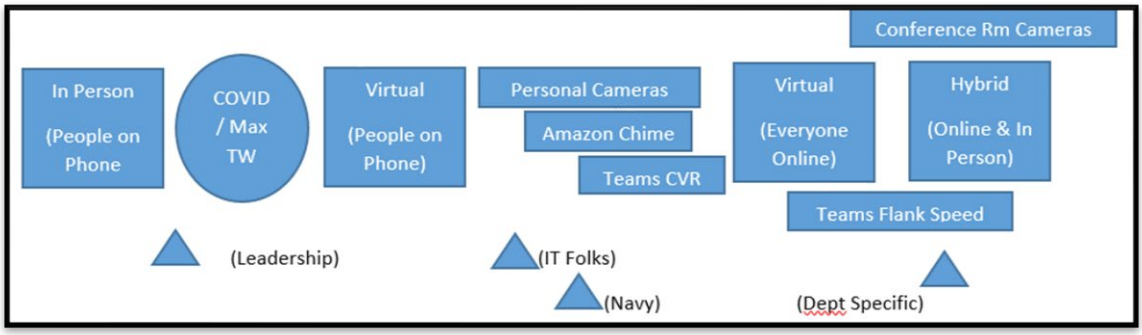

Figure 4. Teleconferencing Process Map

Process steps, activities, and events were then compared with other processes within the same routine to look for similarities and differences. The processes were grouped based upon why they were created, or the purpose with which they best aligned. The three focal routines emerged from this analysis. Table 7 displays the three focal routines and the processes contained within them. There were some overlaps in these routines. One example of an overlapping routine might involve an employee recognizing another employee at a virtual awards ceremony: this would be captured in both the Telework and the Collaboration and Recognition routines.

Table 7. Processes within the Routines

Routine	**Telework**	**COVID Safety**	**Collaboration and Recognition**
Process	Teleconferencing	Wearing a mask	Teleconferencing
	New Employee Onboarding	Check In	Parents for Parents (P4P)
	Parents for Parents (P4P)	Contact Tracing	Weekly Highlights
	Hoteling	Vaccine Request/ Reporting	Awards
	Awards	Health Check	Hoteling
	Checkout	Mission Essential Travel	

The following processes comprised the Telework routine: teleconferencing, new employee onboarding, hoteling, awards, checkout, and Parents for Parents (P4P). These

processes were all new or changed processes that ensured that employees could continue business operations in a virtual environment. For example, conference lines previously existed, but the new teleconferencing capability allowed for screen sharing, chat, and phone calls via an online tool.

The following processes comprised the COVID Safety routine: wearing a mask, check-in, contact tracing, vaccine request/reporting, health check, and mission-essential travel. These were all new processes established because of the COVID pandemic and were put in place to ensure the employees were kept safe and healthy, and the workplace was a safe place to visit. For example, the health check process was put in place to document whether people had the virus or symptoms of the virus or had come in contact with someone who had the virus. This allowed the organization to track the number of employees with the virus and also to contact others who may have come in contact with someone who was sick.

The following processes comprised the Collaboration and Recognition routine: teleconferencing, P4P, weekly highlights, awards, and hoteling. These processes consisted of either new or changed processes that were established to ensure teams could collaborate and recognize their peers when they no longer had in-person daily contact. For example, the hoteling process allowed for teams to reserve a meeting space online and schedule a day to come onsite. The weekly highlight process allowed employees to submit activities through their chain of command for approval, which would then be posted on an intranet site for others to view.

B. CONCLUSIONS

In conclusion, the stage one preliminary analysis meticulously examined some of the organization's processes, skillfully condensing and categorizing them. Through in-depth reviews of data, literature, and visual mapping techniques, this analysis provided comprehensive insights into the intricate interplay of actions, knowledge, and tools within these processes. These findings formed the foundation for further detailed exploration, facilitating a nuanced understanding of the routines established within the work environment to address pandemic challenges. Those three cases are Teleworking, COVID

Safety, and Collaboration and Rewards. The Telework routine encompasses processes facilitating virtual operations, such as teleconferencing, virtual meetings, and new employee onboarding. The COVID Safety routine focuses on measures like wearing masks and performing health checks to ensure a safe workplace during the pandemic. Lastly, the Collaboration and Recognition routine involves processes like the formation of a Parents for Parents collaborative forum, and communication of weekly highlights, emphasizing teamwork and acknowledging achievements in virtual settings. In the next chapter, the researcher reviews each case in greater detail, provides further analysis of the similarities and differences of each routine, and then presents the resulting outcomes.

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V. STAGE TWO: COMPARATIVE CASE ANALYSIS

In the comparative case analysis, the researcher examined each routine, and then compared and contrasted elements of each. This chapter provides a detailed review of each of the routines: Telework, COVID Safety, and Collaboration and Recognition. The routines are then analyzed and compared. Comparison of the performative and ostensive aspects, along with a review of the artifacts, resulted in identifying nine initial phases in the creation, development, and implementation of routines. Details of the analysis are provided, and the chapter concludes with a comparison of the routines. Stage two of the analysis process included a third and final round of semi-structured interviews, coding, visual process mapping, and matrix creation to review and summarize the data, and compare the three cases, resulting in evolving theories that led to the identification of routine phases and timelines as a focal area. Figure 5 depicts the second stage of analysis.

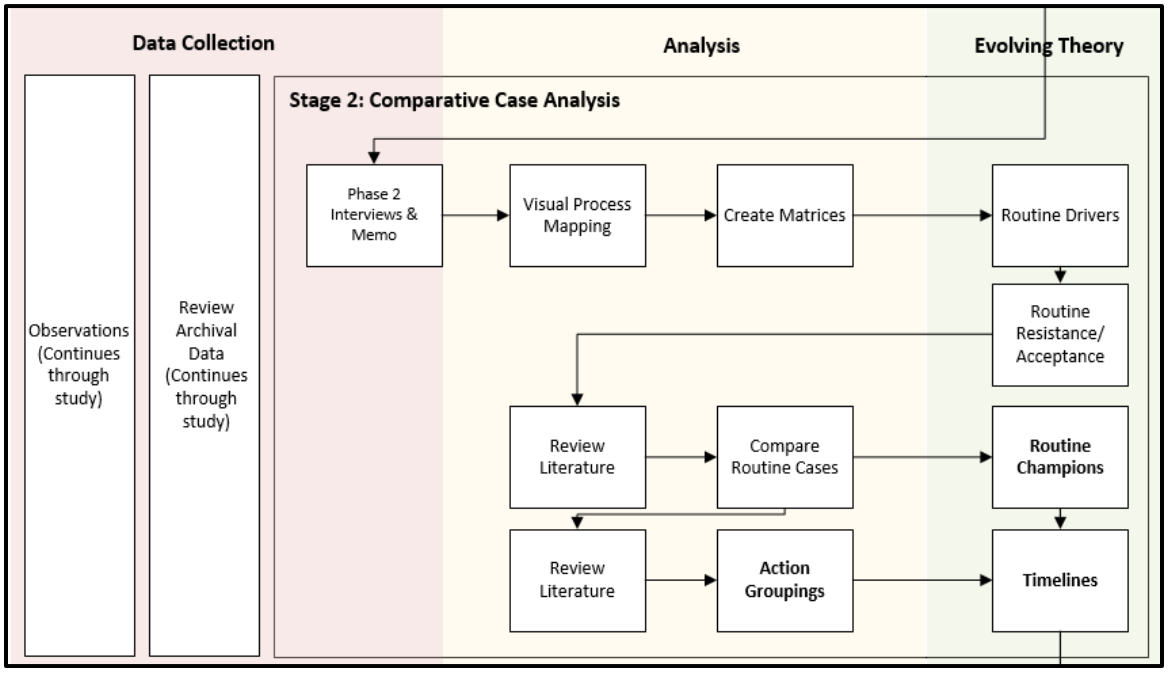


Figure 5. Stage Two – Comparative Case Analysis

These steps, although listed sequentially, often overlapped and restarted, showing the iterative nature of the research. The three focal cases that emerged during the preliminary analysis stage were Telework, COVID Safety, and Collaboration and Recognition routines. Details of each case are described below. Thematic analysis of the data resulted in the identification of routine phases.

A. ROUTINES EMERGING DURING COVID-19

An overview of each case, and the changes that were observed, and documented, are described below.

1. Telework Routine

The Telework routine allowed employees to continue operating and meeting the mission goals while working in a maximum telework environment. The key changes observed were the majority of people worked from home continuously, everyone had to transition to virtual meetings and using the teleconferencing applications, processes that previously involved face-to-face meetings and in-person contact were eliminated, and these were held online, or automated through the use of online tools. Maximum telework was enforced beginning in March 2020. Teleworking became an accepted norm, whereas before the COVID-19 pandemic, teleworking was thought of as a privilege. Managers who had previously only allowed their employees to telework one or two days a week, immediately had to accept that the majority of their workforce would now be teleworking most of the time and were to come onsite only if there was a special need or requirement.

Before COVID, most communications were either in person or via email or phone call. In the new telework environment, the ability to "chat" online with people became more accepted. Teleworking individuals were expected to utilize the MS Teams platform to contact, communicate, and collaborate with others. Virtual indicators allowed employees to determine if their peers were available to communicate or chat.

In the maximum telework environment, meeting participation was limited based on San Diego community levels. Naval Base Point Loma then determined what Health Protection Condition level the base should be set at, and routines were introduced or

adapted based on the requirements of that health protection level. San Diego County community levels and corresponding requirements for the organization are shown in Table 8.

Table 8. San Diego County Community Levels and Organizational Requirements for the NIWC Pacific Hub

Community Level	**Organizational Requirements**
LOW	No restrictions on size or attendance. No prior UNSECNAV written approval needed.
MEDIUM	1–49 attendees: No vaccination requirement No prior UNSECNAV written approval is needed 50+ Attendees: No prior written approval is needed if all attendees are vaccinated. All attendees are required to complete DD Form 3150 and be vaccinated. Prior UNSECNAV approval is required for attendees who are unvaccinated or don't wish to report their status. Request for approval must reach SECNAV 30 days before the meeting start.
HIGH	Internal meetings are confined to NAVWAR team attendees (Mil/ Gov/Contractors) who are homed in the AOR, and no out-of-area travel is required. Attendance will be limited to no more than 50% of the meeting room capacity. Distancing will be conducted. Contact tracing must be accomplished. 1–10 attendees: No prior approval required. Unvaccinated attendees may attend if they show proof of a negative test result from the previous 72 hours. 11–20 attendees: May be approved by the Division Head. Unvaccinated attendees may attend if they show proof of a negative test result from the previous 72 hours. 21–50 attendees: May be approved by the Department Head. Unvaccinated attendees may attend if they show proof of a negative test from the previous 72 hours. Greater than 50 attendees: Prior written approval from UNSECNAV required and all attendees are required to complete DD Form 3150 and be vaccinated. With specific UNSECNAV approval, all attendees who are unvaccinated or don't wish to report their status are required to provide proof of a negative test result from the previous 72 hours. All other meetings. Attendance will be limited to no more than 50% of the meeting room capacity. Distancing will be conducted. Contact tracing must be accomplished.

Community Level	Organizational Requirements
	1–49 attendees: No prior UNSECNAV written approval required. All attendees are required to complete DD Form 3150 and be vaccinated. Prior UNSECNAV approval is required for attendees who are unvaccinated or don't wish to report their status. Requests must reach SECNAV 30 days before meeting start. 50+ attendees: Prior written approval from UNSECNAV required. All attendees are required to complete DD Form 3150 and be vaccinated. Prior UNSECNAV approval is required for attendees who are unvaccinated or don't wish to report their status. Requests must reach SECNAV 30 days before meeting start.

NOTE: The Hub can be accessed on the NIWC Pacific network at https://hub.sd.spawar.navy.mil/.

Employees needed to be aware of what levels were in effect and how that affected meeting attendance requirements. Online Teams meetings were scheduled with a mixture of all in-person, all virtual participants, or hybrid, which included a mixture of some in-person attendees and some virtual attendees. In the hybrid meeting environment, in-person and virtual attendees had to learn to monitor chat, and meeting facilitators specifically needed to call on people if participation was lacking.

Meetings, when hosted virtually, meant having to wear a headset and utilizing the web camera so that facial expressions and interaction could be monitored. This was a new skill to learn. Technology issues and problems sometimes prevented the participants from using headsets and cameras. Additionally, there were times when employees were not able to be seen or heard during a meeting.

The ability to call people into a meeting, or call them online directly, meant that everyone was immediately accessible and on-call during the workday. Managers would often call a subject matter expert into a meeting at a moment's notice and expect them to pick up and interact even if they were previously engaged in other tasks. While this can be seen as a negative, the ability to collaborate and communicate was made faster and easier.

Chats helped people get questions answered and quick responses were expected. The ability to search chats was considered less successful than searching for email. However, the ability to filter chats and search for names or subjects was refined over time.

Prior to COVID, new employee orientation (NEO) was a three-day in-person event at which new employees were briefed by a series of presenters on a multitude of topics, including security, training, and benefits. In the maximum teleworking environment, the NEO program took a pause for three months, and upon resuming the program, participants began attending virtually.

Parents for Parents (P4P) is an online community that was established to assist parents or anyone who was supporting a dependent during the maximum teleworking environment. In the maximum telework environment, caregivers had to work from home while also taking care of their loved ones, resulting in a reduction or elimination of the highly desired work-life balance. This online community was established in April 2020 and provided parents and caregivers a forum to voice concerns and worries, ask for assistance from others, and have a sense of community with other employees facing challenges in balancing work and family. It was initially inspired to advocate for particular challenges that were heightened by COVID-19 and teleworking conditions. Surveys were conducted through this forum to collect an initial understanding of the issues parents were encountering, and to provide support in the teleworking environment. In addition, a channel in Microsoft Teams and a Wiki containing information and helpful resources were established. All employees were welcomed and encouraged to join this community. This online forum is still in place, hosting live events over Teams and hosting in-person events to allow for socialization, and it is generally seen as a positive and useful forum for caregivers.

When people did need to come onsite, most still had an assigned office space. However, there were those who had their workspaces remodeled or removed, which resulted in them needing to find an office, cubicle, or meeting space to work. Hoteling was established to provide the ability for employees to reserve a space online so they knew where they would be working when coming to the worksite. The hoteling process was initiated by the Finance department as all of their department's employees were teleworking and they wanted to downsize and remodel their existing space. The Finance department gave back some of its existing workspace to the organization so they could use it for lab space, and re-evaluated and remodeled the remaining workspace to allow for work

kiosk spaces, team collaboration areas, and meeting rooms. The project began in May 2020, with requirements collected and an evaluation of the use of the area based on survey results, and the space was completed in July 2022. Changes included the purchase of new furniture, remodeling of existing space to address safety and employee concerns, infrastructure and equipment upgrades, and the establishment of a space reservation system in an online tool.

Prior to the maximum telework environment, award ceremonies were held in person and employees were invited to attend in person to recognize the successes of their peers. However, in the telework environment, award ceremonies were held via Teams meetings, a meeting invite was sent out to all awardees, and employees were encouraged to attend virtually. Applause was limited and requested to be held until a specific point in time, when attendees were requested to come off mute and applaud. Chat messages could be sent to specific employees, but the celebration was more impersonal and less individualized.

When employees left the organization, either via resignation or retirement, they still needed to check out of the organization, which prior to the maximum telework environment meant showing up onsite, and walking around to different specific offices (i.e., security, library, supervisors) to collect signatures on a form. However, once the pandemic started, and the teams and employees transitioned to telework, they were not available to sign the form. During the COVID pandemic, the process was automated and moved online, allowing the various offices to be notified and perform checks virtually, and resulted in a notification being sent to the supervisor to approve the employee's checkout.

The key findings were that changes were implemented quickly, tools were automated and delivered in short time frames and generally accepted. Employees, although thrown into a chaotic and unusual situation of maximum telework, adapted quickly and were soon back to normal operations, although they were working in an online environment.

2. COVID Safety Routine

The COVID Safety routine focused on the health and safety of the employees, whether at home or in the workplace. The key changes observed were the implementation of masks, restrictions on attendance of meetings, and thorough health checks prior to coming and after onsite. Health protection conditions changed quickly and often, and the organization needed to respond those changes with rules and guidelines to ensure people did not get sick. Before coming onsite, employees were requested to complete the COVID-19 screening questionnaire to ensure they did not have a fever or headache and were generally feeling well. The COVID-19 screening form is shown in Figure 6.

TODAY'S DATE: _____

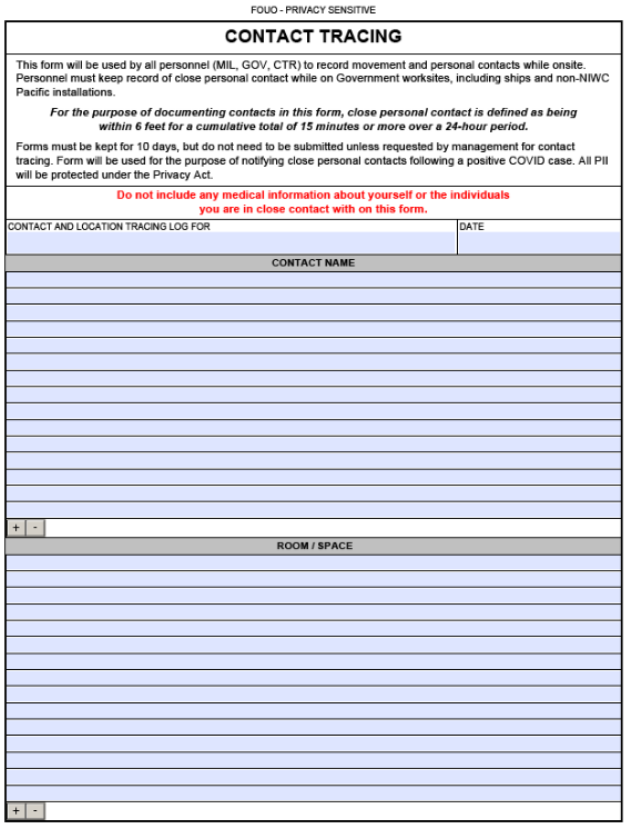
NIWC PACIFIC FACILITIES COVID-19 SCREENING

PLEASE READ EACH QUESTION CAREFULLY	PLEASE CIRCLE THE ANSWER THAT APPLIES TO YOU	
1. Have you experienced any of the following symptoms in the past 48 hours: • fever or chills • cough • shortness of breath or difficulty breathing • fatigue • muscle or body aches • headache • new loss of taste or smell • sore throat • congestion or runny nose • nausea or vomiting • diarrhea	**YES**	**NO**
If you have had any of the above symptoms in the last 48 hours, DO NOT physically return to the workplace until symptoms have subsided for more than 24 hours. If you have a chronic medical condition that causes COVID-19-like symptoms and you need access to our facility within the next few days, please contact your supervisor for guidance. Fully vaccinated individuals should not access campus if they are currently experiencing any of the above symptoms. If you have an urgent need to access a NIWC Pacific facility while experiencing any of the above symptoms, please contact your supervisor and ask them to request a waiver through your department. Waivers will only be granted in exigent circumstances and only if it is safe to do so. Fully vaccinated individuals with symptoms will also require a waiver.		
2. Are you isolating or quarantining because you tested positive for COVID-19 or are worried that you may be sick with COVID-19?	**YES**	**NO**
If you have concerns about being exposed to or sick with COVID-19, please stay home and self-quarantine or isolate. If you have an urgent need to access a NIWC Pacific facility while quarantining, please contact your supervisor. Waivers will only be granted in exigent circumstances and only if it is safe to do so. Fully vaccinated individuals will also require a waiver if symptomatic or testing positive and should work through their Chain of Command.		
3. Have you been in close physical contact in the last 10 days with: • **Anyone who is known to have laboratory-confirmed COVID-19?** OR • **Anyone who has any symptoms consistent with COVID-19?** *Close physical contact is defined as being within 6 feet of an infected/symptomatic person for a cumulative total of 15 minutes or more over a 24-hour period starting from 48 hours before illness onset (or, for asymptomatic individuals, 48 hours prior to test specimen collection).*	**YES**	**NO**
If you have been in close contact with someone with COVID-19, you should stay home and ROM for 5 days. **Immunized personnel may eliminate ROM if asymptomatic (no symptoms). Waivers will only be granted in exigent circumstances and only if it is safe to do so. Please work with your Chain of Command or site visit POC.		
4. Are you currently waiting on the results of a COVID-19 test? **IMPORTANT: ANSWER "NO" IF YOU ARE WAITING ON THE RESULTS OF A PRE-TRAVEL, POST-TRAVEL, or ROUTINE COVID-19 TEST**	**YES**	**NO**
If you have an urgent need to access a NIWC PAC facility while waiting for a test result, please contact your supervisor and ask them to request a waiver through your Department Head. Waivers will only be granted in exigent circumstances and only if it is safe to do so.		
I certify that my responses are true and correct	☐	
Did you answer NO to ALL QUESTIONS?	Access to NIWC PAC facilities **APPROVED**. Thank you for helping us protect you and others during this time.	
Did you answer YES to ANY QUESTION?	Access to NIWC PAC facilities **NOT APPROVED**. Please contact your supervisor for further guidance. Thank you for helping us protect you and others during this time.	

Figure 6. COVID-19 Screening Questionnaire

Once onsite, employees were asked to complete a contact tracing form, which was used to track who the employee had come in to contact with while at the work site. This form was required to be used by all personnel (military, government civilian, and

contractor) to record movement and personal contacts while onsite. Personnel were required to keep a record of close personal contact while at government worksites, including ships and non-NIWC Pacific installations. For the purpose of documenting contacts in the form, close personal contact was defined as being within six feet for a total of fifteen minutes or more over a twenty-four-hour period. Forms were required to be kept for ten days but did not need to be submitted unless requested by management for contact tracing. Forms were used for the purpose of notifying close personal contacts following a positive COVID case. All personally identifiable information (PII) was protected under the Privacy Act. The Contact Tracing Form is shown in Figure 7.



FOUO - PRIVACY SENSITIVE

CONTACT TRACING

This form will be used by all personnel (MIL, GOV, CTR) to record movement and personal contacts while onsite. Personnel must keep record of close personal contact while on Government worksites, including ships and non-NIWC Pacific installations.

For the purpose of documenting contacts in this form, close personal contact is defined as being within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period.

Forms must be kept for 10 days, but do not need to be submitted unless requested by management for contact tracing. Form will be used for the purpose of notifying close personal contacts following a positive COVID case. All PII will be protected under the Privacy Act.

Do not include any medical information about yourself or the individuals you are in close contact with on this form.

CONTACT AND LOCATION TRACING LOG FOR	DATE

CONTACT NAME

ROOM / SPACE

Figure 7. Contact Tracing Form

Masking was enforced for all employees at first, but masking requirements were later based on the community levels, as reflected in Table 9.

Table 9. Community Levels and Masking Requirements for the NIWC Pacific Hub

Community Level	Masking Requirements
LOW	Indoor mask-wearing is not required for Service members, DOD Civilian Employees, onsite DOD contractor personnel, or visitors. Screening testing is not required for entry in the installation or facility.
MEDIUM (San Diego)	Indoor mask-wearing is not required for Service members, DOD Civilian Employees, onsite DOD contractor personnel, or visitors. Unvaccinated government civilians, contractors, and military personnel (including those awaiting adjudication of medical or religious exemption request) must have a negative COVID test within 72 hours of accessing NAVWAR facilities. COVID-19 test kits will be provided by NIWC Pacific to military and government civilians. Contractor personnel should work with their companies for testing requirements.
HIGH	Indoor mask-wearing is required for all Service members, DOD Civilian Employees, onsite DOD contractor personnel, and visitors regardless of vaccination status. Unvaccinated civilians, contractors, and military personnel (including those awaiting adjudication of medical or religious exemption request) must have a negative COVID test within 72 hours of accessing NAVWAR facilities. COVID-19 test kits will be provided by NIWC Pacific to NIWCPAC military and government civilians. Contractor personnel should work with their companies for testing requirements.

NOTE: The Hub can be accessed on the NIWC Pacific network at https://hub.sd.spawar.navy.mil/.

As further details about the virus became available, social distancing was enforced but masking became optional for vaccinated employees. Masking was required for non-vaccinated employees, and they needed a negative result on a COVID test 72 hours prior to coming onsite. Vaccinated employees were allowed to come onsite without taking a COVID test but needed to perform a COVID screening questionnaire first. NIWC Pacific military, government civilians, and contractors needed to adhere to community level masking and testing requirements in other areas of responsibilities (AOR) where they either worked or to which they traveled.

In addition to the onsite masking requirements, employees were requested to complete the check-in form to notify their supervisor that they were onsite. This ensured

that onsite capacity limits implemented by the Department of Defense were not exceeded. Capacity levels are shown in Figure 8 and compared to Health Protection Condition Levels and community levels.

Community Conditions	HPCON Level	Reconstitution Phase
Widespread community transmission daily average > 60*	HPCON D (< 15% occupancy)	Phase 0
Sustained community transmission daily average 31 – 60*	HPCON C (< 25% occupancy)	Phase 1
Elevated community transmission daily average 16-31*	HPCON B+ (< 40% occupancy)	Phase 2
Increased community transmission daily average 2-15*	HPCON B (< 50% occupancy)	Phase 2
Minimal community transmission daily average < 2*	HPCON A (< 100% occupancy)	Phase 2-3
	HPCON 0	Return to normal ops

Figure 8. Capacity Levels and Health Protection Conditions. Adapted from DOD News (2020).

Capacity levels were automatically tracked through the online reporting tool and reported to senior leadership. The check-in form could be accessed from the Hub intranet site and needed the employee to click the button and enter the names of anyone they wanted to notify of their onsite visit with their supervisor being a mandatory entry.

As the organization was a military organization, and personnel were deemed essential to the mission, vaccines were made available before they became available to the general public. Employees who wanted to receive the vaccine could sign up to receive it

via an online tool that was developed and were then notified when and where to receive the vaccine. As the vaccine became available to the public, this routine subsided and transitioned to vaccine reporting. Employees were asked to report if they had received the vaccine so that the number of vaccinated employees could be reported to OPNAV. Reporting to OPNAV was initially completed weekly but then discontinued once vaccinations were more commonplace.

If employees became sick, they were asked to notify their supervisor. The supervisor would then need to contact their department deputy for operations, who would report in an online tool when the symptoms were reported, when the employee took a test, and then report symptoms or recovery. Due to the administrative nature of the routine, recovery was often not reported on time, so as more information about the vaccine became available, it was determined that ten days after the initial report of symptoms was made, the employee could be considered recovered, so the online tool was updated to automatically close these reports. Reporting was enforced at the beginning of the pandemic but has since become less enforced as vaccines became more available and symptoms less severe.

Some employees needed to travel during this period to install software or hardware or attend mission-critical meetings. Initially, the Executive Director and Commanding Officer needed to make the determination if travel was mission critical, but this became extremely time-consuming, and so an automated approval tool and process were developed. Employees could enter details related to their travel, need, purpose, dates, and vaccination status, and then the chain of command would determine if the travel was approved or not. This routine was temporary and used during the height of COVID epidemic when community levels were high.

The key findings were that dynamic processes were put in place to protect the employees whether onsite or working from home. New protections such as wearing masks, performing health checks, and contact tracing were implemented to prevent the spread of the disease and ensure the safety of employees. Employees needed to understand the changing health protection conditions and respond accordingly. Onsite attendance, meeting capacity, and travel were restricted.

3. Collaboration and Recognition Routine

The Collaboration and Recognition routine ensured that employees, although isolated when working from home, could continue to collaborate and continue fulfilling the mission, while also allowing them to celebrate and recognize each other's achievements. The key changes observed were that meetings went virtual, there was limited in-person contact, the awards program shifted to an online forum, and online tools were created to allow for knowledge sharing and collaboration.

As described in the Telework Routine section, collaboration was necessary for work to continue in this new environment; collaboration still occurred, but it required employees, team members, and supervisors to make more effort. Normally, collaboration occurs through in-person meetings, phone calls, and emails, but in the new environment, the majority of the collaboration occurred over MS Teams, using the chat, phone, and meeting features.

Water cooler conversations no longer happened as there was no face-to-face interaction. Employees no longer bumped into each other in the hallways, so more effort was needed to continue the sense of community. Parents for Parents was an online forum that emerged to assist parents or anyone who was supporting a dependent during the maximum telework environment. In the maximum telework environment, caregivers had to work from home while also taking care of their loved ones, often meaning that the work-life balance was non-existent. Further details were provided in the Telework Routine section.

Weekly highlights were initially handled via email and took an exceedingly long time to collect, review, and disseminate. This was eventually transitioned to online reporting during the pandemic. The use of the online tool was expedited due to necessity in this new environment, and acceptance of the technology was also accelerated. The new weekly highlights process was mandated by the Executive Officer in March 2023. Employees were requested to submit their most significant command news, events, milestones, and highlights for a biweekly report. Examples of what could be submitted included highlights and milestones about game-changing support to the Fleet, sponsor, and

partnership news to include both industry and academia, high-level command and personnel awards, patent awards, and ground-breaking publications. This allowed for reporting of events and successes to leadership, the tracking of technical transitions, increased collaboration amongst teams throughout the organization, and recognition among peers for ongoing work.

Prior to the maximum telework environment, award ceremonies were held in person and employees were invited to attend to recognize the successes of their peers. However, in the telework environment, award ceremonies were held via Teams meetings, a meeting invite was sent out to all awardees, and employees were highly encouraged to attend. Applause was limited and requested to be held until a specific point in time at which time attendees were requested to come off mute and applaud. Chat messages could be sent to specific employees, but the celebration was more impersonal and less individualized.

Hoteling allowed employees to reserve a collaboration space or desk so that they could come onsite and have a space to meet with peers and work in the same workspace. More details about the hoteling program are provided in the Telework Routine section. The key findings were that processes were automated and made available online. Collaboration and recognition could still occur, but it involved more preparation and scheduling and was often less personal. Further analysis included identifying the performative and ostensive aspects of the routines and locating and reviewing the artifacts.

4. Performative and Ostensive Aspects of the Routines

Organizational routines are composed of both ostensive and performative aspects (Feldman & Pentland, 2003; Spillane et al., 2011). Aspects are the components that the routine is composed of. The ostensive aspects of organizational routines are the "ideal or schematic form of a routine […] the abstract, generalized idea of the routine, or the routine in principle" (Feldman & Pentland, 2003, p. 101); they are the rules or the procedural memory that organize the routine. The performative aspects of organizational routines are "the specific actions taken by people, in specific places, at specific times" (ibid.). The ostensive and performative aspects explain the operational capabilities of a routine; the

way in which they are created, happen, and evolve. Artifacts include the tools, documents, checklists, hardware. and software needed to perform the routine.

The ostensive aspect (the idea), the performative aspect (how it was performed), and the artifacts involved were collected for each of the routines. Once the routine's components are understood, we can determine how they were created. The performative and ostensive aspects for the each of the three routines, along with their artifacts, are summarized in Table 10.

Table 10. Performative Aspects, Ostensive Aspects, and Artifacts for Each Routine

Routine	Performative	Ostensive	Artifacts
Telework	Attending meetings (team, new employee orientation, awards ceremonies, P4P) virtually. Using online tools to reserve office space or check out of the organization. Organizers encouraged participation during online meetings. Employees needed to access the teleconferencing application, check the Health Protection Condition levels, and respond accordingly based on the requirements.	Remembering how to access the teleconferencing application (MS Teams), connect the headset and camera, and join a meeting Turn on the camera. Look at the camera rather than the screen. Click the button to come off mute and speak/ Knowing where and how to access online tools within the Hub or search for information Know where to find the HPCON levels and requirements.	Computer MS Teams application Hub intranet site Jira application License Account Login Headset Camera Meeting invite on calendar Metrics for attendance Quick reference guide Video tutorial Email notifications directing users to take action.

Routine	Performative	Ostensive	Artifacts
	Employees needed to be willing to ask questions that were not anonymous and hoping someone would respond in the online forum (P4P, chats).	Remembering to attend scheduled meetings online (NEO, awards, teams) Knowing how to reserve a hotel space and where the tool was located or how to find the answers to tool specific questions.	
COVID Safety	Employees wearing a mask when onsite, when sick or when in the presence of others for more than 15 minutes. Using online tool to check in when onsite, request vaccination, report vaccination, infection, symptoms, or sickness. Completing form to track all interactions with other employees. Reviewing policies. Supervisors reminding employees of new guidance and procedures.	Trying to prevent the spread of the disease and prevent yourself and others from getting sick. Employees remember that action is needed upon their arrival onsite, vaccination status, and knowing how to complete the online form and tools. Employees know to check the health protection condition of the environment and respond to guidelines Remembering to notify the supervisor of infection, symptoms, or sickness.	Masks that conform to current guidelines Computer Hub intranet site Jira application Contact tracing form Health screening questionnaire Email notifications directing users to take action MS Teams application License Account Login Headset Camera

Routine	Performative	Ostensive	Artifacts
	Determining need and vaccination status of travelers. Requesting and receiving approval prior to travel. Determining regulations and guidelines for travel, onsite work, and meeting attendance. Staying home if sick – not coming to the workplace for 5–10 days afterwards.	Chain of Command remembering to verify and approve requests. Remembering to check for approval before going onsite and going on travel.	Metrics for travel, health status, infection, capacity levels, check-ins, vaccination status Email notification to leadership Metrics and reports to OPNAV Dashboards for visibility
Collaboration & Recognition	Using collaboration tools to connect with other employees, their supervisors, and report project activities. Attending meetings (team, awards, P4P) virtually. Logging in to schedule meeting. Voicing concerns. Making suggestions for how to resolve issues.	Remembering how to access the teleconferencing application (MS Teams), connect the headset and camera, and join a meeting Turn on the camera. Look at the camera rather than the screen. Click the button to come off mute and speak. Knowing where and how to access online tools within the Hub or search for information.	Computer MS Teams application License Account Login Quick reference guide Video tutorial Email notifications directing users to take action. Hub intranet site Jira application Headset Camera

Routine	Performative	Ostensive	Artifacts
	Using online tool to reserve office space, report project activities. Being able and willing to ask questions that were not anonymous and hoping someone would respond in the online forum (P4P, chats). Receiving virtual recognition.	Employee remembering that action is needed upon them arriving onsite. Remembering to attend scheduled meetings online (awards, teams). Knowing how to reserve a hotel space and where the tool was located, or how to find the answers to tool-specific questions.	Meeting invite on calendar Metrics for project activities Quick reference guide Video tutorial Email notifications directing users to take action. Dashboards for visibility Approval of highlight

B. ROUTINE COMPARISON

The three routines—namely, the Telework routine, COVID Safety routine, and the Collaboration and Recognition routine—represent distinct yet interconnected aspects of the organizational response to the challenges posed by the COVID-19 pandemic. The Telework routine underwent a substantial transformation, evolving from a sporadic privilege to a widespread and enforced practice. The implementation of maximum telework necessitated a shift in communication norms, with virtual platforms like MS Teams becoming central for collaboration. Meetings adapted to varying community levels of COVID transmission, leading to a blend of virtual and in-person attendance. Moreover, the pandemic prompted the development of innovative solutions such as the online hoteling system, addressing the need for reserved spaces during onsite work.

In contrast, the COVID Safety routine emphasized stringent health protocols. From screening questionnaires to contact tracing forms, the organization introduced meticulous measures to ensure the safety of onsite employees. Masking requirements and vaccination

protocols were meticulously aligned with San Diego County community levels, highlighting the organization's adaptive response to the evolving situation. The introduction of automated reporting tools streamlined administrative processes, easing the burden on employees, and ensuring timely responses to health incidents. Travel policies were also revised, transitioning from manual approval processes to automated tools, enhancing efficiency during periods of high community transmission.

The Collaboration and Recognition routine adapted to the absence of physical interactions, relying heavily on virtual platforms. Online forums like Parents for Parents provided much-needed support, fostering a sense of community amidst the challenges of telework. The shift to virtual award ceremonies and the implementation of an accelerated online reporting system for weekly highlights underscored the organization's commitment to recognizing achievements and maintaining morale. However, the virtual environment introduced a dichotomy: while it enhanced accessibility, it also led to potential challenges such as reduced individual recognition and the need for heightened effort in sustaining collaborative efforts. The organization responded by implementing programs, forums, and automated processes that assisted employees in collaborating and celebrating their successes.

When the routines were analyzed through the lens of performative and ostensive aspects, it became apparent that the organization's response was multifaceted. The ostensive aspects encompassed idealized rules and procedures, whereas the performative aspects reflected the practical actions taken by employees and the challenges encountered during their implementation. Artifacts, ranging from online platforms to screening forms, played a pivotal role in facilitating these routines, showcasing the integration of technology into organizational processes. This holistic analysis, encapsulated in Table 10, delineates the nuances of each routine, highlighting the organization's adaptability and innovation, and the evolving nature of its responses in the face of the pandemic's uncertainties.

The three focal cases shared the same goal—to enable operations to resume quickly in the new environment while keeping the workforce safe. These cases share certain features, such as having an individual or team that championed the changes, control

mechanisms to prevent failures, and analysis that was involved in many aspects of the routine creation, development, and implementation.

However, they differed in their focus. The first enabled the workforce to work in the new environment, the second addressed safety and health concerns, and the third was focused on collaboration and cohesiveness among employees by allowing them to report on their activities and be rewarded. The routines were compared and analyzed to better understand the process through which they were created and developed. Much of this comparison was added by coding and categorization.

Routine drivers were identified: they included environmental changes, policy changes in response to the changing environment, changing circumstances, new information, the safety and wellbeing of employees, and technological requirements. Routine resistance and acceptance were a continuous theme throughout the routine creation, development, and implementation process. Routine champions and routine analysis teams were identified and were very prevalent in all of the routines. Their actions and activities were documented and coded.

C. DETAILED ANALYSIS

A third cycle of semi-structured interviews was undertaken to uncover details about each of the three routines. Visual process maps were created for each of the routines. An example of the Collaboration and Recognition routine is shown in Figure 9. The maps were then overlaid to identify similarities and differences.

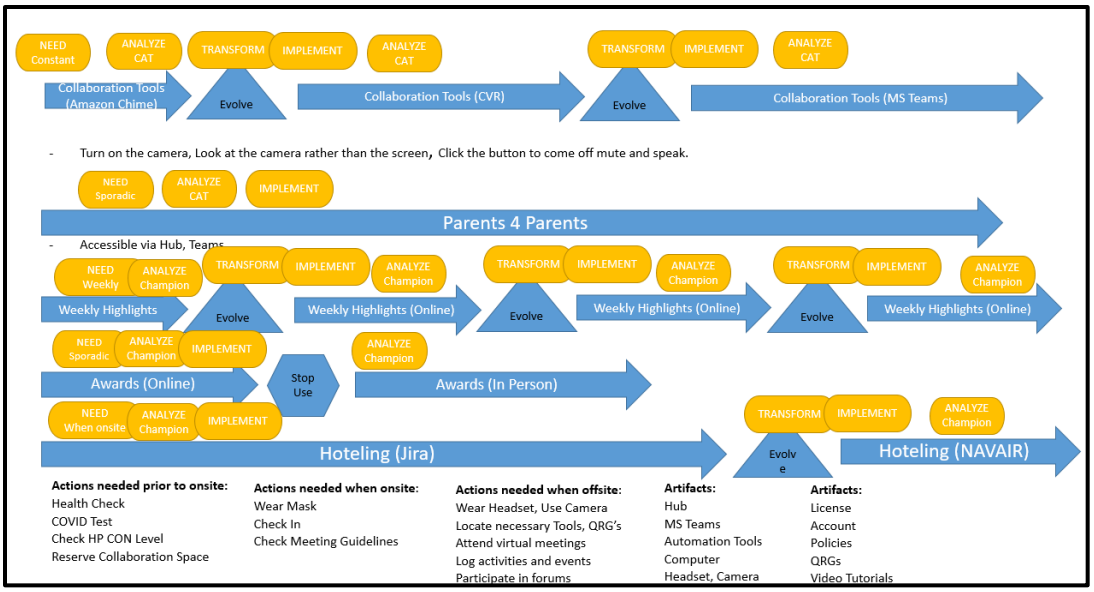


Figure 9. Collaboration and Recognition Routine Process Map

The routines were coded, categorized, and compared. The researcher analyzed the data using sense-making strategies for analyzing cases and processing data, including matrix diagrams (Miles et al., 2019) and coding (Langley, 1989).

1. Matrix Diagrams

A matrix diagram displayed qualitative data condensed into a two- or three-column table, allowing the researcher to review the entire data set in one systematic visual display, so the researcher could draw conclusions and take needed action (Miles & Huberman, 2019). This enables the researcher to review the data and see how answers to the research question might be approached, along with sequences of events and actions. Figure 10 provides a screenshot of the data matrix.

Type	Origin	Changes Seen	Process	Time to Implement	Leaders Mindset	Employees Mindset	Individual Factors	Group Factors	Organizational Factors
Reconfigured/ Evolving	Center	Process	Policy Change	Within a week	Necessity	Confusion	Technology	Team Communication	Leadership
		Technology	Capacity Restrictions		Acceptance	Chaos	Perception/ attitudes	Workplace Relationship	Organizational Climate/ Culture
		Mindset	Fluctuate number of people allowed on site			Acceptance	Skills & Training	Team adaptability	NO Human Resources
		Relationships	Leadership Review			Resistance	Workplace adaptability		
		Communications	Technology Implemented				Workplace Stress		
		Organizational Climate/ Culture	Fluctuate between onsite/ virtual/ Hybrid						
New	Center	Process	Environmental Change	Within a week	Necessity	Confusion	Technology	Team Communication	Leadership
		Technology	Process Created CAT Team Review		Acceptance	Resistance	Perception/ attitudes	Workplace Relationship	Organizational Climate/ Culture
		Mindset	Initially Email/ Spreadsheets			Acceptance	NO Skills & Training	Team adaptability	NO Human Resources
		Relationships	Technology Implemented				Workplace adaptability		
		Communications	Communicated				Workplace Stress (High/ Volatile)		
		Organizational Climate/ Culture							
New	Center	Process	Environmental Change	Within 2 weeks	Necessity	Acceptance	Technology	Team Communication	Leadership

Figure 10. Matrix of Qualitative Data

A matrix diagram of the changes, observations, events, and actions for all of the routines was created. The ability to review data across the routines in one place made it possible to identify consistencies and similarities. The researcher continued refining the categorized data, including the interview transcripts, research memos, and narrative descriptions, working to refine the categories to capture critical aspects of the process.

2. Coding

Initial coding was completed based on intuition using Atlas.ti qualitative data analysis software. The initial coding cycle included labelling segments of the data using the interviewees' own language. The codes were then sorted, combined, and summarized into larger categories. In the second cycle of coding, the data was coded again utilizing themes obtained from similar scholars to determine how the data was relevant or different from prior research: "Coding is, however, not a linear but an emerging process, and shifting between initial and focused coding can generate new insights during later phases of the analysis process" (Taubenberger, 2020, p. 38). Figure 11 provides a graphical depiction of the coding cycles.

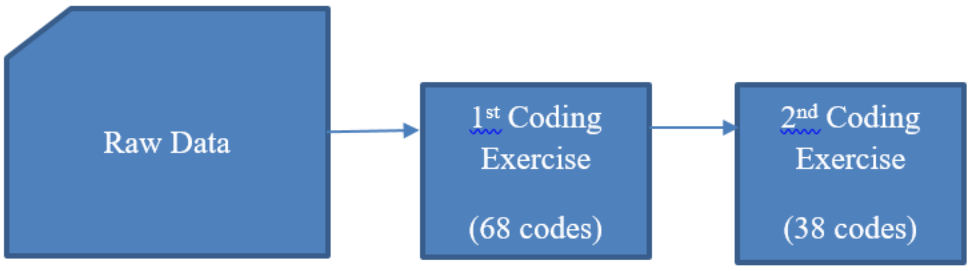


Figure 11. Overview of the Coding Cycle

The researcher read the data segments and grouped them to develop a set of sixty-eight emergent codes, using participants' words and phrases. After the initial coding exercise, the data was sorted into different routines and then coded once more, selecting text related to actions, events, and decisions, and labeling them. Figure 12 shows a sample of the initial codes; the entire list of initial codes is provided in Appendix A.

acceptance	driver for change	meeting dynamics	process
action	employee resistance	Meetings	pushback
action for clare	enforcement	mission essential travel	reason for resistance
after change	evolving routine	necessity	relationship changes
awards	failed process	negative effect	remote work
centerwide	good insight	NEO	requirement
challenge	good quote	new routine	response
check in	group analysis	non-compliance	role
…	…	…	…

Figure 12. Sample of Initial Codes

Reference to the existing literature was a continual and iterative process. Observation and archival data were collected and continually referenced. The data was re-read and re-examined and data summaries were documented. The researcher reviewed prior literature (Davies, 2018; Orlikowski, 2021; Cacciatori & Prencipe, 2021) and added codes related to their research. Iteration then took place; this involved continual reference to the literature and re-analyzing the data. Knowledge of the literature on routines provided

an additional thirty-eight codes. Figure 13 shows a sample of the additional codes; the entire list of secondary codes is provided in Appendix A.

analysis	existential	ostensive	slow
artifacts	experimenting	P4P	stop use
automation	fast	performative	tactical
contact tracing	implement	personal contact	telework
control	influence	practical	temporary
...	...	...	...

Figure 13. Sample of Additional Codes

The 106 codes were then narrowed to action codes. Action codes are representative of the actions that were taking place throughout the routines. Examples include the need or purpose of the routine, analysis, or decision-making steps, how the changes evolved, and what changes took place. Figure 14 shows a sample of the action code groupings; all of the action codes are listed in Appendix B.

Origin	**Need**	**Analyze**	**Generate**
action	action	acceptance	action
capacity limits	capacity limits	action	after change
center	centerwide	after change	analysis
centerwide	collaboration	analysis	automation
collaboration	communication	automation	center
communication	control	capacity limits	centerwide
control	COVID Action Team	center	enacting
decision	decision	centerwide	entrenching

Figure 14. Sample of Action Codes

Figure 15 shows an example of how the raw data was coded and then clustered into categories. It started to shape the phases for how the routines were developed. The complete list of codes mapped to phases are provided in Appendix B.

Center Department New Evolving		**Origin** (Where change originated from)
Centerwide driver for change department specific leadership driven change Necessity nice to have Policy Requirement Virtual telework Safety		**Need** (Reason for development)
analysis decision collaboration evolving routine experimenting group analysis leadership meetings new routine options for resolution ostensive performative prior to change Role envisioning		**Analysis** (Decisions and discussions that took place to analyze potential solutions)

Figure 15. Example of Codes Clustered into Action Categories

Comparative analysis identified phases of the routines. The initial phases that were identified were Origin, Need, Analyze, Generate, Implement, Influence, Usage, Result, and Timeline. Similar phases were then condensed; for example, Origin and Need were combined into one phase, as where they originated within the organization did not seem significant. The Usage and Result phases were combined into Assess Result as there seemed to be a lot of overlapping codes. Analysis indicated that routines are constructed through the following phases over time. The consolidated phases are Need, Analyze, Generate, Implement, Influence, and Assess Result. If there are subsequent changes or new information provided, there is typically a decision made to either Stop Use, Evolve the existing routine, or Continue Use.

The Need phase indicated where the need for the change originated from, whether it was dictated by necessity, policy, or a good idea, driven by an individual, leadership, or a nice to have. The Analyze phase described how agility was derived and the collaboration, discussion, and decision-making that took place to discuss what changes should take place, and solutions that could be provided, and whether they were acceptable, and could address any concerns. Generate detailed what actions took place, what change was implemented, and what innovation resulted from the change. Implement describes how the implementation of the change occurred, whether training and communication took place, the process, timing, and socialization, and whether it was deemed a success or a failure. The Influence phase describes what responses occurred, the importance of employee mindsets, whether positive or negative, and resistance or acceptance. The Assess Result phase illustrates that the routine was assessed to determine it was meeting its intended need and whether it was working effectively across the organization. Employee responses to whether they felt that the agile implementation was positive or negative, how the change was utilized, and how the employees responded to the change were also captured here. The Stop Use phase identified whether the change was temporary or stopped use after a given period. The Continue Use/Evolve phase identified whether any additional changes or evolution took place from the original requirement, or whether it continued in its original state. Finally, the Timeline phase describes how long different actions took to implement, when actions and events occurred, and how quickly or slowly the change was put in place.

The last three phases—Stop Use, Continue/Evolve, and Timeline—seemed particularly relevant. In similar research, researchers have treated routines as having a specific timeline or a specific start and end date (Cacciatori & Prencipe, 2021). Yet the data suggested that different aspects of the routines had different timelines and could evolve as needed. A review of the literature and further analysis highlighted that timing and usage were of particular importance.

Action categories represent stages in the routine creation process that were consistent across all of the routines. The researcher created a table, mapping key the actions, activities, and categories that emerged. The action categories with example quotations are shown in Table 11.

Table 11. Action Categories and Example Quotations

Code/ Phase	**Quote**
Origin	"It came from the tech codes." "I think our Department Head was being proactive and not knowing what the return to work was going to be or when. […] We recognized that a lot of our functions are administrative and that we have been able to perform them successfully while fully working remotely from home." "The CAT team was responding to higher policy." "They had a good idea that they wanted to do. And then it just—it just worked out that way."
Need	"We got direction out of DOD to make sure that everyone did the health check." "They gave the authority to Third Fleet to manage the vaccine allocations for all of the bases in San Diego." "I think it [the routine] came about out of crisis." The reporting has dropped off—I think people realized that at this point it's mostly endemic."
Analyze	"And then we discussed it on the RAD team." "We had a town hall with all the employees where we pulled and presented the three different options and the pros and cons of each option." "There was even a bit of socialization with other portfolio managers and division heads."
Generate	"They developed a program where they can host it virtually."

Code/ Phase	Quote
	"I think we initially captured it via email, but I think that only lasted for about a week before a tool was developed for our folks to self-report." "Most of my team had been teleworking once in a while, but to do full time." "Our All Hands meeting went virtual." "So, we had it all in one place. We could see who was doing what."
Implement	"I don't think it became a Center-wide mandate until about a year ago." "The Center did a pretty good job, because of the fact that we had frequent meetings with the workforce, with the leadership team in each department so they could ask questions." "I more actively encouraged them to do this." "But then pretty quickly we rolled it out to the whole department—just so we could get more people using it."
Influence	"Eventually got him to the point where he was going to demand that everyone in the Center has to use the tool." "He saw the power of it and how it would ultimately make his life better. So, he was all in and he got them to use it." "She loved the idea. […] And that was a big win for us because she had the energy, and she also had the background in terms of doing."
Usage	"And now we don't do it anymore. I think that went away a couple of months ago." "As far as I am aware there's no process for tracking mission essential travel because there's no requirement from the Navy to track that stuff." "The tool and processes were in places for about six months. And then I think that died out after a period of time." "I've stopped doing it. I don't know if my folks are doing it because I'm no longer pushing them to do it." "There's no plan to do hoteling, some of that doesn't make sense." "The adoption of it without COVID would have been slow." "A pandemic gives people the nudge they need to use these collaboration tools."
Result	"I haven't heard of any complaints since it was implemented; it allows people to be in a virtual environment and still check out." "The only pushback was 'Oh great, we have to do one more thing,' but at least it was easier than briefing the CO and ED when we needed folks to go on travel." "People love it. They love that they are able to recognize each other." "Ugh, we saved time there." "From what I have heard on the employee side as they are checking out, it's much better."

Code/ Phase	Quote
	"It's more efficient from a time perspective." "I like that we are using less paper." "It's the flexibility it offers me—it's incredible and the productivity." "I would like to continue the ability for my workforce to continue working from home."
Timeline	"Right at the start of the pandemic we went fully virtual." "Whenever the vaccine came out—they put out a tool like a day or two later." "The checkout tool came about maybe six or eight months ago, that was to automate everything." "They shut NEO down for a couple of months." "Yeah, it was just launched like a month ago." "Yeah, I think it started because of COVID." "Initially everyone travelling needed to put it in. And now it's only for the unvaxxed." "So, it took two years of planning to get people adapted to this change or this idea." "I think it was June 15 of 2021 when the secure version of it was ready, and then we all migrated there."

D. CONCLUSIONS

This chapter provided a more detailed look at each of the routines, the analysis, and comparison of the routines. See Appendix C for further assignment of codes by routine. Routine champions were identified in each of the routines, and benefits listed. Nine action phases were identified for each of the routines: Need, Analyze, Generate, Implement, Influence, Assess Result, Stop Use, Evolve/Continue, Timeline. The phases of each routine were then compared. Further analysis of the timeline phase led to a further review of the literature, which led to timelines being identified as a focal area and leading to the key finding of the research. The routine creation process began to emerge through action phases that were derived through thematic analysis of the data. The development of the conceptual process model for routine development is further discussed in the chapter on theory building.

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VI. STAGE THREE: THEORY BUILDING

The third stage of analysis was theory building. This critical phase involved a meticulous examination of routine phases, a thorough review of the existing literature, and the subsequent development of a robust conceptual process model. Furthermore, a focus on the temporal dimensions and knowledge flow further underpins the formation and evolution of the model. By meticulously scrutinizing the timelines associated with each routine, a pivotal insight was unearthed: the concept of temporariness within routines. This newfound perspective challenged established views in routine research, particularly the prevailing notion that routines function akin to well-defined projects with fixed start and end points. Instead, our analysis illuminated a distinct pattern: routines are remarkably responsive and adaptable, emerging in response to specific needs, new information, or evolving requirements. Subsequent sections will provide concrete examples and evidence, underscoring the adaptability and evolution of routines in response to new information, thus providing empirical weight to our conclusions. Figure 16 provides an overview of the third stage of analysis.

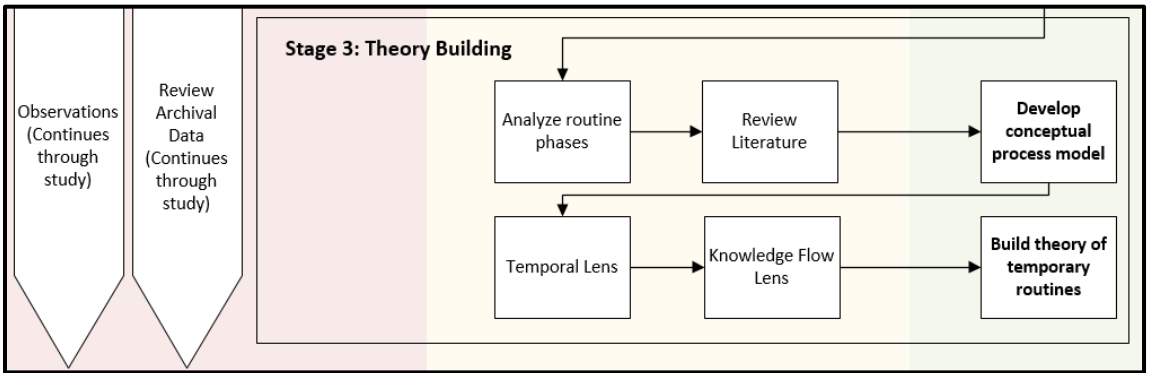

Figure 16. Stage Three – Theory Building

Identification of the phases of the routines, as discussed in the comparative analysis chapter, resulted in the development of a conceptual process model for routine creation. Figure 17 depicts the action categories identified in each of the routines and lays out a

sequential process for how these phases map onto routine creation, development, and implementation.

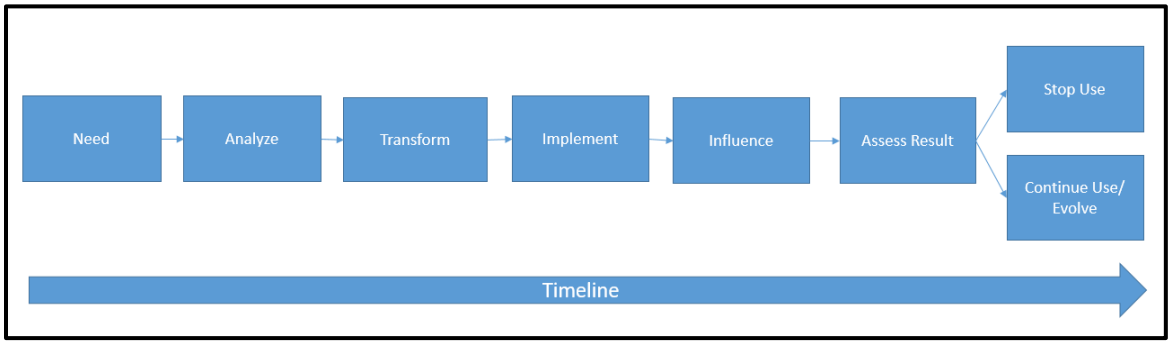

Figure 17. Action Categories

Routine development was cyclical: routines evolved, and they were continued or discontinued. The quotations below provide evidence that the routines and their performative aspects, ostensive aspects, and artifacts are cyclical and continually evolving:

"We just finished submitting all of those (awards) virtually. And I believe it went fairly well. I'd like to see the rest of our awards go that way."

"I think we initially captured it via email, but I think that only lasted for about a week before a tool was developed for our folks to self-report."

The quotations below provide evidence that the routines and their performative aspects, ostensive aspects, and artifacts were sometimes no longer needed due to new information or new circumstances:

"The reporting has dropped off—I think people realized that at this point it's mostly endemic."

"And now we don't do it anymore. I think that went away a couple of months ago."

"Some of that doesn't make sense anymore."

Coding within this research suggested that temporal analysis could contribute to furthering routine and agility research. Agility is found in the timeliness of implementation:

the time taken to implement the change, the length of time the routine is in place, and whether it is still in place or has evolved (Holbeche, 2019).

When the phases were reviewed through a temporal lens, the researcher focused on the timelines of each routine. Timelines for each of the focal cases and each routine were created. Figure 18 shows an example of the timelines within the COVID Safety routine.

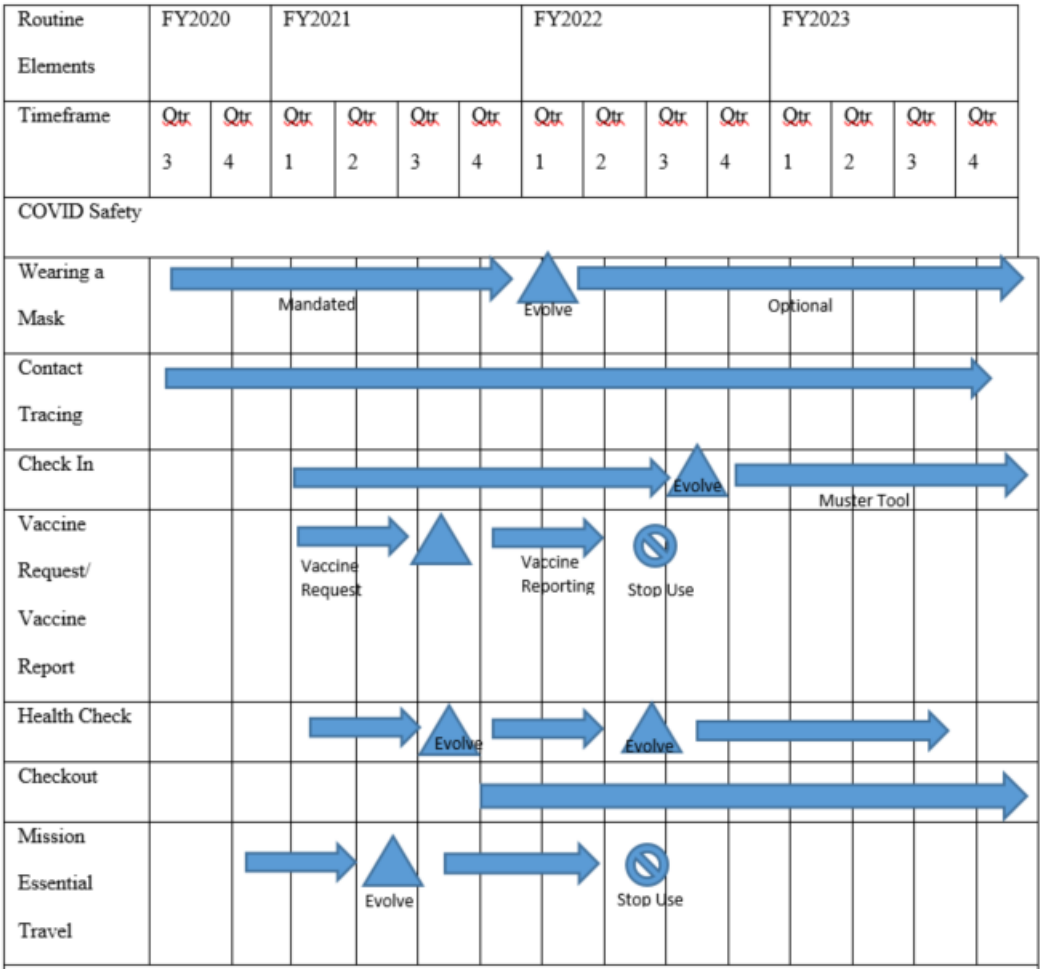

Figure 18. COVID Safety Routine Timelines

This exercise was then completed for the other routines (Telework, and Collaboration and Recognition), which focused the researcher on timelines as an area of interest. For each routine, the ostensive aspect of the routine (the idea), the performative aspect (how it was performed), and the artifacts involved were identified and collected.

Timelines for the performative and ostensive aspects of each of the routines were then created and compared, along with the artifacts, processes, and tools. Figure 19 provides a high-level overview of the different timelines of the aspects and artifacts of each routine.

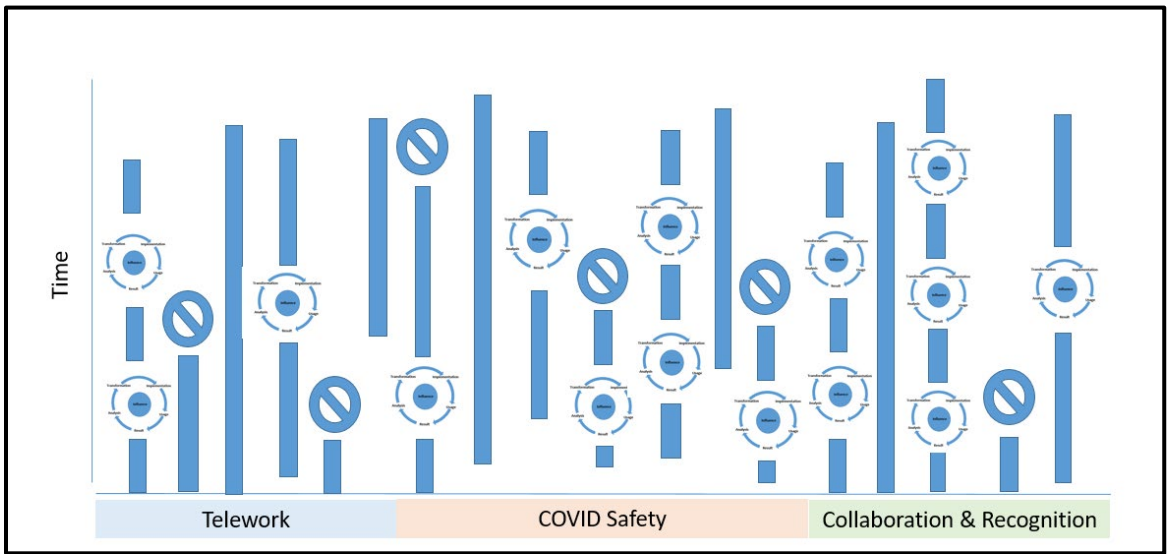

Figure 19. Routine Aspects Timelines

Aspects start – evolve – start – evolve – start, start and stop, start – continue, start – evolve – stop. The different patterns were evident in each routine with no consistent behavior. This differed from prior research. The preceding literature suggested that routines had a specified start and stop time and had previously been likened to projects (Cacciatori and Prencipe, 2021). Yet evidence from analysis of these routines showed that aspects of the routine came and went, that they were temporary in nature. They were created in response to a need, to new information or requirements, evolved due to new information or requirements, and stopped due to new information, new requirements, or changes in the external environment.

Quotation supporting evidence of new information being provided and routines adapting and evolving or stopping are provided below:

"Everything we did was based upon what we knew at the time."

"And that's what we reacted to. […] All of our communications were based upon what we knew at the time."

"And we basically moved all kit and caboodle. He would still call me on my personal phone. But a few months down the road that stopped, and everything moved to CVR. Then a year later we moved to Microsoft Teams, an impact level 4 instance of the same application."

"We were going to go to this application until something better came along."

Timelines and the element of temporariness were added to the preliminary process model and an updated process model generated, as reflected in Figure 20.

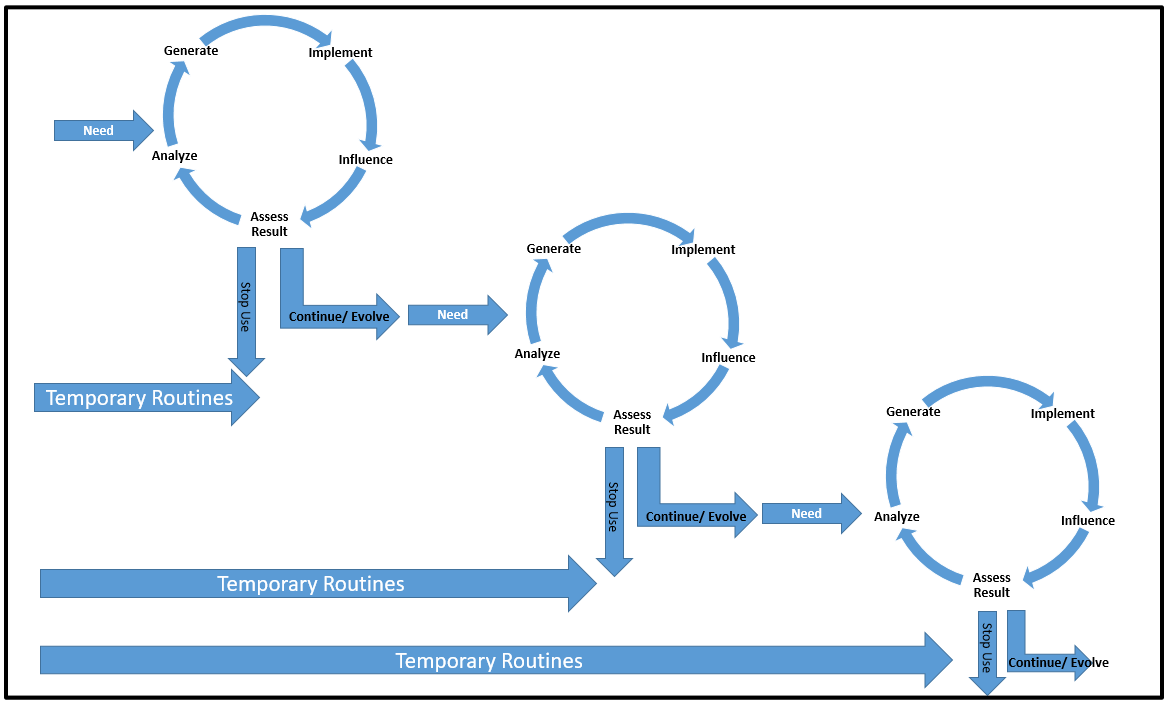

Figure 20. Preliminary Process Model for Routine Creation, Development, and Implementation

The data and process model were then reviewed through a knowledge flow lens. Organizational knowledge is contained within routines. These routines exhibited a cyclical nature, continuously evolving to align with changing circumstances, and eventually fading away when confronted with new information and shifts in organizational demands. The researcher was able to depict what helped or hindered the flow of knowledge, and identified how knowledge friction was overcome. Routine champions were identified as facilitators of knowledge flow, helping overcome resistance and enabling acceptance by the organization's employees. Quotations showing how routine champions assisted with the acceptance of routines are provided below:

"She loved the idea—and that was a big win for us because she had the energy, and she also had the background in terms of doing."

"He saw the power of it and how it would ultimately make his life better. So, he was all in and he got them to use it."

Refinement of the preliminary process model (shown in Figure 20) was simplified, phases condensed, and verbiage refined. See Appendix D for further details and the mapping of routine phases to the Temporary Routine Creation and Evolution Life Cycle. The process phases were then mapped to life-cycle phases: prototyping, testing, deciding, and continue to evolve. The final process model is further explored in Chapter VII.

A. CONCLUSIONS

The third stage of the analysis process delved deeply into the temporal dimensions of organizational routines, fostering a nuanced understanding of their development and evolution. Through a meticulous examination of routine phases and an extensive review of the literature, a conceptual process model emerged, shedding light on the intricate interplay of time and routine dynamics. An essential revelation was the identification of the element of temporariness, a significant facet uncovered through the analysis of routine timelines. This temporal lens facilitated the recognition of agility within routines, emphasizing the importance of timeliness in implementation and adaptation. Notably, this study challenged prevailing notions in routine research, particularly those likening routines to well-defined projects with fixed start and stop times. Contrary to the prior literature, the analysis

illuminated a distinctive pattern wherein aspects of routines exhibited a temporary nature. Routines were found to be responsive entities, emerging in response to specific needs, new information, or requirements, evolving to accommodate changing circumstances, and eventually discontinuing due to shifts in external environments or organizational demands, facilitated by routine champions who advanced the flow of knowledge within the organization. This novel perspective, encapsulated in the updated process model, not only enriches the theoretical understanding of routine dynamics but also underscores the adaptive, cyclical, and inherently flexible nature of organizational routines in response to the dynamic demands of the contemporary environment.

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VII. FINDINGS

The analysis describes how one public organization provided an agile response to changes in the external environment. The organization responded with agility by generating temporary routines from bureaucratic processes, in response to changes in the external environment. The COVID-19 pandemic created drivers, such as policy changes and performance gaps, which led the organization to generate and implement new, temporary organizational routines. The organization created temporary routines from the building blocks of bureaucratic processes. Temporary routines transformed the organization, often changing people, processes, strategy, structure, and rewards (Galbreith, 2002), when they were accepted and diffused throughout the organization, allowing for an agile response. The organization continued its mission despite a substantial environmental change that made previous routines no longer viable. Routine champions were critical to the generation and evolution of routines. A knowledge cyclone facilitated this process. The remainder of this chapter is organized as follows. First, the chapter characterizes temporary routines. Next, it describes the temporary routine generation and evolution process shown in Figure 21, detailing each step, and providing case examples. The chapter then characterizes routine champions and knowledge cyclones and describes the role of each in the organization's agile response.

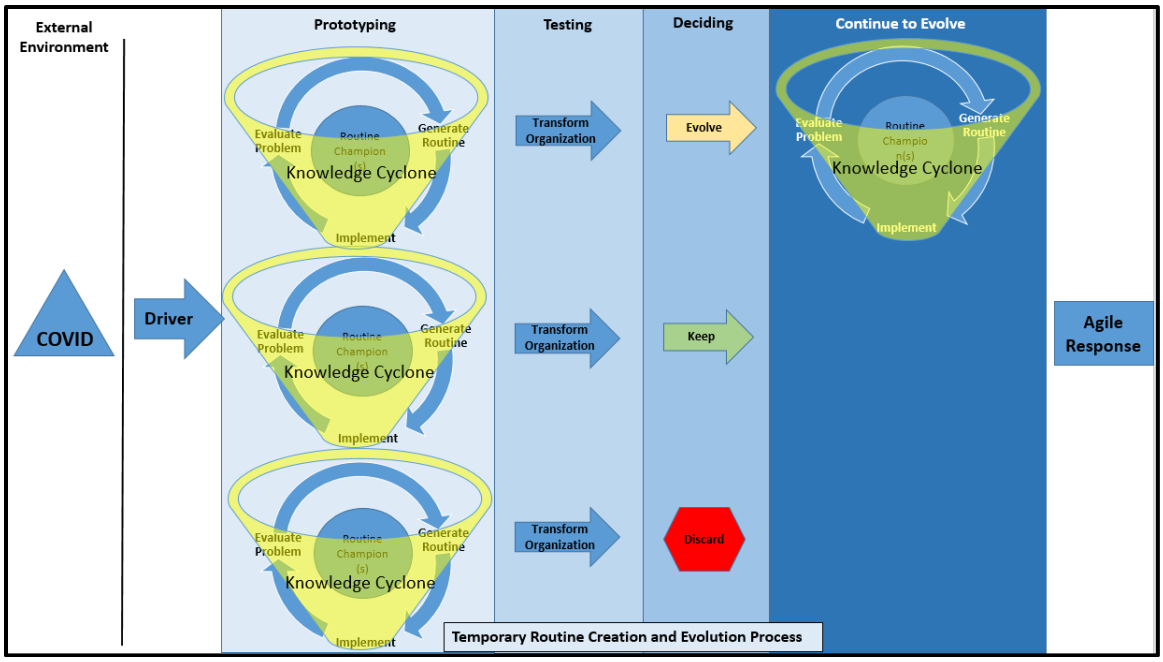


Figure 21. Agility through the Generation and Evolution of Temporary Routines

Before the COVID-19 pandemic, NIWC Pacific fulfilled its mission—"conduct [ing] research, development, prototyping, engineering, test and evaluation, installation and sustainment of integrated information warfare capabilities and services across all warfighting domains with an emphasis on basic and applied research and tactical systems afloat and ashore in order to drive innovation and warfighter information advantage" (NIWC Pacific, "Mission," n.d.)—through face-to-face meetings and onsite collaboration.

The COVID-19 pandemic hit in March 2020. The Executive Director and Commanding Officer sent a directive to the entire workforce to leave work and stay home immediately until further notice. If an employee had to return to the workplace, they were required to present a Navy-issued letter verifying the need to go to work. The environment was one of constantly shifting guidelines, recommendations, and rules, and the leadership clearly stated that they did not, and could not, know what the next day might bring and what conditions would be different. Stay-at-home orders eventually lifted, and people were able to return to work. The Executive Director and Commanding Officer stated that they

would make no move to specifically direct mandatory in-office days beyond the minimums stipulated by the Department of the Navy's Telework policy.

The organization successfully adapted to the change, as evidenced by its increasing funding and continued ability to provide capabilities and services to its customers. Employees also perceived a positive and lasting response, noting, "I think I communicate more with people after COVID," and "We saved time there, there's less random showing and telling, meetings are more focused." Others observed better performance: "Having [information] in a tool where we can mine the data made it easily accessible and reduced the amount of data calls," and "The checkout process, like everything we do in JIRA…it was absolutely the right way to go, for more than just COVID."

In the face of the COVID-19 pandemic, NIWC Pacific demonstrated remarkable resilience and agility. Swift and effective leadership, coupled with the dedication of its workforce, allowed the organization to seamlessly transition to remote work, ensuring the continuity of its mission. The pandemic prompted innovative solutions, improved communication, and streamlined processes. Employees embraced new technologies, making information more accessible and reducing workload. NIWC Pacific's response to maintain a flexible work approach without rigid in-office requirements showcased a forward-thinking mindset and accommodated the evolving nature of work. This experience strengthened the organization and positioned it as a model for providing an agile response in challenging times.

A. TEMPORARY ROUTINES

Organizational routines are "repetitive, recognizable patterns of interdependent actions, carried out by multiple actors" that provide stability, predictability, and efficiency, enabling organizations to function effectively (Feldman, 2003, p. 95). This research introduces temporary routines, which are distinctive for their reactive implementation, in direct response to specific external situations. They have short-lived elements, mirroring the urgency of the situations they address. Furthermore, they evolve dynamically to address changing needs and offer alternative solutions. Temporary routines served as adaptive mechanisms that aligned with the existing rules and regulations; the organization utilized

bureaucratic processes to create new flexible routines, allowing employees to navigate through changes driven by COVID-19 with little disruption. Three temporary routines were created at NIWC Pacific in direct response to the COVID-19 pandemic: Telework, COVID Safety, and Collaboration and Recognition. Table 12 summarizes the characteristics of temporary routines, as seen in each case.

Table 12. Evidence of Temporary Routine Characteristics

Temporary Routine	**Telework**	**COVID Safety**	**Collaboration & Recognition**
Direct response	Stay at home order Maximum telework environment	Health protection conditions Capacity limitations Keep employees safe	Healthy work-life balance
Short-lived elements	Virtual presentation of new employee orientation Virtual presentation of awards	Vaccine requests Vaccine reporting Check in when onsite Mission essential travel	Virtual presentation of awards
Evolve dynamically	High turnover of teleconferencing applications Rapid deployment of automated processes; hoteling, checkout	Wearing of masks Rapid deployment of automated processes; health check Onsite capacity limits	Rapid adaptation to changing requirements; hoteling and weekly highlights

The Telework routine drew on and comprised processes that shifted activities, such as employee orientation and awards presentations, to a virtual setting and automated other activities, such as hoteling and checkout. The Telework routine directly responded to the stay-at-home order and enforcement of the maximum telework situation. It had short-lived elements: teleconferencing software applications were rapidly deployed and replaced. A division head described the rapid acceptance of a teleworking software application: "We all agreed that for the sake of continuity of operations, we were going to go with this application until something better came up." Similarly, the new employee orientation process, which became part of teleworking, initially transitioned to online presentations and reverted to in-person as soon as the health protection conditions reverted. One senior leader explained this short-lived change: "If we go too high [in terms of community levels of COVID transmission], we will go back to a virtual, but until then NEO will be in person . . . because it is a one-way conversation." The Telework routine evolved dynamically to respond to health protection conditions and as how people worked and interacted shifted from in-person meetings to virtual to hybrid meetings. One participant described the dynamic meeting environment: "The whole nature of our meetings went from purely in-person [everyone had to attend] to hybrid. It was all virtual for a time, then a few of us would come into the office…And now we are to a point where it is about half and half." The organization quickly adapted existing processes and established new ones to allow employees to continue operations while operating in a telework environment. The routine evolved dynamically: the teleconferencing process transitioned through multiple software applications, and the awards and new employee check-in processes moved to virtual presentations but were discarded once employees could return to the workplace. The checkout process transitioned to an online application, and a new process for reserving onsite desks and collaboration space was established.

The COVID Safety routine drew on and comprised processes such as the mission essential travel tool, and it created new processes to keep the workforce safe. The COVID Safety routine directly responded to the stay-at-home order and enforcement of the maximum telework situation. The process for requesting vaccine appointments was short-lived and discarded as the vaccine became more widely available. Software applications

for requesting vaccines, reporting vaccination status, and reporting symptoms were rapidly deployed and replaced. This is explained by one of the interviewees: "I think initially we were capturing it [health check tracker] via email, but I think that lasted about a week before a tool was developed." This observation was supported by another interviewee, who described how the fluctuating travel requirements and reporting changed: "The requirements for the use of [the mission essential travel application] changed over time, and then the approval levels changed. […] So, as the Navy regulations and policies changed, the approval authority change […] and then what was deemed mission critical changed over time. And then I think it went from tracking CONUS and OCONUS travel to just CONUS." The routine evolved dynamically: the check-in process transitioned to a mustering tool once the capacity requirements were no longer a priority; mask-wearing was enforced based on health protection conditions; and testing and vaccination requirements fluctuated based on new information as it emerged.

The Collaboration and Recognition routine drew on and comprised processes such as awards and weekly highlights and introduced new ways of collaborating through newly established Teams channels, intranet sites, and the establishment of an online reservation system for collaboration spaces. The virtual awards presentation was short-lived as the organization preferred in-person presentations. The routine evolved dynamically: the tool developed for reporting highlights was continually updated based on requirements and feedback provided by stakeholders. One participant explained how the highlights tool dynamically changed: "We were tweaking the tool. We were tweaking the Word document that was generated. Like it was really like a Dev Ops kind of thing." Another interviewee describes the constantly changing environment: "I think initially we were capturing [weekly highlights] via email, but I think that lasted about a week before a tool was developed." The organization responded to changing requirements rapidly, and the changing environment allowed employees to engage and collaborate within isolated conditions.

In summary, as exemplified by NIWC Pacific, temporary routines are characterized by their short-lived, responsive nature, evolving dynamically to meet diverse outcomes while adhering to existing rules and regulations. The case presented three distinct

temporary routines: Telework, COVID Safety, and Collaboration and Recognition. The Telework routine rapidly adapted to stay-at-home orders, shifting activities between virtual and in-person settings. The COVID Safety routine swiftly generated and discarded processes in response to changing conditions, while the Collaboration and Recognition routine continuously evolved to ensure the workforce's well-being. These examples highlight the essential role of temporary routines in enabling organizations to navigate crises effectively, showcasing the adaptability and innovation that can stem from bureaucratic processes.

B. AGILITY THROUGH THE GENERATION AND EVOLUTION OF TEMPORARY ROUTINES

As discussed previously, the organization successfully responded to the external change presented by the COVID-19 pandemic. COVID-19 was a change to the external environment; drivers consisted of new policies or performance gaps, and new routines were generated in response to the drivers. Generating and evolving temporary routines involved three phases: prototyping, testing, and deciding. Prototyping, although evident in organizational routines (Colberda, 2021; Assimakopoulos et al., 2015), contradicts typical organization routine development. Temporary routine creation and evolution does not involve a lengthy development and testing process. Prototyping within temporary routines applied rapid analysis, development, and implementation of solutions, often within days and weeks of initial requirement identification. Testing included organizational transformation, which included adjudicating feedback to the implemented solutions and diffusion and acceptance of the routines across the organization. During the Deciding phase, if the organization decided to evolve the routine, the creation and evolution process would start over. Figure 22 shows the life cycle through which the organization generated and evolved temporary organizational routines. This section describes each phase of the life cycle.

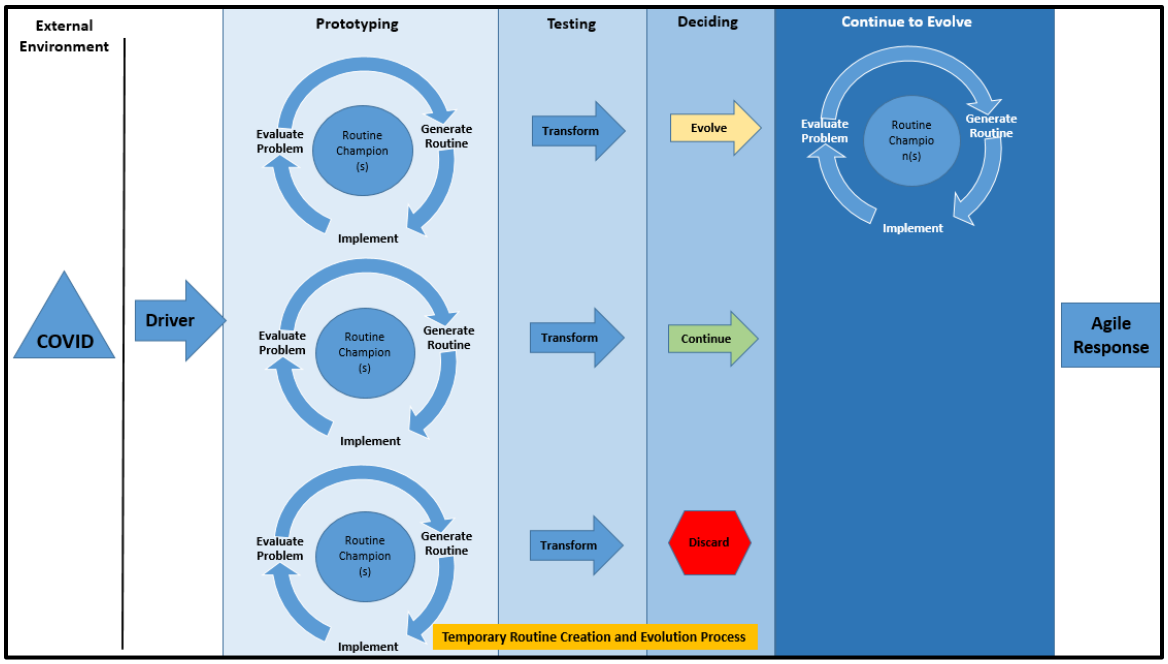


Figure 22. Temporary Routine Generation and Evolution Life Cycle

1. Drivers

Each routine was created in response to a driver. There were two main drivers: policy and performance gaps. Policy changes instigated the generation of temporary routines when outside mandates forced internal policies to be created, or updated, in response to the COVID-19 pandemic. Performance gaps instigated the temporary routines when individuals became aware that the organization could no longer work onsite, process interpersonal transactions, and route handwritten forms. Furthermore, leaders were unable to monitor their employees, and employees were unable to engage in operational transactions. The organization generated all three routines—Telework, COVID Safety, and Collaboration and Recognition—in response to a policy change. However, the organization also generated the Collaboration and Recognition routine in response to a recognized performance gap.

The Telework routine was driven by policies that responded to the current environmental conditions. In response to the COVID-19 pandemic, President Trump issued Executive Order N-33-20, declaring a state of emergency. Escalating Health Protection Conditions (HPCON), the Command entered into a maximum telework environment,

utilizing its continuity of operations plan in conjunction with the telework policy. The following policies also drove the COVID Safety routine: Executive Order 13295 issued a revised list of quarantinable communicable diseases, revised and updated by Executive Orders 13375 and 13674, relating to certain influenza viruses. The Collaboration and Recognition routine was also driven by Executive Order N-33-20, which ordered employees to stay at home, isolate, and not come into contact with other people.

One participant provides evidence of policy as a driver of change: "The CAT team [COVID Action Team] was responding to higher policy." Other participants corroborated that policy was driver: "It was directed by DOD or DON. They were the ones that directed us on traveling and directed us on if you travel within CONUS, there was this if you traveled outside of CONUS—there were all these different directions that came out, health protection notices—that came out that told us what to do." As another interviewee said: "We got direction out of DOD to make sure that everyone did the health check."

The routines were created in response to policies and executive orders that arose because of the COVID-19 pandemic. The changing environment demanded that old policies be updated, and new policies be created to allow government employees to work from home, maintain a safe workplace, prevent the spread of the disease, and avoid unnecessary travel or unnecessary reporting to the work site.

Performance gaps were another driver for change. In addition to policy drivers, performance gaps also drove the creation of the Collaboration and Recognition routine. Performance gaps that drove the development of the routines included the organization's need to communicate accomplishments effectively and prevent employees from not feeling like part of the team due to their lack of interaction with others. Examples of drivers that led to the generation of the Collaboration and Recognition routine included employees not being able to have water-cooler conversations and not receiving support from peers or leadership. This led to the establishment of the Parent for Parents forum.

Another example is the need for more communication of project activities. This is corroborated by one participant who explained how the weekly highlights process within the Collaboration and Recognition routine was derived from a performance gap:

"What it boils down to is we're looking for accomplishments, big or small, uh, on a weekly basis from our people, from our projects saying what they have done. It's kind of like an impact statement. Here, here's what I did this week. This is the impact it had, whether across the, you know, the, the project, the Center, or the Navy, what have you. And it's just to kind of like toot our own horn up to the leadership."

Performance gaps were another driver for the generation of routines. This is particularly evident in the Collaboration and Recognition routine, where new processes were developed to allow for peer-to-peer collaboration and sharing of project activities and accomplishments.

2. Temporary Routine Creation and Evolution Process

Temporary routines were generated through a cyclical process of routine prototyping, testing, and deciding, potentially leading to another evolution. Prototyping began with the organization evaluating the problem and existing processes, then generating a new routine from existing bureaucratic processes or newly created ones, and then implementing the routine. Testing allowed the organization to respond to the solutions and address their feedback. The transformation occurred when the organization began to diffuse and accept the routine; routine champions facilitated this. During the Deciding phase, the organization decided to discard, keep, or evolve the routine. The following sections describe the temporary routine creation and evolution process within the Temporary Routine Generation and Evolution Life cycle. Each process phase (prototyping, testing, and deciding) will be discussed, and examples provided. Figure 23 depicts the Temporary Routine Creation and Evolution Process.

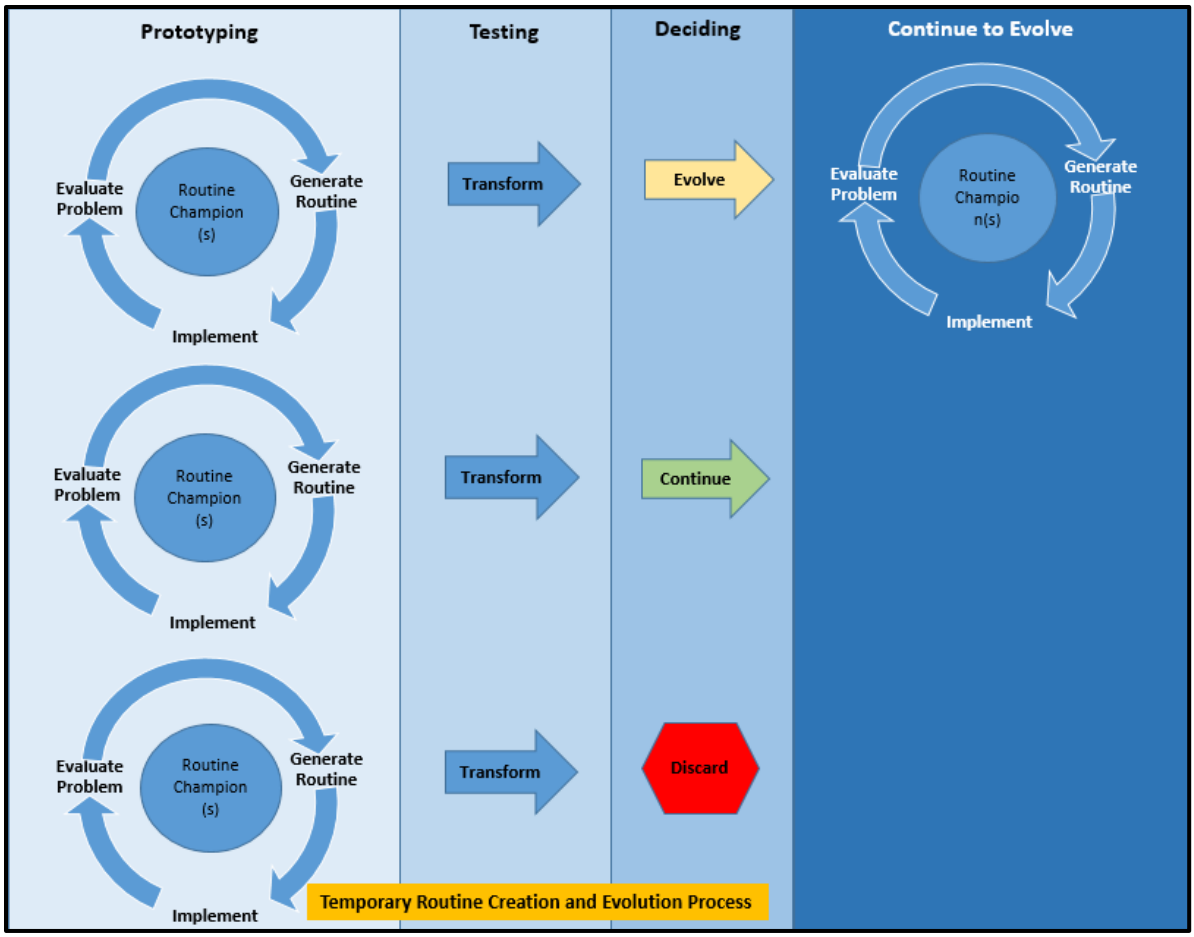


Figure 23. Temporary Routine Creation and Evolution Process

a. Prototyping

Prototyping is the first phase of the temporary routine creation and evolution process. This phase included the temporary organizational routine's evaluation, generation, and implementation steps. It allowed the organization to respond to drivers of change, evaluate the problem through collaboration, analyze existing resources, generate new routines, and implement solutions.

(1) Evaluate

The organization evaluated problems and potential resources. Individuals collaborated through discussions held with the Reduce Administrative Distractions (RAD) Team and COVID Action Team (CAT). Utilization of these think tanks allowed for

analysis of problems and available resources, identification, and prioritization of proposed changes. The organization created new think tanks, such as the COVID Action Team (CAT), and utilized existing teams, such as the Reduce Administrative Distractions (RAD) Team. In collaboration with process owners, these team members analyzed the problem, identified what changes should occur, assessed possible solutions, evaluated proposed solutions, and prioritized developments. Analytical think tanks were either newly established or repurposed and utilized to evaluate the best possible response quickly.

The COVID Action Team members included the Corporate Operations Department Head, the IT Division Head and Process Owner, the Total Workforce Division Head and Process owner, the Special Projects Division Head and Process Owner, the Corporate Strategy Division Head and Process Owner, and the Command Operations Division Head and Process Owner. The Reduce Administrative Distraction Team members included operation managers from each department and the knowledge management representative. The CAT and RAD Teams worked with process owners to assess policies, determine what options and solutions were available, and gather feedback from stakeholders for all three routines during this phase of the temporary routine creation process. This is evidenced through the evaluation of the checkout process in the Telework routine. As one employee stated: "Then we discussed it on the RAD team, and then one of the members started working with the various individuals involved as well as the Hub team to see how we could automate the checkout process." Similarly, another employee recounted how the CAT team was able to facilitate and communicate the vaccine request process within the COVID Safety routine: "COVID action team, I think it was that's their name, um, they were able to engage with, uh, Navy medical centers around the region to determine who had vaccines, um, and what their policies were. Then they were communicating that out to the department leadership as well as the COG members." And the process owner for the hoteling process describes how they evaluated solutions in collaboration with the department's employees as part of the Collaboration and Recognition routine: "We had a town hall with all the employees where we pulled and presented the three different options and the pros and cons of each option."

The employees were more involved in the Collaboration and Recognition routine as this routine took longer to shape and implement; stakeholders and process owners were more involved and provided more feedback to ensure that the routines evolved and addressed their requirements. Table 13 offers samples for evidence of evaluation in each of the routines.

Table 13. Evidence Samples of Evaluation in Each Routine

Process Step/Key Concept	Telework	COVID Safety	Collaboration & Recognition
Evaluation/Think Tanks	"Then we discussed it on the RAD team and then one of the members started working with the various individuals involved as well as the hub team to see how we could automate the checkout process."	"We got feedback on a variety of different things. That helped us define what kinds of processes we needed to put in place." "COVID action team, I think it was that's their name, um, they were able to engage with, uh, Navy medical centers around the region to determine who had vaccines, um, and what their policies were. Then they were communicating that out to the department leadership as well as the COG members."	"And then we discussed it on the RAD team." "There was even a bit of socialization with other portfolio managers and division heads." "We had a town hall with all the employees where we pulled and presented the three different options and the pros and cons of each option." "We actually did a number of online surveys, we did two, that went out to the workforce."

As demonstrated in these examples, temporary routines required impromptu reactions and well-thought-out responses grounded in analytical reasoning. Creating and re-using think tanks helped with rapid evaluation, and assessment of possible solutions, and was a necessary step in the prototyping phase when creating temporary routines.

(2) Generate

The organization determined what and how changes were developed and utilized existing resources or created new innovations to deploy solutions. The second step of the prototyping phase is Generate. This step details what actions took place, what change was implemented, and what innovation resulted from the change. This phase saw rapid changes to processes, fast deployment of tools, and lots of automation.

The organization saw a rapid transition from in-person meetings to three different teleconferencing solutions in the Telework routine. The first, Amazon Chime, was deployed a few weeks after the initial transition to teleworking. The organization then transitioned two more times within a year from CVR (a MS Teams product) to the more secure Flank Speed (MS Teams) teleconferencing software application. New and automated technology was implemented to allow for virtual business operations and virtual meetings. New employee onboarding and awards ceremonies transitioned to online. The checkout processes were automated but took longer to deploy as the online content and formatting also had to be developed, as described by one interviewee: "The checkout tool came about maybe six or eight months ago, that was to automate everything." It took a while for the organization to realize that the process was broken. Teams that needed to sign the checkout form were no longer available as maximum telework was enforced, and they were not working onsite, so employees were checking out without providing the required signatures. Many teams were involved in the checkout process: as many as twenty teams needed to verify that the employee had completed specific actions before signing the paper form, so ensuring all of their requirements were captured in the tool took a while.

Many new processes were established in the COVID Safety routine: vaccine reporting and health tracking were found in an online tool. A mission-essential travel tool evolved out of the foreign travel tool, evolving to include vaccination status and the need for travel as well as requesting approval from the employee's chain of command prior to approval. Finally, a check-in tool was established for those going onsite to inform their supervisor of onsite visits. One employee describes how rapidly a new health check tool was implemented: "I think we initially captured it via email, but I think that only lasted for about a week before a tool was developed for our folks to self-report."

Project employees were reporting activities and celebrated for their achievements through an automated online workflow that allowed for weekly highlight submissions in the Collaboration and Recognition routine. One of the routine champions explains how the weekly highlights tool evolved: "It started as just a, 'Hey, we're gonna help with—umm—status reports,' and suddenly it's gone, 'Oh, this is working,' and then it's gone into how can we use it for our requirements as well."

Many of the activities that were previously handled in person or via email were transformed through automation or made available online. An online forum was established on the Hub intranet site and also in MS Teams to allow employees to collaborate with others. Table 14 provides evidence of rapid innovations in each of the routines.

Table 14. Evidence Samples of Generation in Each Routine

Process Step/ Key Concept	**Telework**	**COVID Safety**	**Collaboration & Recognition**
Generate/Rapid Prototyping	"Right at the start of the pandemic we went fully virtual." "Then we discussed it on the RAD team and then one of the members started working with the various individuals involved as well as the Hub team to see how we could automate the checkout process." "The checkout tool came about maybe six or eight months ago, that was to automate everything."	"I think we initially captured it via email, but I think that only lasted for about a week before a tool was developed for our folks to self-report." "Whenever the vaccine came out—they put out a tool like a day or two later."	"It started as just a, 'Hey, we're gonna help with—umm—status reports,' and suddenly it's gone, 'Oh, this is working,' and then it's gone into how can we use it for our requirements as well." "It was just launched like a month ago." "So, it took two years of planning to get people adapted to this change or this idea."

Generation of solutions was rapid in this step of the prototyping phase. Automations were quickly established, processes were made available online, and software applications

were speedily evaluated and implemented. As demonstrated in these examples, temporary routines required rapid development and deployment of solutions.

(3) Implement

The organization determined how the changes were implemented and deployed across the organization, and what training and communication methods were used. The Implement step is the final step of the prototyping phase. This step of the prototyping phase describes how the change was implemented, detailing how the routine was received across the organization, and saw quick reference guides developed, demonstrations provided, and feedback sessions held. The key concepts of the implement phases are that training and communications were required and frequent. Additionally, people who valued the changes were sought out to help influence others, which helped overcome negative feedback as concerns were quickly addressed.

The organization sent out many Center-wide emails, along with associated quick reference guides (QRG), Hub (intranet) pages, discussions, training sessions, and demonstrations with stakeholders for each of the routines, as evidenced by one member of the CAT team describing how hybrid meetings would be held: "We're gonna have to train people, put together a QRG, show them how to do that in our conference room; they're not used to doing it." This echoes how communications and feedback sessions were held when the mission-essential travel tool as part of the COVID Safety routine: "The Center did a pretty good job, because of the fact that we had frequent meetings with the workforce, with the leadership team in each department so they could ask questions." The Collaboration and Recognition routine also had training sessions, demonstrations, and feedback sessions but differed because initial training sessions were more frequent and specific to the department that initiated the changes, and less Center-wide training and communications were evidenced. The process owner describes the implementation as a "huge change effort." Table 15 provides additional samples of evidence of how the routines were implemented.

Table 15. Evidence Samples of Implementation in Each Routine

Process Step/ Key Concept	Telework	COVID Safety	Collaboration & Recognition
Implementation /Training and Communication	"We're going to have to train people, put together a QRG, show them how to do that in our conference room; they're not used to doing it." "It was piloted for a while, maybe two to three months, and then it came out."	"The Center did a pretty good job, because of the fact that we had frequent meetings with the workforce, with the leadership team in each department so they could ask questions." "Then the Hub team came and gave us a demo about a week later."	"I don't think it became a Center-wide mandate until about a year ago." "But then pretty quickly we rolled it out to the whole department—just so we could get more people using it." "We're going to start training the workforce on this new tool next week." "There was a huge change effort to this."

The implementation step of the prototyping phase saw plenty of training events, artifacts generated to assist with training, feedback sessions held to answer questions, and communications advertising how the processes had changed and were to be used. Additionally, people who valued the changes were sought out to help influence others, which helped overcome negative feedback as concerns were quickly addressed.

b. Testing

Testing is the second phase of the temporary routine creation and evolution process. This phase included transformation of the organization. The organization transformed by accepting and utilizing routines that were deployed in the previous phase. The Transformation step discusses how the routine was utilized and how it diffused across the organization. Routine champions were key to the successful utilization and diffusion of temporary routines; they advocated for utilization and helped address feedback and overcome challenges. The organization tested the routine and provided feedback; once concerns were adjudicated, routine champions helped alleviate employees' concerns and assisted in the acceptance and diffusion of routines across the entire organization.

There were positive and negative responses to all of the routines, but ultimately most negative responses were addressed through feedback and the evolving nature of the routines; normally, the organization successfully implemented many changes in response to the changing environment. People who valued the changes were sought out to influence the adoption of the changes; these people were identified by the routine champions and the advocate responses used to encourage acceptance of the routines. Employees initially resisted the weekly highlight process, which was part of the Collaboration and Recognition routine. However, the organization navigated these challenges adeptly. Negative sentiments were effectively addressed through active feedback mechanisms and an openness to evolving the routines based on employee input. Influence was a big part of routine acceptance, and routine champions used that to their advantage. The routine champion for the weekly highlights process describes how he used an employee's positive response to their advantage: "She loved the idea…And that was a big win for us because she had the energy, and she also had the background in terms of doing." This is corroborated by another participant: "He saw the power of it and how it would ultimately make his life better. So, he was all in and he got them to use it."

Positive responses, on the other hand, aided in influencing others and in acceptance and adoption of changes. Employees found ease in the Telework routine, appreciating its flexibility and efficiency. One division head described how the teleconferencing process was eventually accepted: "And then once we got our IT in place, like once people were able to log on, everybody had Teams. Um, and kind of got used to how to use that technology, which took a couple of months. Um, then people felt like it was easier. Like I think they actually enjoyed it more, especially the ones that had access on their phones." The Telework routine transformed daily operations. To ensure continued operations, teleworking was a necessity which quickly diffused across the organization. There was initial disruption, and operations were a little chaotic during the transition to maximum telework, but employees soon adapted once equipment and training were provided.

Many new processes, such as vaccine reporting and health tracking, were established as part of the COVID Safety routine. Many changes were implemented rapidly and continually updated as new requirements were identified and new information was

provided. Weekly communications were sent out by the Corporate Operations department head, and weekly drumbeats with the COVID Action Team helped address employees concerns and addressed feedback. All of the COVID-19 safety processes were implemented quickly, within the first three months of the COVID-19 pandemic. Responsive changes were made in order to ensure the health and safety of the employees. Timing was deemed a higher priority as lives were at risk. Many employees within the organization initially hesitated to accept some of the processes implemented as part of the COVID Safety routine, but eventually saw positive reinforcement as the leadership actively encouraged adherence, emphasizing the collective need for safety. As one leader explained: "We wanted to track who's where, what and when because of COVID, and to make sure we weren't exceeding the capacity."

The organization saw changes to the way projects and employees were reporting activities and celebrated for their achievements through diffusion of the Collaboration and Recognition routine. The Collaboration and Recognition processes had varied timelines. Teleconferencing was established almost immediately. The Parent for Parents forum was established within two months of employees transitioning to maximum telework. However, the weekly highlights, hoteling and awards processes took more work to implement as requirements needed more thorough review and development with the stakeholders. Collaboration and Recognition, despite initial reservations, garnered support as individuals recognized the transformative power of operations, acknowledging its potential to enhance their work lives. While initially confined to specific departments, parts of the Collaboration and Recognition routine gradually expanded their reach, transitioning from a departmental initiative to a Center-wide mandate, showcasing its successful integration into the organization's operations. The weekly highlights process was eventually mandated to ensure the organization as a whole was using it. Hoteling was specific to one department and did not diffuse to other departments because only that department needed the capability and the others felt it needed to be revised. Table 16 provides samples of the routine transformations.

Table 16. Evidence Samples of Transformation in Each Routine

Process Step/ Key Concept	Telework	COVID Safety	Collaboration & Recognition
Transformation/ Routine Champion	"And then once we got our IT in place, like once people were able to log on, everybody had Teams. Um, and kind of got used to how to use that technology, which took a couple of months. Um, then people felt like it was easier. Like I think they actually enjoyed it more, especially the ones that had access on their phones." "The only pushback was 'Oh great we have to do one more thing but at least it was easier than briefing the CO and ED when we needed folks to go on travel.'"	"Some people were confused in the beginning." "We wanted to track who's where, what and when because of COVID, and to make sure we weren't exceeding the capacity." "We're talking like a possible 8,000 people could potentially put in a request, so we needed an easy way for me to prioritize vaccines…we needed a way to be able to extract…so that's how we decided we could use the Hub." "Within that policy, and then HR constraints, HR and legal constraints, the COVID Action Team had some expertise from within. It was HR, IT, knowledge management, facilities and safety. So, with input from all of those folks, internal policy was implemented."	"It didn't become a Center-wide mandate until about a year ago." "We presented our department changes as a use case to share our journey of how it went and why we did it, all of those things." "She loved the idea…And that was a big win for us because she had the energy, and she also had the background in terms of doing."

The testing step of the prototyping phase saw the organization transform in many ways: the Telework routine was deployed immediately and utilized by eighty percent of the workforce within weeks of implementation, making it possible for employees to work from home with little disruption. Similarly, the organization saw rapid acceptance and utilization of the COVID Safety routine: the workforce accepted the need to keep everyone safe when visiting the worksite, and ensured that they completed health checks prior to coming onsite and prior to travel. Employees were slower to accept the Collaboration and Recognition routine: its processes were slower to implement, and utilization was not as great, unless it was mandated, or isolated to specific departments.

c. Deciding

Deciding is the final phase of the temporary routine creation and evolution process. This phase decided the fate of the temporary organizational routine. The Deciding phase contains three decision paths for the temporary routine: the routine could evolve, be discarded, or be kept as was The organization, facilitated by routine champions, decided the outcome of the routines. The Telework routine went through many evolutions. The COVID Safety routine evolved before most of the processes comprising it were discarded, while the Collaboration and Recognition routine evolved and then saw its elements both kept and discarded.

(1) Evolve

The Evolve step of the Deciding phase identified whether any additional changes were needed and whether evolution took place from the original requirement. The organization decided that many elements of the Telework routine would evolve throughout the pandemic. New technology was evaluated and utilized; previously utilized applications were more widely adopted and re-utilized to automate processes so that operational processes and approvals could be handled through online transactions. The teleconferencing process evolved many times over the first year of COVID-19, changing from a free industry-provided impact level 2 solution to an industry impact level 4 solution and now to a government-managed impact level 4 solution. New employee orientation and the awards process evolved from in-person to online and back to in-person. The hoteling process evolved through different technologies but continues to be mandated for one department. The checkout process continues to evolve and improve through employee feedback.

Similarly, some elements of the COVID Safety routine evolved. Wearing masks became optional since COVID-19 appeared to be transmitted whether masks were worn or not. The vaccine request tool evolved into vaccine reporting. Vaccine reporting was discontinued after it was determined that you could still catch the virus even if you had been vaccinated. The health check process was initially intended for government civilians, contractors, the military, and their dependents. Then contractors were excluded, and later

dependents were freed from reporting requirements. The check-in tool evolved into a mustering tool once capacity levels returned to normal. It is now up to divisions or departments to decide whether to use it. The mission-essential travel tool evolved out of a foreign travel reporting tool to ensure travelers had a mission-critical need and were vaccinated, but this evolved as guidelines changed. Originally, it was intended for use by Government civilians and the military. Subsequently, it was limited to use by civilians, before being mandated only for unvaccinated travelers, but now it is no longer required. This is explained by one employee as follows: "The requirements for the use of it changed over time and then the approval levels changed…So as the Navy regulations and policies changed, the approval authority changed…then what was deemed mission critical changed over time. And then I think it went from tracking both CONUS and OCONUS travel to just CONUS."

The organization saw many evolutions of the Collaboration and Recognition routine: the weekly highlights process and the hoteling process evolved to address differing requirements, as explained by the hoteling routine champion: "We knew that Jira was our interim solution, and we told everyone that at the very beginning." Similarly, the teleconferencing process evolved through many iterations of technology.

If the routine continues to evolve, it moves to the Continue to Evolve phase of the Routine creation and evolution life cycle, and the steps would repeat through the temporary routine creation and evolution process—prototype, test and decide—as depicted in Figure 23.

(2) Keep

The decision to keep the routine determined that the routine could continue. After the initial transition to the Telework routine, many employees really enjoyed the ability to work from home, as explained by one employee, "It's the flexibility it offers me—it's incredible and the productivity…" and corroborated by a division head, "I would like to continue the ability for my workforce to continue working from home."

The organization still has a few elements of COVID Safety routine in place. The contact tracing and health check tracking processes remain in place, but less emphasis is

put on the requirement to enforce these processes, as the effects of contracting the disease are not deemed such an imminent threat to life. As one division head explained, "I don't know if my folks are doing it because I am no longer pushing them to do it."

The Collaboration and Rewards routine has temporary elements that are still in place, but some were only in place temporarily, such as the presentation of awards. Weekly highlights and Parents for Parents remain in place. Many artifacts of these routines still exist, and parts of the routine could be re-implemented if the need arises.

(3) Discard

All three routines had parts that have been discontinued and are no longer used. Discard identified whether the change was temporary and stopped being used after a given period. The organization decided that some of the processes comprising the Telework routine could be discarded: the virtual hosting of new employee orientation and presentation of awards were discarded as in-person events were preferred, so the virtual attendance was stopped once the organization's employees began returning to the workplace. As ne senior leader stated, "If we go too high [in terms of community levels] we'll go back to a virtual, but until then NEO will be in person…because otherwise it's a one-way conversation."

Many of the COVID Safety processes have entirely gone away. Initially, the routine was established to ensure the organization's employees were kept healthy and safe. Conditions have since changed once again: vaccines are now available, the environment has adapted, and health protection levels have returned to HPCON Alpha. Vaccine requests eventually stopped being used for scheduling vaccinations, as they were managed by the medical facility and became more publicly available. The vaccine request tool transitioned and was initially repurposed for vaccine reporting; reporting vaccination status then stopped when new information was revealed that it was possible to catch the virus after one had been vaccinated. The check-in tool stopped once the health protection condition dropped, and the capacity levels increased. However, this provides evidence that the COVID Safety routine was very temporary since most of its elements have gone away entirely. It is now left up to the discretion of departments, divisions, teams, or individuals

whether to wear a mask or check in. Use of the mission-essential travel tool was stopped once capacity levels returned to HPCON Alpha, and vaccines were more widely available. As mentioned in the Telework routine, it was determined that in-person recognition events are preferred, and more interaction occurs when face to face. Table 17 provides evidence samples of decisions in each of the routines.

Table 17. Evidence Samples of Deciding in Each Routine

Process Step/Key Concept	**Telework**	**COVID Safety**	**Collaboration & Recognition**
Keep	"I would like to continue the ability for my workforce to continue working from home." "It's the flexibility it offers me—it's incredible and the productivity."		
Evolve		"The requirements for the use of it changed over time and then the approval levels changed…So as the Navy regulations and policies changed, the approval authority changed…then what was deemed mission critical changed over time. And then I think it went from tracking both CONUS and OCONUS travel to just CONUS." "I would say that some branches are probably now using it as a way to muster."	"So, there were some features that people wanted that the tool didn't have…now we are moving on to a SharePoint site." "We knew that Jira was our interim solution, and we told everyone that at the very beginning."

Process Step/Key Concept	Telework	COVID Safety	Collaboration & Recognition
Discard	"If we go too high [in terms of community levels] we'll go back to a virtual, but until then NEO will be in person….because it's a one-way conversation."	"So, at the end of April, um, 3rd Fleet was relieved from continuing to do that. We closed out all of the folks that needed the second dose and then they didn't take any more first dose people. So, now if you want a booster or anything like that, you just go through the regular medical facility process now." "The tool and processes were in places for about six months. And then I think that died out after a period of time."	"The artifacts for merit or honorary awards, they were sitting in my office for the longest time because we would not give them to our employees." "There's no plan to do hoteling, some of that doesn't make sense."

Elements within these routines deemed no longer essential were discarded as conditions evolved. The preference for in-person events, evident in the Telework and Collaboration and Recognition routines, highlighted the importance of face-to-face interactions. Similarly, the COVID Safety processes, initially vital for employee health, were rendered obsolete with the availability of vaccines and shifting health protection levels. This analysis underscores the organization's agility, with decisions based on practicality and changing requirements.

The Deciding phase marked the culmination of the organizational routine generation and evolution process, shaping the fate of temporary routines crucially during the challenging times of the pandemic. Guided by routine champions, the organization made pivotal decisions, leading to the evolution, discarding, or retention of specific routines. Notably, the Telework routine underwent multiple evolutions, adapting to changing needs and technologies, reflecting a proactive approach to remote work. Parts of all three routines were discarded, emphasizing the organization's agility in discarding elements that were no longer relevant or preferred. The balancing act between evolving, discarding, and retaining routines showcased the organization's agility, ensuring that the temporary routines align seamlessly with the workforce's needs and preferences, ultimately contributing to a resilient and dynamic work environment.

C. TEMPORARY ROUTINE ENERGIZERS

Temporary routines are energized by routine champions and knowledge cyclones. Temporary routine energizers smooth and increase the flow of knowledge throughout the organization. Routine champions and knowledge cyclones are not process steps but are still depicted in "Agility through the Generation and Evolution of Temporary Routines Life Cycle" diagram (Figure 21) as they help the organization provide an agile response.

1. Routine Champions

An organizational routine champion refers to an individual or a group within an organization who actively promotes, supports, and advocates for the adoption, execution, and improvement of specific organizational routines. These champions play a critical role in ensuring that routines are implemented effectively, sustained over time, and adapted to changing circumstances. They act as advocates, influencers, and facilitators, encouraging other members of the organization to embrace and adhere to established routines. Champions often possess deep knowledge and expertise related to the routines in question, and they leverage their credibility and influence to drive organizational learning and improvement. Evidence within the research shows how routine champions solicit, collect, and address feedback, and play a large part in all phases of the process but are most evident in the transformation phase. They maneuver the routine so that it can evolve and adapt to new circumstances, overcome barriers, and include and adapt to new technology.

In the Telework routine, champions like the COVID Action Team and the Hoteling Process Lead were critical in facilitating communications, addressing questions, and ensuring collaboration Center-wide. Similarly, in the COVID Safety routine, champions managed challenges related to vaccine requests, contact tracing, and health checks. The Collaboration and Recognition routine saw champions from different departments collaborating to implement new processes and technologies, demonstrating their proactive approach to driving change. One interview provided evidence of the work done by the routine champions: "Within that policy, and then HR constraints, HR and legal constraints, the COVID Action Team had some expertise from within. It was HR, IT, knowledge management, facilities and safety. So, with input from all of those folks, internal policy

was implemented." And one routine champion described how much effort was needed to ensure elements of the Collaboration and Recognition routine were accepted: We went through a whole lot of things…all of those questions that were coming up in focus groups, and the town halls. And you know we also did surveys…and got feedback on a variety of different things." One employee explains how a routine champion helped with implementation of the weekly highlights process: "She loved the idea… And that was a big win for us because she had the energy, and she also had the background in terms of doing."

The significance of routine champions emanates from their proactive engagement with individuals impacted by established routines. Routine champions collaborate with stakeholders, garner feedback, and facilitate socialization and training initiatives. Moreover, routine champions play a fundamental role in the evolutionary processes within organizations. To enable evolution, these champions adeptly address resistance among individuals affected by routine modifications. By fostering an environment of open communication, in which individuals feel not only involved but also integral to the solution, champions facilitate a sense of ownership and belonging.

By leveraging their expertise, credibility, and influence, routine champions bridge the gap between the change driver, implementation, and actual practice. Their ability to manage challenges, collaborate across departments, and facilitate open communication ensures that established routines are not only effectively implemented but also evolve to meet changing circumstances. They are the linchpin that transforms organizational routines from an immediate response to change, into an integral part of organizational operations, thereby ensuring sustained success in the face of challenges. Their efforts underscore the importance of proactive leadership and collaborative engagement, offering invaluable lessons for organizations aiming to thrive in today's ever-changing landscape.

2. Knowledge Cyclones

The creation of temporary routines was energized by a knowledge cyclone and assisted by knowledge flow.

A knowledge cyclone is a rapid, cyclical generation and flow of knowledge, driven by a set of three conditions. These three conditions power rapid and effective, unplanned process change: 1) Someone needs to have a good idea (knowledge); 2) the organization needs to have the ability for it to proliferate (knowledge flow) through practice; and 3) the organizational climate needs to be ready for change.

a. Knowledge

According to Nissen (2006), knowledge is information that is actionable and executed in order to make decisions. For example, there is a flashing light. If a person were to see the flashing light, they may recognize a pattern, for instance three short bursts, three long bursts, and three more short bursts. This a specific pattern to someone who understands Morse code: they can translate the pattern, understand the meaning behind the information provided, and take action—in this instance, they can call for search and rescue assistance or send a message for emergency assistance. Knowledge can further be broken down into explicit and tacit knowledge. Explicit knowledge is that which has been documented, articulated through words or diagrams, and can be disseminated via books, standard operating procedures, lessons learned, websites, etc. Alternatively, tacit knowledge, which has not been documented, is more difficult to transfer and involves experience and practice. Nonaka et al. (2000) describe the differences between the two types of knowledge as follows: "Explicit knowledge can be expressed in formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals, and such like. It can be processed, transmitted, and stored relatively easily. In contrast, tacit knowledge is highly personal and hard to formalize. Subjective insights, intuitions and hunches fall into this category of knowledge" (p. 7).

Routines contain organizational knowledge and allow employees to perform repetitive actions. Explicit knowledge can be identified through the artifacts of the routines, as identified in Table 10, while tacit knowledge can be identified in the performative and ostensive aspects of the routines as identified in the same table. NIWC Pacific has a workforce of scientists and engineers who are paid to develop good ideas. The workforce already has the ability to think and innovate as a resource at their disposal. Requests were

made by the Commanding Officer and Executive Director to submit ideas, responses to certain conditions, and possible solutions as part of the NIWC Pacific Beat COVID-19 All-Virtual Startup Event. See Figure 24 for the news article extract that thanked everyone for their submissions. This event resulted in the submission of thirty-six ideas. The top suggestion was from Naval Hospital Guam, which had been working with the Defense Digital Service (DDS) to deploy a symptom checker to muster sailors from USS Theodore Roosevelt twice a day and collect their self-reported symptoms.

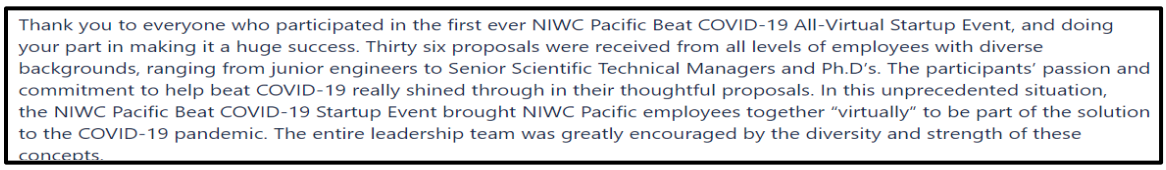

Thank you to everyone who participated in the first ever NIWC Pacific Beat COVID-19 All-Virtual Startup Event, and doing your part in making it a huge success. Thirty six proposals were received from all levels of employees with diverse backgrounds, ranging from junior engineers to Senior Scientific Technical Managers and Ph.D's. The participants' passion and commitment to help beat COVID-19 really shined through in their thoughtful proposals. In this unprecedented situation, the NIWC Pacific Beat COVID-19 Startup Event brought NIWC Pacific employees together "virtually" to be part of the solution to the COVID-19 pandemic. The entire leadership team was greatly encouraged by the diversity and strength of these concepts.

Figure 24. News Article Extract

Similarly, a symptom and health tracker was created for the NIWC PAC workforce through the health heck tool as part of the COVID Safety routine, which are evidenced in the temporary routines.

A COVID Action Team was established to think through and assess proposed solutions to address new requirements and meet guidelines. A Reduce Administrative Distractions Team (previously established) was utilized to assess, address, and prioritize responses to problems that were submitted by the workforce. A sample of the ideas submitted through the RAD process can be found in Appendix E. As can be seen within this organization, many great ideas were suggested, and feedback provided.

b. Knowledge Flow through Practice

Knowledge flow is the process of transferring and sharing knowledge between individual, groups, and organizations. It encompasses the processes and mechanisms through which knowledge is created, captured, organized, and transmitted among individuals, teams, and departments. Knowledge flow is essential for fostering innovation, problem-solving, and continuous organizational learning. It enables employees to access relevant information, collaborate effectively, and make informed decisions, thus enhancing

organizational performance and adaptability (Nonaka, 1995; Grant, 1996; Nissen, 2006). In essence, knowledge flow ensures that organizational knowledge is not stagnant but continuously evolving, aligning with the ever-changing landscape of challenges and opportunities. The continuous evolution of routines is an essential facet of temporary routines. Organizations embracing knowledge flow are more inclined to accept temporary elements, acknowledging that agility necessitates a readiness to let go of routines that no longer serve their purpose. Rapid responses to emerging information, knowledge, or new circumstances become feasible through this agile approach. Details of each routine and associated automations, and how they were generated and transformed, are discussed in earlier sections of this chapter.

Communication barriers were eliminated through a more concerted effort by leaders to communicate what was known about the virus and how that would affect operations. The Corporate Operations Director wrote weekly COVID-19 updates at the onset of the pandemic, and these continued over the next three years, although decreasing in frequency as operations normalized. Weekly COVID drumbeats were established to disseminate details to the senior leadership, operations, and employees. Emails, Hub pages, blog articles, quick reference guides, and demonstrations were created and published to advertise new capabilities and new or updated tools. Examples of artifacts include IT Management updates, Telework FAQs, and COVID FAQs.

c. Organizational Climate

The COVID-19 pandemic created a set of life-threatening conditions: people were worried about their lives and the lives of their families, about how to get food for those out of work, and how to continue to work in the new maximum telework environment. This sudden organizational climate change left the workforce grasping for lifelines and a sense of normality. Imperfect solutions were developed and implemented to restore normality and fine-tuned as feedback was provided. Table 18 provides evidence of the knowledge cyclone conditions in each routine.

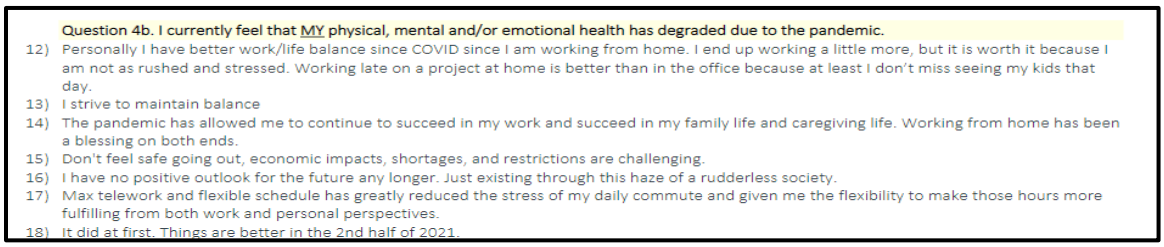
Table 18. Evidence of Knowledge Cyclone Conditions in Each of the Temporary Routines

Routine	Telework	COVID Safety	Collaboration & Recognition
Knowledge	Reduce Administrative Distraction Submittals	NIWC Pacific Beat COVID-19 All-Virtual Startup Event COVID Action Team Suggestions Reduce Administrative Distraction Submittals	Reduce Administrative Distraction Submittals
Knowledge Flow	Implementation of teleconferencing applications IT Management emails and blogs providing details of improvements of the IT infrastructure Telework FAQs Hub Page	Creation of check-in tool Creation of health check tracker Creation of vaccine reporting Creation of mission-essential travel tracker Weekly COVID drumbeat meetings COVID update emails from the Corporate Operations Director Q&A sessions with employees and supervisors COVID FAQs Hub Page	Parent for Parent forum (Hub page and MS Teams channel) Improvements to the online awards tool Creation of the weekly highlights tool Creation of the hoteling tool Emails announcing release of tools, demos, and training sessions. Notifications of virtual awards ceremony
Organizational Climate	Needed to be able to work in a maximum telework environment.	Needed to be able to work while preventing the spread of the disease.	Needed to be able to support other employees when isolation was enforced, and collaboration was not possible in person.

Additionally, the organizational need for a sense of stability reduced knowledge friction and facilitated the diffusion of temporary routines across the organization. Knowledge friction refers to the barriers, obstacles, or challenges that hinder the smooth flow and transfer of knowledge within an organization. It represents the resistance, inefficiencies, or difficulties encountered when individuals or teams attempt to share,

access, or apply knowledge. Reducing knowledge friction is crucial for enhancing organizational learning, innovation, and adaptability. Some common forms of knowledge friction include cultural barriers, communication challenges, information silos, lack of trust, and technology limitations. Knowledge flow and minimizing knowledge barriers assist the seamless diffusion of temporary routines.

Cultural barriers were eliminated as employees worked and supported one another. A Parents for Parents forum was established, surveys were utilized to collect feedback, and many open and honest question-and-answer sessions were facilitated between the employees and leadership. Figure 25 provides an example of a survey question with responses provided.



Question 4b. I currently feel that MY physical, mental and/or emotional health has degraded due to the pandemic.

12) Personally I have better work/life balance since COVID since I am working from home. I end up working a little more, but it is worth it because I am not as rushed and stressed. Working late on a project at home is better than in the office because at least I don't miss seeing my kids that day.
13) I strive to maintain balance
14) The pandemic has allowed me to continue to succeed in my work and succeed in my family life and caregiving life. Working from home has been a blessing on both ends.
15) Don't feel safe going out, economic impacts, shortages, and restrictions are challenging.
16) I have no positive outlook for the future any longer. Just existing through this haze of a rudderless society.
17) Max telework and flexible schedule has greatly reduced the stress of my daily commute and given me the flexibility to make those hours more fulfilling from both work and personal perspectives.
18) It did at first. Things are better in the 2nd half of 2021.

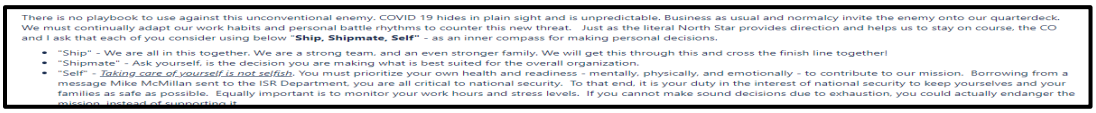
Figure 25. Parents for Parents – Sample Survey Question with Responses

Senior leaders and supervisors started communicating with their employees more. As one participant explained, "Since we didn't have face-to-face communications, we ended up inserting time into our meetings. Like at the beginning of our staff meetings, we started playing music, and that was just to keep people engaged. And then [name deleted] started doing 'This Day in History.'" As another noted, some of these changes were lasting: "And now, at the end, we do these Culture Quarter meetings, which is really just having a discussion about values and stuff like that."

Leaders put a priority on the mental health of employees. Quotations and artifacts that provide evidence that the leaders were very concerned about the physical and psychological well-being of their employees can be seen through emails and blog posts sent to the workforce. Leaders urged everyone to stay healthy and overcome obstacles to work effectively. Both the Executive Director and Commanding Officer sent

communications out to the workforce, encouraging the employees to "Be mindful of any stressors that you may be experiencing and take time to decompress. To remain effective, we must all remain healthy, and part of that is taking care of our families and ourselves."

Extracts from the Commanding Officer's communications are shown in Figure 26. They highlight the importance of mental well-being and work-life balance, as encouraged by the organization's senior leaders.



There is no playbook to use against this unconventional enemy. COVID 19 hides in plain sight and is unpredictable. Business as usual and normalcy invite the enemy onto our quarterdeck. We must continually adapt our work habits and personal battle rhythms to counter this new threat. Just as the literal North Star provides direction and helps us to stay on course, the CO and I ask that each of you consider using below "**Ship, Shipmate, Self**" - as an inner compass for making personal decisions.

- "Ship" - We are all in this together. We are a strong team, and an even stronger family. We will get this through this and cross the finish line together!
- "Shipmate" - Ask yourself, is the decision you are making what is best suited for the overall organization.
- "Self" - *Taking care of yourself is not selfish.* You must prioritize your own health and readiness - mentally, physically, and emotionally - to contribute to our mission. Borrowing from a message Mike McMillan sent to the ISR Department, you are all critical to national security. To that end, it is your duty in the interest of national security to keep yourselves and your families as safe as possible. Equally important is to monitor your work hours and stress levels. If you cannot make sound decisions due to exhaustion, you could actually endanger the mission, instead of supporting it.

Figure 26. Stay Safe Communications from the Commanding Officer

Information silos were addressed through many engagements and communications among supervisors, leadership, and the workforce. Question-and-answer sessions were held with the Executive Director and Commanding Officer, supervisors, and the rest of the workforce; everyone was invited to attend, listen, participate, and have their questions answered. Lack of trust was eliminated by open communication and the ability of employees to voice concerns through online forums and have their questions answered.

Technology limitations were addressed quickly. The organization was able to exploit computer and cloud technology—everyone could participate in a conference call through Voice over IP. Connections opened up, an additional NMCI VPN gateway was added, and additional VPN connections were employed to increase capacity due to eighty percent of the workforce working from home. Commercial applications were provided free of charge to ensure operations could continue, paving the way for more secure versions of the same application to be instituted later.

The crisis eased people's resistance to trying new things. As one participant explained: "We all agreed that for the sake of continuity of operations…we were going to go to this application until something better came up." The initial willingness often continued: "Once we got our IT in place like once people were able to log on, everybody had Teams. Um, and we got used to how to use that technology…then people felt like it

was easier...especially the ones that had access to their phones." Employees then shared their willingness and enthusiasm with others: "We want to show them what teams can do for them, what SharePoint could do for them, what OneDrive could do for them, leveraging all of these tools to their function as a dispersed team in this hoteling situation." The IT team built on this willingness. They communicated and responded to needs as they were revealed and sent multiple All Hands emails, communicating to the workforce the availability of new tools or new capabilities.

Resistance to existing automation tools was also abated: one example was Jira, which was already being used for process automation at the organization, so it was easy to use the application for other processes and purposes to meet new emergent needs. Employees began to accept the tools. For example, one of them noted: "So Jira was a great sort of tool in crisis. We needed something, and we needed something quick to accommodate just the basic requirement of allowing somebody to easily book something…so it accomplished that." Another employee explained: "All throughout COVID when a new requirement would come up that would cause us to track the results, the team being part of it would say, 'Well, I think we can automate this.'"

Knowledge cyclones serve as vital energizers, smoothing and accelerating the flow of knowledge. The supportive organizational climate, shaped by the urgency of adaptation during the COVID-19 pandemic, further facilitated the reduction of knowledge friction and encouraged a culture of continuous learning and adaptability. This aided the integration of temporary routines throughout the organization. These cyclones, although not formal process steps, played an essential role in providing the organization with an agile response to challenges.

D. CONCLUSIONS

In response to the challenges posed by the COVID-19 pandemic, NIWC Pacific swiftly implemented three temporary routines, each tailored to evolving needs and circumstances. These temporary routines, born out of policy shifts and performance gaps, underwent a systematic process involving rapid prototyping, thorough testing, and crucial decision-making phases.

The temporary routines evolved existing bureaucratic processes and created new solutions. Notably, the Telework routine, now ingrained in employees' daily lives, garnered much support due to its flexibility, with many employees preferring remote work arrangements. While the COVID Safety routine, the most short-lived of the three, largely phased out as the disease risk diminished, the Collaboration and Recognition routine continued to evolve, fostering more in-person interactions as restrictions eased.

Routine champions and knowledge cyclones emerged and energized temporary routine creation, evolution, and acceptance. Routine champions embraced open communication, feedback loops, and transparent leadership. Leaders prioritized safety and mental well-being and maintained clear, regular communication, fostering trust and reducing uncertainty.

Knowledge cyclones energized leaders to embrace diverse perspectives and employees to adapt to new norms and to integrate technology into operations. The swift adoption of technological solutions facilitated widespread participation and collaboration. This dynamic knowledge flow eliminated barriers, fostering agility by eradicating issues like cultural differences, communication challenges, and information silos.

This research showcases one organization's agile response to an external change. The research highlights the invaluable role of temporary routines in swiftly identifying needs, streamlining operations, addressing employee concerns, and continuously adapting to ensure organizational resilience. These findings enhance our understanding of organizational agility and suggest lessons for leaders of bureaucratic organizations needing to navigate complex external challenges.

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VIII. DISCUSSION AND CONCLUSIONS

My research answers the question of how a public organization provided an agile response to changes in the external environment despite known barriers. There is a preponderance of literature suggesting that public organizations need to be agile; they need to respond to external changes but struggle due to agility barriers. However, to manage change and provide an agile response, the cases that this research analyzed shows that NIWC Pacific, a bureaucratic organization, was able to agilely respond to a catastrophic change in the external environment—the COVID-19 pandemic. This public organization was able to respond through the creation of three temporary routines. Equally importantly, routine champions and a knowledge cyclone energized the generation of temporary routines.

Contrary to prior literature, which has focused on the difficulties public organizations face in implementing agile practices, these findings contribute to the theoretical body of knowledge by describing how a public organization provided an agile response, overcoming challenges and implementing temporary routines to establish a sense of normalcy. This research focuses on three cases within a single organization. It thus provides a rich account of these cases, but the findings do not represent the entire spectrum of routines, or of government and public organizations.

The analysis shows that temporary routines can be a means to an agile response and provide valuable insights for other organizations to consider in their quest for agility. The implications for practice are that for an organization to establish temporary routines, it should identify or be on the lookout for routine champions, and its leaders should then actively engage with and respond to the insights provided by those champions within the organization. Routine champions helped with the generation and acceptance of these temporary routines through constant communications with leaders and employees. In addition, knowledge cyclones energized both leaders and employees to embrace new solutions and technologies; the cyclones assisted in reducing knowledge friction and provided opportunities for two-way communication and the flow of knowledge throughout the organization. Drawing on the reviewed academic literature and the empirical findings,

the researcher suggests strategies for overcoming challenges to agility within a public organization.

A. CONTRIBUTIONS TO THEORY

This research makes three significant contributions to several areas within the scholarly domain. These insights enrich the existing literature on the bureaucratic organizations, organizational routines, and knowledge flows, and they provide a foundation for further exploration and theoretical development. First, by analyzing a public organization responding to the COVID-19 pandemic, it finds that bureaucratic organizations can become agile by creating temporary routines and providing a processual model. Additionally, this research provides valuable insights into the effective strategies for overcoming agility barriers, contributing to a deeper understanding of how organizations can enhance their agility amidst challenges. Second, it introduces the concept of a knowledge cyclone, highlighting that bureaucratic organizations, typically considered slow in implementing, adopting, and accepting new solutions, can accelerate when the context and situation demands. This concept emphasizes the importance of reducing knowledge friction and improving the seamless exchange of information within organizational settings. Organizations can increase their adoption and acceptance of new solutions through knowledge flow in reaction to the external environment. Lastly, the study highlights the importance of routine champions in public organizations. For the organization to be agile, leaders should be aware and responsive to the thoughts and needs of those champions.

1. Agile Response Through Temporary Routines

As the NIWC Pacific study highlights through their adoption of the Telework, COVID Safety, and Collaboration and Recognition routines during the pandemic, bureaucratic organizations can react and implement new solutions extremely quickly, while also creating and adhering to new policies. The literature shows that it is hard for the public sector to be agile. Public organizations are typically characterized by terms such as command-and-control, rigid, risk-averse, and hierarchical, which seemingly contradict the principles of agility. Although Brown and Eisenhardt (1997) state that continuously

changing organizations "grow over time through a series of sequenced steps, and they are associated with success in highly competitive, high-velocity environments" (p. 32), they further argue that success is a balancing act between structured and unstructured organization in dynamic environments: "[T]he effective management of current projects lay between very structured, mechanistic organization, in which bureaucratic procedures were tightly determined, and very unstructured, organic organization, in which there were few, if any, rules, responsibilities, or procedures" (p. 28). This dissertation's research, however, shows how bureaucratic organizations actually use dynamic patterns to revert to equilibrium as quickly as possible.

Furthermore, this dissertation's research contradicts the findings of Scott and Bardach (2008), who argue that government organizations involve long developmental processes, distinguishable sub-processes, and feedback mechanisms. Nuottila et al. (2016) and Ribeiro and Domingues (2018) focus on the difficulties that public organizations face when implementing agile practices. This research paper documents innovation within a government organization, demonstrating that it is possible and can involve short, rapid developmental cycles and temporary processes. In contrast to the extant literature, this research paper focuses on how a public organization overcame challenges to attain agility. The research shows that a public organization can be agile by creating temporary routines. Temporary routines helped provide an agile response to the COVID-19 pandemic. This research augments the existing body of knowledge by presenting a process model describing the creation of temporary routines, as depicted in Figure 1. This contribution suggests that the adoption of temporary routines offers a comprehensive and dynamic approach to achieving agility within public organizations, underscoring the importance of flexibility, adaptability, and open communication in navigating complex and urgent situations. Temporary routines are distinctive for their reactive implementation, directly responding to specific external situations. They have short-lived elements, mirroring the urgency of the situations they address. Furthermore, they evolve dynamically to address diverse outcomes. In this context, temporary routines serve as adaptive mechanisms that align with the existing rules and regulations, allowing employees to navigate through changes with little disruption.

The COVID-19 pandemic hit in March 2020. The pandemic destroyed lives, masking and social distancing were enforced, and stay-at-home isolation was recommended. The environment was one of constantly shifting guidelines, recommendations, and rules, and the leadership clearly stated that they did not, and could not, know what tomorrow might bring and what conditions could, therefore, be different. It was a time of great uncertainty. Uncertainty existed about the effects of the illness, the working environment, job security, and what life and work would be like when it was all over. This time was ultimately a time of growth and change. Stay-at-home orders eventually lifted, and people returned to the work site. As is highlighted in the Collaboration and Recognition routine, uncertainty allowed this organization to let go of the idea that there is only one right perspective, which made way for greater inclusion of other thoughts and ideas. Similarly, in the Telework and COVID Safety routines, uncertainty allowed the organization to embrace curiosity and experimentation, freeing it from the success-or-failure mindset and allowing it to see each error as merely a step in the right direction, enabling the organization and its leaders to lean in towards the next possible solution or way of doing. Living with more uncertainty enables the organization to be more agile and responsive to emergent situations. Through creating temporary routines, this organization managed to ride this particular wave of change and came out better for it.

Temporary routines played a pivotal role in establishing order within the organization during this time of upheaval. They allowed for a flexible approach, wherein components of these routines could be adapted or discarded in response to changing rules, regulations, and needs. This adaptability was crucial in stabilizing the organization and providing a semblance of normalcy for its employees, in keeping with the urgency of the situations they confronted.

Temporary routines can help organizations regain equilibrium. The research provides an empirical demonstration of "dynamic stability," as conceptualized by Burton and Nissen (2011): the "quickness of a system's return to its dynamic trajectory after deviation from an external force (p. 423). The research extends the time element, as outlined by Burton and Nissen, by discussing the changes that took place during the

pandemic and identifying the multiple temporary routines and evolutions that occurred during this time.

The organization has now returned to stability and continues its dynamic trajectory, but the airplane (i.e., NIWC Pacific) managed to weather the storm very well, if we borrow Nissen and Burton's airplane analogy. Similarly, the research echoes Teece et al. (1997), since the organization empirically demonstrated "timely responsiveness, rapid and flexible product innovation, and the management capability to coordinate and redeploy resources as key" (p. 509) through the rapid deployment of a teleconferencing solution in the Telework routine and multiple automated processes that helped with vaccinations, as described in the COVID Safety routine.

The crisis was a compelling catalyst for developing temporary organizational routines in the external environment, leading to widespread acceptance and implementation. Temporary routines allowed for a more reactive response than typical, strategically planned organizational routines. This research finds that routines were created in response to emergent changes in the external environment, which accords with the research done by Orlikowski (2021) and by Leonardi and Barley (2010), who find that much of the literature on routines needs to consider the phenomenon of emergent change. In response to the COVID-19 crisis, emergent changes were initiated, as described in my research. Routines created in response to emergent change or crisis do not include prescribed, strategic, or intentional change; they were more reactive, had short development life cycles, and involved less planning.

Temporary routines do not have strict start and stop times. This acknowledges prior routine literature focusing on timing (Cacciatori and Prencipe, 2021; Turner and Rindova, 2018). However, Cacciatori and Prencipe (2021) argue that routines have "a clear beginning and end" (p. 16). In contrast to their argument, this research has found that routines do not have strict start and stop times but have aspects that fade away if circumstances change, or new requirements emerge. This research discovered that routines did not have strict start and stop times, but fluctuated based upon health protection conditions, as evidenced in the Telework and the Collaboration and Recognition routines when award presentations and new employee orientation were temporarily moved online.

This move was temporary: the organization soon reverted to in-person events but continued to fluctuate in response to health protection conditions.

a. Overcoming Barriers

Temporary routines helped overcome several barriers to agility and helped transform the organization. Researchers (Liang, 2018; Shah & Stephens, 2005; Nuottila et al., 2016; Burton & Nissen, 2011) have identified four key barriers to bureaucratic agility: organizational and hierarchical structures, legal constraints, red tape and documentation, and formalized rules. My research shows how these barriers were addressed.

Temporary routines helped flatten the structure of the organization and allowed a more open flow of communication, implementing a flexible approach for adhering to policy and guidelines, and streamlining automations. Furthermore, this research contrasts with the findings of Mergel et al. (2018), who assert that "bureaucracies are not designed for [the] shared leadership or open collaboration across ad-hoc teams" (pp. 291–298) needed for agility. NIWC Pacific, a government organization with a structured chain of command involving three to four levels of hierarchy—employee, supervisor, manager, and senior leader —was able to flatten this structure during the pandemic through open forums and continued collaboration. Traditional hierarchical structures were transcended by fostering open communication channels that enabled upward and downward knowledge exchange within the organization. Continuous communication was promoted from leaders to operational managers, supervisors, and employees; and open forums, All Hands meetings, and enhanced communication strategies further reinforced this open environment. The hierarchical structure was also seamlessly integrated with automation, facilitating online chain of command approvals, and minimizing face-to-face interactions. A high priority was placed on inclusivity, and the organizational culture was adapted to foster a sense of belonging among employees.

Temporary routines rapidly addressed legal constraints. The organization responded to external policies and executive orders to ensure that it met its legal obligations, abided by the rules and regulations, and kept the workforce safe. Yet rapid policy changes created a sense of urgency, forcing the organization to interpret rules and

regulations flexibly. Ambiguity in policy implementation empowered the organization to devise its responses, in keeping with the situation's urgency and the need for swift action.

The automation within all three routines helped overcome red tape and streamlined operations. As is typical of many government organizations, there is much red tape, documentation, and standard operating procedures at NIWC Pacific. In response to the pandemic, the organization transformed tedious bureaucratic processes through the swift analysis, development, and implementation of solutions. Temporary routines incorporated processes and procedures, and automated rules and guidelines. New processes and practices were documented, automated, and made accessible online, enhancing organizational transparency and communication. Formalized rules were adapted and incorporated into the automated tools, so the rules were invisible to the employees using the tools. Automation was leveraged to eliminate formalized rules wherever possible, reducing bureaucratic hurdles and promoting a more agile environment. One example was employees submitting travel requests: they would complete an online form, and based on their inputs, the request would then route through the chain of command based upon where the employees were traveling, whether they were vaccinated, and whether the work to be performed was critical.

2. Knowledge Cyclones

This research found that public organizations can use bidirectional communication, or knowledge cyclones, to aid with the diffusion of temporary routines, thus building on research by Nissen (2014), who argues that agility can be aided by a better understanding of knowledge flow through an organization. Effective communication channels and knowledge dissemination within the organization facilitated the dissemination of these routines while enabling the upward flow of feedback. This bidirectional communication flow allowed the routines to evolve, or be discontinued, as necessary. The research confirms that innovation and knowledge management are fundamental pillars of agility (Dove, 1996). This research provided empirical evidence of knowledge flow within this organization and extended it by introducing the knowledge cyclone and implementing innovative outcomes. The research findings demonstrate the importance of communication

and transparency in encouraging a more uncensored approach to knowledge dissemination within organizations. This approach, characterized by open communication channels, resulted in a flatter organizational structure, enhancing the flow of knowledge. Notably, the elimination of friction in this knowledge transfer process accelerated the exchange of information, akin to the effect of a "knowledge cyclone." Regarding technology adoption, it became evident that without the impetus provided by the COVID-19 pandemic, technology integration within the organization would have been gradual and sluggish. The crisis served as a catalyst, compelling individuals to embrace collaboration tools that might have faced resistance absent such urgency. This observation highlights the pivotal role of external stimuli, such as a pandemic, in expediting technological adoption within the organizational context.

3. Routine Champions

Routine champions energize the creation and evolution of temporary routines. This conclusion builds on prior research by Alberts and Hayes (2003) and Alberts and Nissen (2009). My research highlights the importance of champions, many of whom emerge from line organization roles, and the willingness of management to empower champions. Ongoing efforts from routine champions are important because change is framed as a continuous and fluid process that needs continual force to ensure it diffuses throughout the organization. As shown in the development of all three routines, routine champions possess a profound understanding of the organization's culture, processes, and goals, enabling them to align routines with the organization's immediate objectives. They have the authority and mandate to initiate changes, implement new processes, and optimize existing routines to enhance organizational efficiency and effectiveness.

Champions can also emerge from within the workforce, often as subject matter experts, change champions, or employees with specialized knowledge and skills. These champions may not have formal leadership titles. Still, their expertise and credibility within the organization empower them to sway opinions, garner support for new routines, and drive the adoption of innovative practices. Organizational routine champions are instrumental in change management, as they inspire and motivate others to embrace new

routines, adapt to evolving work methodologies, and contribute to overall organizational progress, or, conversely, to reject, resist, and prevent organizational change and progress. To fully grasp the importance of routine champions, it is essential to understand the individuals or groups within the organizational context who hold this influential role and comprehend the nature of their influence. Their insights, suggestions, and critiques are invaluable in routine development and evolution.

Leadership responsiveness to routine champions is crucial for fostering an environment conducive to innovation and adaptability. This responsiveness necessitates a deliberate effort to engage with routine influencers actively. Establishing analytical "think tanks" with representation across the organization's different functional areas is pivotal. These subject matter experts are dedicated to brainstorming and proposing novel ideas while maintaining an open-minded approach where no idea is dismissed outright. These think tanks serve as forums for soliciting innovative suggestions and encouraging the exploration of unorthodox concepts. Crucially, leaders must meticulously analyze, debate, and critically evaluate these suggestions to identify the most effective approaches for implementation or adaptation. Experimentation with new solutions and the evolution of existing ones are paramount in this process.

B. IMPLICATIONS FOR PRACTICE

There are two noteworthy practical implications from this research that can guide public organizations in their crisis response efforts, equipping them with a structured approach to implementing temporary routines that significantly enhance their ability to cope with unforeseen challenges. Firstly, organizations may want to identify or be on the lookout for routine champions, and leaders should actively engage with and respond to the insights provided by those champions within their organizations. This active listening fosters inclusivity and ensures that valuable on-the-ground perspectives are considered in decision-making processes. Moreover, leaders should consider the feedback provided by routine champions comprehensively. Addressing this feedback not only aids in the socialization and acceptance of newly introduced routines but also plays a critical role in

determining the longevity and sustainability of these routines within the organizational framework.

Secondly, organizational leaders need to nurture cultures of innovation and empathy to create an environment in which the workforce feels secure amidst substantial changes. This culture of openness encourages discussions and adaptability, aligning with the dynamic nature of crisis response. Therefore, fostering a responsive and open relationship between leaders and routine influencers is indispensable for organizational growth, adaptability, and sustained success.

Furthermore, organizations should recognize the importance of the chaotic environment in which they operate, acknowledging that such turbulence can facilitate the elimination of barriers to knowledge flow and reduce friction within the organization. Embracing this chaos becomes essential in the quest to establish temporary stability. This is borne out by the Telework routine: the organization wanted to get employees working in the new telework environment as quickly as possible, and this meant implementing new technology rapidly and adapting it as new requirements emerged. The analysis strongly indicates that by adopting these practices and understanding the significance of these aspects, public organizations can substantially enhance their crisis response strategies, fostering resilience and adaptability in the face of unforeseen challenges.

Based on the research, if public organizations want to provide an agile response, they should try to eliminate agility barriers. Agility barriers typically include silos, entrenched hierarchies, red tape, and inflexible budgets and contracts. This research shows that leadership overcame information silos and hierarchies by focusing their efforts on inclusive leadership and a culture of openness. Leaders held open forums with employees, allowing them to ask questions and have any concerns addressed in the implementation of all routines. This builds on the prior research on agility barriers (Liang et al., 2018; Mergel, 2016; Morse & Buss, 2007; Osborne & Brown, 2005) by showing how agility barriers can be torn down.

Public organizations should incorporate rules and guidelines in their automated solutions to alleviate the need for employees to be concerned with red tape. Red tape is still

evident through the many policies implemented, but how to perform the required rules and guidelines is left up to the organization, which has innovatively addressed requirements. Digitization enhances responsiveness, innovation, transparency, and efficiency in organizations (Mergel, 2016), and the automation integrated within these routines proves instrumental in streamlining and improving previous inefficient processes in response to the new virtual environment.

Furthermore, open communication is a cornerstone of organizational agility (Nuottila et al., 2016). Communication assisted this organization, granting autonomy and inclusivity (Häusling & Kahl, 2018) to routine champions and reducing knowledge friction and fostering seamless knowledge flow, demonstrated through the bidirectional exchange of knowledge between employees and leaders.

Insights gathered from the interviews suggest a process model for creating temporary routines that contribute to agility within an organizational context. Innovative problem-solving approaches were encouraged, and non-value-added components of routines discarded. Automation supplements these routines, addressing existing process deficiencies and streamlining chain of command approvals. Cross-collaboration is evident through group analysis and feedback loops. Additionally, the research underscores the need for creating a sense of structure within a chaotic environment, a previously underexplored facet in the literature. Notably, amid rapid changes, employees exhibit greater openness to potential solutions as these routines provide a semblance of stability, highlighting the strategic importance of such temporary structures.

C. LIMITATIONS AND FUTURE RESEARCH

Several factors restricted the scope and generalizability of this research. Firstly, due to time and resource limitations, the research was focused on a single organization and compared three cases, which means that the findings do not represent the entire spectrum of government or public organizations. A comparative case study involving multiple organizations and potentially more cases would enable a richer exploration of contrasts and similarities, providing empirical evidence to validate the proposed model. The findings are thus not representative of the entire spectrum of government or public organizations.

Secondly, while conceptually robust, the model proposed in this research has yet to undergo empirical testing to validate its efficacy and applicability in diverse organizational contexts. It is likewise essential to recognize the inherent complexity in constructing temporary routines: these processes may not follow a linear trajectory, and phases may exhibit fluidity and overlap, challenging the conventional depiction.

Thirdly, the selection of interviewees focused predominantly on a subset of departments within a broader organizational landscape, limiting the comprehensive representation of diverse perspectives. Future research endeavors should adopt a more inclusive approach, encompassing a more comprehensive array of departments and more of the organization's routines to ensure a more holistic understanding of the organization's practices. Delving into the characteristics of leaders and routine champions in public organizations could also provide valuable insights into the mechanisms underpinning organizational agility.

This dissertation underscores the imperative for future research endeavors, encompassing diverse organizational contexts, varied routines, and nuanced leadership dynamics, enhancing the depth and breadth of knowledge in this research area.

D. CONCLUSIONS

In conclusion, this study significantly contributes to the existing literature by unveiling valuable insights into the dynamic nature of organizational agility in the public sector. Through an exploration of routine creation as a response to the external environment, this research highlights the instrumental role of temporary routines in fostering organizational agility. By focusing on a comparative case study approach and conducting in-depth interviews with employees and leaders in a specific public sector organization during the chaotic period of the COVID-19 pandemic, this study provides an understanding of the challenges faced and the strategies employed to enhance organizational agility.

The research emphasizes the pivotal role of temporary routines. These routines serve as crucial mechanisms that enable organizations to enhance their adaptive capacities and effectively navigate complex and rapidly changing environments. Moreover, the

research sheds light on the significance of strategic digitalization and automation, further amplifying organizational agility efforts. In addition, inclusive leadership, coupled with a culture of openness and the reduction of knowledge friction within routines, emerges as a central strategy vital to fostering agility. Notably, the study empirically validates the importance of routine champions, that is, individuals operating at various organizational levels who are pivotal in driving the agility agenda forward.

While this study does not offer a one-size-fits-all solution for every organization, it does provide valuable insights into the process steps and functions within an organization that can be considered by other organizations striving to enhance their agility. By embracing the key strategies identified in this research, public organizations can augment their ability to respond effectively to dynamic challenges. By enriching the academic discourse and offering practical guidance to organizations embarking on their agility journey, this study advances our understanding of bureaucratic organizations and organizational agility and is a foundation for future research endeavors in this critical area of study.

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APPENDIX A: INITIAL AND SECONDARY CODES

Preliminary Codes	Secondary Codes
Analysis	Acceptance
Artifacts	Action
after change	Automation
Awards	contact tracing
capacity limits	Control
Center	COVID Action Team
Centerwide	Enacting
Challenge	Entrenching
check in	Existential
checkout process	Experimenting
Cognition	Fast
collaboration	Implement
Comms	Influence
communication	Ostensive
Decision	P4P
Department	Performative
department specific	personal contact
Diffusion	Practical
driver for change	Process Owner
employee resistance	Reactive
External	Reduce Administrative Distraction Team
failed process	Response
good insight	Safety
good quote	Slow
group analysis	stop use
health check	successful routine
Hoteling	Tactical

Preliminary Codes	Secondary Codes
Innov	Telework
Innovation	Temporary
Internal	Timeline
Intuitive	Tool
lack of communication	Training
leaders resistance	Transformation
leadership driven change	used for alternative purposes
leadership meetings	Virtual
Masks	well being
meeting dynamics	Performance gaps
Meetings	Continue
mission essential travel	
Necessity	
Need	
negative effect	
NEO	
new routine	
non-compliance	
not following process	
not in place	
Observation	
options for resolution	
Evolving	
Policy	
positive effect	
Pragmatic	
prior to change	
Process	
Pushback	
reason for resistance	

Preliminary Codes	Secondary Codes
Recognition	
relationship changes	
remote work	
requirement	
Resistance	
Role	
Rules	
still in place	
Surprising	
vaccine request/ reporting	
weekly highlights	

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APPENDIX B: CODES SORTED BY ACTION

Origin	Need	Analyze	Generate	Implementation	Influence	Usage	Result	Timeline
Where change originated from	Reason for development	Decisions and discussions that took place to analyze potential solutions	How solutions and changes took place	How changes were implemented	Responses to actions and changes	How changes were used, as intended or alternatively	How the changes spread across the organization	Timeframes and timing of changes, events, and actions
action	Action	acceptance	acceptance	artifacts	acceptance	after change	Diffusion	Center
capacity limits	capacity limits	action	action	challenge	challenge	centerwide	Center	Days
center	centerwide	after change	after change	collaboration	cognition	cognition	Department	Dept
centerwide	collaboration	analysis	analysis	Comm	employee resistance	department specific	Duration	Fast
collaboration	communication	automation	automation	communication	enforcement	diffusion	Failure	Months
communication	Control	capacity limits	center	continue	envisioning	enacting	Still in Place	Slow
control	COVID Action Team	center	centerwide	control	influence	failed process	Success	start
department	department	centerwide	challenge	Days	lack of communication	negative effect	Went away	stop
department specific	department specific	challenge	communication	diffusion	leaders resistance	negative effect		

Origin	Need	Analyze	Generate	Implementation	Influence	Usage	Result	Timeline
driver for change	driver for change	cognition	diffusion	duration	negative effect	non-compliance		
evolving	evolving	collaboration	enacting	enacting	positive effect	not following process		
external	external	communication	evolve	entrenching	pushback	observation		
improvement	group analysis	continue	experimenting	existential	reason for resistance	ostensive		
innov	improvement	control	failed process	experimenting	relationship changes	performative		
innovation	Innov	COVID Action Team	fast	failed process	resistance	personal contact		
internal	innovation	decision	good insight	Fast	response	positive effect		
leadership driven change	internal	department	implement	implement	safety	result		
necessity	leadership driven change	department specific	influence	implement	surprising	still in place		
need	Masks		ostensive	influence	transform	stop use		
new routine	meeting dynamics	envisioning	P4P	lack of communication		successful routine		
nice to have	meetings	evolving	performative	months		temporary		
Performance gaps	necessity	external	performative	negative effect		timeline		

Origin	Need	Analyze	Generate	Implementation	Influence	Usage	Result	Timeline
policy	Need	good insight	personal contact	not in place		transform		
practical	new routine	good quote	slow	positive effect		used for alternative purposes		
pragmatic	nice to have	group analysis	stop use	practical				
prior to change	observation	influence	successful routine	process				
process	Performance gaps	innovation	telework	relationship changes				
Process Owner	Policy	internal	temporary	Role				
reactive	practical	intuitive	timeline	slow				
requirement	pragmatic		tool	successful routine				
response	prior to change	leaders resistance	training	timeline				
rules	Process	leadership driven change	transformation	training				
safety	Process Owner	necessity						
tactical	reactive	need						
telework	remote work	new routine						
virtual	requirement	non-compliance						
well being	response	not in place						

Origin	Need	Analyze	Generate	Implementation	Influence	Usage	Result	Timeline
	Rules	observation						
	Safety	options for resolution						
	Tactical	positive effect						
	telework	practical						
	Virtual	pushback						
	well being	reactive						
		reason for resistance						
		recognition						
		Reduce Administrative Distraction Team						
		remote work						
		requirement						
		resistance						
		response						
		safety						
		still in place						

Origin	Need	Analyze	Generate	Implementation	Influence	Usage	Result	Timeline
		tactical						
		used for alternative purposes						

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APPENDIX C: CODES SORTED BY ROUTINES

Telework	Safety	Collaboration & Recognition
Analysis	Analysis	Analysis
Artifacts	Artifacts	Artifacts
Automation	Automation	Automation
Awards	capacity limits	Awards
Center	Center	Center
Center wide	Center wide	Center wide
Checkout process	Check in	Collaboration
Collaboration	Communication	Communication
communication	contact tracing	Continue
Continue	Continue	Decision
COVID Action Team	COVID Action Team	Department
Decision	Decision	Evaluate
Department	Diffusion	Evolve
Diffusion	Evaluate	Evolving
Evaluate	Evolve	Failed process
Evolve	Evolving	Hoteling
Evolving	Failed process	Implementation
Failed process	Health check	Influence
Hoteling	Implementation	Influence
Implementation	Influence	Innovation
Influence	Influence	Internal
Influence	Innovation	Leaders resistance
Innovation	Internal	Meeting dynamics
Internal	leadership meetings	Need
leadership meetings	Masks	New routine
Meeting dynamics	Meeting dynamics	Options for resolution
Need	Mission essential travel	Ostensive
NEO	Necessity	Performance gaps

Telework	Safety	Collaboration & Recognition
New routine	Need	Performative
Options for resolution	Need	Policy
Origin	New routine	Positive effect
Ostensive	Options for resolution	Process Owner
Performance gaps	Origin	Pushback
Performative	Ostensive	Reactive
Policy	Performance gaps	Reason for resistance
Positive effect	Performative	Recognition
Process Owner	Policy	Reduce Administrative Distraction Team
Pushback	Positive effect	Resistance
Reactive	Pushback	Still in place
Reason for resistance	Reactive	Stop use
Recognition	Reason for resistance	Successful routine
Reduce Administrative Distraction Team	Reduce Administrative Distraction Team	Transformation
Requirement	Requirement	Weekly highlights
Resistance	Resistance	
Still in place	Safety	
Stop use	Still in place	
Successful routine	Stop use	
Tool	Successful routine	
Transformation	Transformation	
	Vaccine request/reporting	

APPENDIX D: ACTION CATEGORIES MAPPED TO LIFE-CYCLE PHASES

Driver for change		**Temporary Routine Creation & Evolution**			**Transformation of Organization**		**Deciding**
		Evaluate	Generate	Implement			
What drove the need for change		Evaluate Problem	What changes were developed, utilized existing resources, or created new innovations to deploy solutions	How the changes were implemented and deployed across the organization	How the routine was utilized and how it diffused across the organization		Decision to Keep, Use or Discard
Origin	Need	Analyze	Transform	Implementation	Influence	Usage	Result

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APPENDIX E: SAMPLE OF REDUCE ADMINISTRATIVE DISTRACTION SUBMISSIONS

Key	Summary	Reporter Code (Text)	Created
RAD-347	Paternity and Special Leave Request Automation	53231	14-12-2022
RAD-346	Make base maps easier to find on the Hub	56006	13-12-2022
RAD-345	Streamline line CAC/Badge/VR Processes for Embedded Contractors	56483	03-11-2022
RAD-344	CSWF Request – Add a "Send Back to Customer" Status for CLU Submission Tickets		18-10-2022
RAD-343	Create Request for Material Movement via Hub Services	53122	07-10-2022
RAD-342	Streamline VR/DBIDS process for visitors	53103	06-10-2022
RAD-341	Add a new request type in our Mobility HUB request system	82300	06-10-2022
RAD-340	Hub request to hold accounts while on extended leave	55780	26-09-2022
RAD-339	Update to the GE Action Tool	84200	08-09-2022
RAD-338	Changes to RPA Tool: Add Request Type and add fields	81110	02-09-2022
RAD-337	electronic routing of invention disclosures thru patent	72110	22-08-2022
RAD-336	Update Badge/CAC Request to make appointments for visitors	56483	21-08-2022
RAD-335	RPATool request to add fields (MIOC) and edit RPA numbers	81110	19-08-2022
RAD-334	RPA Tool update to sort out RPAs on hold and Test RPAs	81110	16-08-2022
RAD-333	Add fields to RPA Tool (PMA Comment and Request Method)	81110	11-08-2022
RAD-332	VIP PARKING RESERVATION	41170	09-08-2022
RAD-328	Add category "STRL Support Position" to Request Type in the RPA Tool	81110	01-08-2022
RAD-327	Voucher submittal deadline extension for OCONUS	55780	27-07-2022
RAD-325	Official Contractor Checkout Process via the Hub	55101	20-07-2022
RAD-324	85300 Work Request Tool	85000	19-07-2022
RAD-323	PPL/FMLA – NMCI Account Deleted After 30 Days, Lost Access to Web Apps	42130	19-07-2022

Key	Summary	Reporter Code (Text)	Created
RAD-322	Streamline & Automate the Conference Approval Process	84000	13-07-2022
RAD-321	Allow reimbursement of conference fees through DTS	56206	13-07-2022
RAD-320	Hub Service for creating DTS Cross-Org LOAs	71740	11-07-2022
RAD-319	Cloud specific EUA form	82400	05-07-2022
RAD-318	Improve process of getting official passport	56206	24-06-2022
RAD-317	update 4570 / Excess tool with additional functionality	84200	18-05-2022
RAD-316	Update OSA Tools onboarding and add to OSA tool help desk	53225	16-05-2022
RAD-315	Move the TSR to a Hub Services Request	56751	11-05-2022
RAD-314	RPA Tool Update for STRL Coversheet and new DAWIA Sheet	81110	11-05-2022
RAD-313	Add Flank Speed distro groups as an option for sharing requests	43110	26-04-2022
RAD-312	Request Remote Access Point (RAP) service offering in JIRA		26-04-2022
RAD-311	Implement Consolidated Overmatch Software Armory Help Desk	53226	19-04-2022
RAD-310	The addition of Cost Code (NWA or WBS) field in Training Requests		06-04-2022
RAD-309	Hazardous Material Coordinator (HMCOR) Appointment Hub Tool	83620	01-04-2022
RAD-308	Quick view report of Internal and External Awards with Criterion	53523	31-03-2022
RAD-307	Business Financial Manager (BFM) Help Desk	HXR4H	30-03-2022
RAD-306	Reduce occurrence of commander navy installation calls/ texts	55280	30-03-2022
RAD-305	Professional/admin SOC/ROC direct support access helpline/email	71740	22-03-2022
RAD-304	OM&S Goods Issue/Gain tool	84200	21-03-2022
RAD-303	RPA Tool (Need to make “Civilian Financial Management (35f)” field separate for each RPA.	81110	08-03-2022
RAD-302	Allows users to easily record monthly checks on building Fire Life Safety Items via the Hub. Emergency Lights, Exit Signs, Fire Extinguishers	83610	04-03-2022
RAD-301	Special Request Chit Streamline Review/Routing Process	81200	10-02-2022

Key	Summary	Reporter Code (Text)	Created
RAD-300	Use Hub for SSO visit requests	56206	09-02-2022
RAD-299	PR Approval Duplication Elimination	56752	08-02-2022
RAD-298	Out of Office Calendar available to larger audience	56752	07-02-2022
RAD-297	Create an “excerpt fill” for commonly changing roles, titles, or anything dynamic	53125	03-02-2022
RAD-296	Interactive Buy It Right web page	84200	21-01-2022
RAD-295	interactive OM&S inventory web page	84200	21-01-2022
RAD-294	Business rule – distro e-mail starts with Dear xxx Team	55780	21-01-2022
RAD-293	Create the equivalent PDF form currently used by the FIELD PMAC in JIRA. See attached form.	41170	10-01-2022
RAD-292	Center to provide Docker Licenses	53421	05-01-2022
RAD-291	Transition Cybersecurity OPS DTA process from Remedy to JIRA	82400	09-12-2021
RAD-290	Conference Attendance Request in the HUB	56001	01-12-2021
RAD-289	Sustainment Communication Improvement	42110	16-11-2021
RAD-288	JIRA for CCRs, TRs, Risk Mitigation Efforts	53522	04-11-2021
RAD-287	Modify shipping request to include pull down for TAC utilization MEMO	43150	03-11-2021
RAD-286	Student Loan Repayment Program	56001	20-10-2021
RAD-285	in shipping requests, add line for Tracking Number and Cost due to we have a one shipping request number and with 15 small packages	43150	14-10-2021
RAD-280	MCPP Hub tools – updates needed	53122	05-10-2021
RAD-279	HUB services project for MAGIC tracking routing/status/ Technical Direction Letters	53225	04-10-2021
RAD-277	Update and share the Configuration Management Database System used by the Center’s CMCC so Custodians can be more efficient when completing annual Classified Inventory	53529	22-09-2021
RAD-276	Hub Service requests for UAS flights and support activities	56482	15-09-2021
RAD-275	Request Type Search – unable to see all request types	53122	09-09-2021
RAD-274	SUP: Excess Material/Equipment Turn-In (4570)/To generate DD 2500 and update work flowed		08-09-2021

Key	Summary	Reporter Code (Text)	Created
RAD-273	Automatic notification of Supervisor when employee submits onsite check-in	55101	01-09-2021
RAD-272	FLIPL: DD200 New Request Type – "Non-GE/OM&S Request"		01-09-2021
RAD-271	Automated feature for Cellular Service Request		20-08-2021
RAD-270	Add the NFAAS app to Flank Speed phones	53500	11-08-2021
RAD-269	Add Delegate Project Portal Approvals to Leave Request and email IPT Support team	61100	05-08-2021
RAD-268	Reduce Volume of Email and Delays in Obtaining Picture Badges	55111	04-08-2021
RAD-267	Remove requirement for arbitrary (periodic) NIWC Password changes	56440	04-08-2021
RAD-266	Incorporate slicer tool into SEAS and officially notify employees	41200	02-08-2021
RAD-265	Decommissioned Devices Tracker	53608	28-07-2021
RAD-264	Remove requirement for a service agreement from conference attendance	53001	27-07-2021
RAD-263	Put the OGE-450 'who has to' list on the hub for updating and tracking	70001	27-07-2021
RAD-262	Clear Guidance on CSWF Requirements	55111	26-07-2021
RAD-261	DD-200 Submission Tracking by Name	55000	14-07-2021
RAD-260	Revise the Hub Services Travel Request	53122	08-07-2021
RAD-259	Outlook client on RDTE – enable the Reading Pane (group policy)	56401	25-06-2021
RAD-258	New Tool – Environmental Review Request	83550	03-06-2021
RAD-257	A searchable "database"/list of templates, organized by category and with key attributes (displayed as part of search results/lookups) can increase efficiency and effectiveness.	H0005	26-05-2021
RAD-256	Upload or link to the new CUI cover sheet	55201	26-05-2021
RAD-255	The enterprise can support personnel in organizing and utilizing their "digital workspaces" by establishing a capability that could be named something like the "Personal Push-Pull Portal"	H0005	24-05-2021
RAD-254	DD-200 Workflow process	55101	24-05-2021
RAD-253	Improve Flank Speed communications by network	55311	14-05-2021

Key	Summary	Reporter Code (Text)	Created
RAD-251	Government Travel Credit Card Increase (GTCC) Request	83420	10-05-2021
RAD-250	place visual alarm indication OUTSIDE of a secure space	53001	06-05-2021
RAD-249	Reduce High Grade Accretion Paperwork	61000	05-05-2021
RAD-248	Host TWMS Training on AWS or Similar	55111	03-05-2021
RAD-245	Unmatched Transaction (UMT) Dashboard	43110	12-04-2021
RAD-244	Incorporate pickup of the Physical Token into the SIPR/ SWAN Account Process	53529	06-04-2021
RAD-243	Ticket workflow to improve Military PERS-SEC Check-in	55160	02-04-2021
RAD-242	Overmatch Software Armory (OSA) Ecosystem Onboarding Hub Services Project and Analytics	50E10	02-04-2021
RAD-241	Automate the Employee Checkout Sheet	53508	01-04-2021
RAD-240	Standardize the email address of experts and groups	53125	19-03-2021
RAD-239	Automation of the Awards Nomination Process	81300	02-03-2021
RAD-238	To create a JIRA request form for PKI RAQ form instead of using PDFs	53608	01-03-2021
RAD-237	RPA Tool Request Type	81110	23-02-2021
RAD-236	Telephone Appointments for Pass and Decal	56410	17-02-2021
RAD-235	OGE-450 Due Date of 16 Feb	56410	14-02-2021
RAD-234	Renewal of Permission to use External Hard Drive	56001	11-02-2021
RAD-231	OUT Project	81110	07-02-2021
RAD-230	Lab Access Request, Equipment Request & Scheduling for Labs	53522	28-01-2021
RAD-229	Delegation of Authority Enhancement		25-01-2021
RAD-228	Create a KANBAN page to track Project Overmatch Battle Management Aid Progress	50E20	20-01-2021
RAD-227	Tool to request videography and/or photography services from PAO	56000	19-01-2021
RAD-226	COVID Vaccination Request	84300	14-01-2021
RAD-225	COVID Testing Request	84300	14-01-2021
RAD-224	Update to Complete HRO Report	81120	13-01-2021
RAD-223	Enhancements to the Space Request Input form		23-12-2020

Key	Summary	Reporter Code (Text)	Created
RAD-222	Provide a Hub Services Page to request hardware and Software	61100	10-12-2020
RAD-221	Expand the fields and form selections for the OM&S Service Center Requests	43150	07-12-2020
RAD-220	Make the HUB Accessible Off-Network	56240	04-12-2020
RAD-219	A Jira workflow to track IT Asset allocation for new hires		02-12-2020
RAD-218	Moving Depot Technical Direction Letter Approval to Hub Services	43170	02-12-2020
RAD-217	IT service order website, for WINADR laptops	82300	25-11-2020
RAD-216	Update telework business rules to make telework eligibility the default selection.	53201	19-11-2020
RAD-211	Create a dashboard to track and report clearance upgrade progress	75601	04-11-2020
RAD-210	CSA Onboarding Workflow and Quote Changes	53225	02-11-2020
RAD-209	RPA Tool Updates	81120	28-10-2020
RAD-208	Center Wide Inventory Scheduling Tool	56007	19-10-2020
RAD-207	CSWF – Manually Routed PAA/EUA	82400	07-10-2020
RAD-206	CSWF – Enhanced User Agreement Requests	82400	07-10-2020
RAD-205	Unposted/Unbarcoded Report utilization through Hub Services		07-10-2020
RAD-204	Build additional capability into existing USA Tool (Phase 2)	83330	28-09-2020
RAD-202	Streamline/Track requests for Vouchers/approval from Navy Cool for CompTIA fees	53427	15-09-2020
RAD-201	Meeting and Visitor Checklist	84200	10-09-2020
RAD-200	Weekly Action Reports	84200	10-09-2020
RAD-199	Create a hub service tool for Covid19 questionnaire	55250	10-09-2020
RAD-198	Eliminate the current training procurement process	55306	09-09-2020
RAD-197	Tracking mechanism for NIWC Pacific ELA/ESI/SA Renewals	82300	02-09-2020
RAD-196	Shipping Transmittal – Enhance to Include Security Review of Classified Shipments to Contractors		25-08-2020
RAD-195	Automate identification of proper personnel for routing on Hub forms	53125	21-08-2020

Key	Summary	Reporter Code (Text)	Created
RAD-193	Online signup sheets for STRL appointments	56790	15-07-2020
RAD-191	Each Project undergoing RMF process are required to do Incident Response Training. It would be useful if the center provided and tracked such training.	53421	01-07-2020
RAD-190	DD200 Hub Services process to replace current paper/ routing based process		30-06-2020
RAD-189	Expedite new NMCI laptop availability	41190	23-06-2020
RAD-188	Enhancements to the Task Tracker/Manager		16-06-2020
RAD-187	Automating the Route Sheet (SSCSDINST 5216.1D)		09-06-2020
RAD-186	Automate the TW Mustering – Check-In/Out – Using Existing Tools	53421	28-05-2020
RAD-185	CSA would like to request a HUB Service for the Onboarding workflow of new projects into Collaborative Software Armory (CSA)	53225	28-05-2020
RAD-184	Central CODE 87000 hub page	87000	14-05-2020
RAD-183	Automated Muster via Hub	56170	14-05-2020
RAD-182	JIRA Service Desk Instance	56101	07-05-2020
RAD-181	System Admin of record request to CSWF	82400	05-05-2020
RAD-180	Consolidate SSO forms and processes.	87100	05-05-2020
RAD-179	Automatic URMR Renewal/Prompt	53529	05-05-2020
RAD-178	CSWF Specialty Area/Proficiency Level Change Request	82400	04-05-2020
RAD-177	Submit CompTIA Work Experience Memo to CSWF	82400	04-05-2020
RAD-176	Submit Training/Certification to CSWF	82400	04-05-2020
RAD-175	Facilitate VIP Visit Life Cycle with the Hub/Hub Services	84300	29-04-2020
RAD-174	Badge Appointment Scheduling	84300	14-04-2020
RAD-173	Admin Document Tracking Tool	56201	30-03-2020

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