# CREATING NEW FORESTRY MARKETS IS A TEAM EFFORT: BUILDING NEW CONNECTIONS AND SHARING KNOWLEDGE IN A MULTI-STATE COMMUNITY OF PRACTICE

by

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(Under the Direction of Caleb Han)

## ABSTRACT

Many public agencies and private organizations work to promote and support forestry and the forest products industry, including economic developers. Connections among these groups, though, are limited; and current and pending retirements from Baby Boomer-era employees at public agencies are further reducing these connections. This action research study focused on identifying challenges and solutions related to forest economic development. This study's focus was: What is learned at an individual, group and systems level that advances theory and practice in a group of diverse forest economic development stakeholders? The purpose of this action research project was to identify, design, implement and evaluate challenges and solutions that would connect these diverse stakeholders and promote knowledge-sharing and learning. An action research (AR) team that included members with backgrounds in forest utilization and marketing, economic development, and forestry economics led the study, which was guided by social capital, knowledge-sharing, and community of practice theories. The AR Team designed an in-person intervention (summit) for clarification of the problem and brainstorming of solutions followed by creation of a multi-state, multi-organization virtual

Community of Practice (CoP) to further connections, build social capital and encourage knowledge-sharing.

Within the AR team, there was significant evidence of high levels of trust and knowledge-sharing, and benefits from their participation. Data from CoP members suggested high levels of trust, social capital, and willingness to share knowledge, but only structural, relational, and cognitive social capital were significantly related to tacit knowledge-sharing. There was evidence of innovative outcomes from the summit and from interaction in the CoP among members. Findings from the study suggest that including boundary-spanners with knowledge of multiple industries has a strong positive influence in problem identification and solutions. In addition, creating cross-organizational connections among employees from public agencies with similar positions will enable better knowledge transfer within the organization and across an industry, especially where positions are unique within an organization and only include one or two positions. Lastly, this study suggests that industry type may strongly influence willingness to share knowledge and should be accounted for when creating connections across industries and across different jurisdictions (i.e.. state, regional, etc.).

INDEX WORDS: Community of Practice, Social Capital, Knowledge-Sharing, Forestry, Boundary-Spanning, Trust

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# DEDICATION

This dissertation is dedicated to all of the people who have supported me on my doctoral journey, especially my family, friends, and many professional colleagues.

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## Vignette

Lumber prices soared in 2021, by May shattering price records established only weeks before (Greene, 2021). Throughout the end of 2020 and into 2021, homeowners responded to the COVID-19 pandemic by remodeling their houses in record numbers. While there was a huge spike in demand for lumber, supplies were low due to the pandemic, as manufacturers, anticipating a dip in demand, had cut back production. Lumber comes from trees that are grown as crops on land owned by individuals, families, and companies. The trees are cut by loggers in the field and delivered, via truck, to a mill where the logs or timber are processed.

While record prices were being paid for the product of finished lumber, the suppliers of that timber were not faring as well. A Wall Street *Journal* article, "Lumber prices are soaring. Why are tree growers Miserable?" (Dezember & Monga, 2021), summarized the situation:

> The log-lumber divergence has been painful for thousands of Southerners who are counting on pine trees for income and to hold onto family land. And it has been incredibly profitable for forest-product companies that have been buying mills in the South. The surplus is such that even with mills sawing at capacity and new facilities coming online, it could be another decade, maybe two, before enough trees are felled to balance supply with demand…None of that has lifted the price of timber, which never recovered from the 2007 housing bust…Adjusted for inflation, prices for the logs used to make lumber are at their lowest in more than 50 years. (p. 2)

Joe Hopkins, a forest landowner featured in the article, raises timber on 25-year growth rotations and sells portions each year to sustain his family land and forest business. But the low timber prices led Hopkins to worry that he would have to sell some of his family's thousands of acres in southern Georgia – "If I'm not sustainable," Hopkins said, "I can't keep that land, as everything is going up except the price of timber" (Dezember & Monga, 2021).

# CHAPTER ONE: INTRODUCTION AND THE LITERATURE

There are three parts in this chapter. The first part is an introduction to the problem that this study is focused on and its relevance. The second part situates the study in the literature, theoretical framework, and theory of change that will inform the action research interventions. The third and final part of Chapter One addresses the purpose of the study and its research questions.

## Introduction and Relevance: The Focus of the Action Research Study

### Overview of the Context and the Problem

Forests in the United States are an abundant and economically important natural resource that are owned and managed by a mix of federal, state, and local governments (publicly owned), as well as individuals, corporations, and families. (privately owned). Trees from forests are used as raw material to create wood or forest products and are the basis for the forest products industry. Forests can be defined in many ways, ranging from a source of wood products to an ecosystem or home for biodiversity to a type of land cover and more (Chazdon et al., 2016)(Chazdon et al., 2016). Forestry is the science and practice of managing forests in many capacities: for tree production; wildlife habitat; non-timber forest products; and a range of other objectives. Forestry and the forest products industry include a range of actors, such as the people or organizations who own private forest land and grow the wood, loggers who cut the wood and transport it to the mills, and manufacturing facilities that process the trees and create basic forest or wood products or more advanced secondary wood products (furniture, for example). While

forestry and the forest products industry together are important sectors of the United States' economy, they are even more important in the 13 states of the southern U.S., as these sectors make up about 2% of the total economy in the South (Boby et al., 2014) and approximately 317 billion dollars (Parajuli, 2019). They are also significant contributors to rural economic development (Abt, 2013).

Over the past 30 years, the amount of available wood has increased in the South. Markets for forestry and forest products, though, have declined, due to the substitution of plastic for wood in products, the decline of paper production as the internet evolved, and the dip in the housing market from the 2007-08 recession, as well as other factors (Espinoza, 2020). Most private forest landowners plan to harvest and sell their trees as they reach maturity at 25 to 30 years. However, if there are few markets for the wood or they receive low prices from the mills, then these private forest landowners are less likely to replant the land with seedlings after harvesting. Thus, the continuation of current market levels – or further reductions – could lead to the loss of millions of acres of privately owned forest land.

Since forestry is such an important industry across the country, a mix of state and federal agencies that support it: non-profit associations; scientists; cooperative Extension faculty; companies; and investors, among others. While these organizations' work contributes to forestry and the forest products industry, economic developers also offer key support. These developers can be found at public agencies in all states; their work entails increasing the number of statewide jobs by recruiting businesses to expand or open new facilities. To develop an economic project related to forestry, developers need specific information that forestry stakeholders can provide. What they may be unaware of is that this information and expertise is easily accessible. Expanding markets for forestry and the forest products industry would create more jobs and

increase economic output, especially in rural areas, and meet several of the goals of both economic developers and forestry organizations. But because economic developers across the South, have few or inconsistent linkages to forestry organizations, knowledge-sharing is impeded, limiting opportunities to work together on projects that would benefit everyone.

Furthermore, funding for positions at public natural resource agencies (such as state or federal forestry agencies) has steadily been reduced over time (Green Investment Report, 2017). Without sufficient funds, an agency may not be able to fill a position after someone takes another job or be unable to offer salaries sufficient to attract new employees. In addition, in the coming years, many public agencies are already losing and are expected to lose many of their long-term staff from the Baby Boomer generation (born between 1946-1964) to retirement (Clark et al., 2019). The loss of experienced personnel at public agencies is likely to further reduce these organizations' connectivity.

While the factors that have limited connections between people in these organizations are multi-faceted and influenced by more than funding decreases at public agencies or retirements, enhancing their connections would aid in their respective work. The decline of markets for forestry and forest products are complicated and much bigger than forestry and economic development organizations; this project can only influence one part. However, creating stronger, more multi-faceted connections, and increasing knowledge-sharing between diverse forestry stakeholders and economic developers could facilitate development of more facilities that would help reverse this decline in forest markets.

## Understanding the Context: Forestland in the South

### *Privately-owned and Economically Important*

The southern United States includes 13 states: Alabama; Arkansas; Florida; Georgia; Kentucky; Louisiana; Mississippi; North Carolina; Oklahoma; South Carolina; Tennessee; Texas; and Virginia). Forests cover 40% of this area (235 million acres). The South is the woodbasket of the world, providing about 16% of the world's wood fiber (Wear & Greis, 2013). Only 10% of the 235 million acres of forestland in the South are owned by federal, state, or local governments (public entities). Of the 90% of Southern forested lands that are privately owned, approximately two-thirds are owned by individuals or families (Bengston et al., 2011; Butler et al., 2016). Family forest owners have multiple reasons for owning their land, including recreation and preserving family heritage. The majority, though – and especially those individuals with more than 1000 acres – consider their forest a financial investment, often managing it as  a plantation (ortree farm) where trees are grown as crops to harvest and sell for income (Bengston et al., 2011). Depending on how much land they own, a forest landowner may only harvest once or twice in their lifetime; poor timber prices for timber may therefore influence whether they choose to replant. Meanwhile, one-third of privately owned southern forestland area is owned by timber investment management organizations (TIMOs) and industry or real estate investment trusts (REITs; (Butler et al., 2016). TIMOs, REITs, and other private entities invest in timber land as a low-risk asset, or for industry landowners, as a way to supply wood to their own industry (Clutter et al., 2005). And, as was mentioned in the vignette at the start of this chapter, owners who do not make sufficient income from selling the timber are likely to convert the land to other uses or sell it for development.

### *Public Benefits from Private Forestland*

Forests in the South are a distinct biological and socio-economic area. Beyond economic benefits, this land provides critical ecological and social benefits to the region (Wear & Greis, 2013). Thus, while southern forest lands are predominantly privately owned, they nonetheless provide a public good. Ecological or "ecosystem" services are often defined as "the benefits people obtain from nature or ecosystems," or the goods and services that are important to human health and livelihood (Ballofet, Deal, Hines, Larry, & Smith, 2012). Some examples of these goods and services include air and water purification; carbon sequestration; wildlife habitat; and recreation (Sills et al., 2017).

In turn, the ecosystem services provided by these privately owned forests have direct tangible economic and physical benefits for communities. For example, forests sequester or absorb atmospheric carbon dioxide and then store carbon, which reduces atmospheric greenhouse gases. Surface water (i.e., from rivers or lakes) comes from large watersheds. Forested land in these watersheds helps to protect surface water, filtering out potential pollutants and saving communities money on water treatment and water supply maintenance. And maintaining or increasing the amount of forested land worldwide is critical for reducing atmospheric carbon dioxide and mitigating climate change. Forests in the South also provide wood fiber for numerous products, including houses; furniture; boxes for shipping; paper, and many more.

### *Low Timber Prices and Lack of Markets Threaten Southern Forests*

As private landowners own 90% of southern forest land, their decisions about their land control the future of southern forests (Butler & Wear, 2013). Over the next 40 years, millions of acres of southern forest are projected to be lost to conversion due to development pressures or other factors (Wear & Greis, 2013). Four key socioeconomic and biophysical factors will influence whether these private lands remain forested: increased population growth; changes in timber markets; climate change; and invasive insects or diseases (Wear & Greis, 2013). While population growth, climate change, and invasive insects or diseases are all serious threats by themselves, this study is focused on factors related to timber markets. According to Wear and Greis (2013),

> Future timber markets could affect the forests of the south in two important ways. First, strong timber markets encourage retaining forests rather than converting them too other land uses, so high timber prices can help delay or even reverse forest losses in areas where forest management is still feasible. Secondly, strong timber markets encourage continued investment in forest management. (p. 19)

Mills, such as pulp, paper mill, and lumber, are the primary markets for forest-harvested wood. Timber prices are low for a multitude of reasons, but primarily because forest growth and wood supply far exceed wood demand (Mendell, 2021). However, corresponding social and policy components also influence the demand for wood products created by those mills. In the past 30 years, the southern forestry industry has changed ownerships and production types. Shrinking demand for printing and writing led many pulp and paper mills to close. In addition, the 2008 recession contributed to forest landowners waiting to cut and sell their timber, which in turn contributed to an oversupply of wood today.

Timber markets are local. It is not economically feasible to ship harvested logs great distances, and so a mill or other facility must be within a maximum of 100 miles of where the trees were grown. For this reason, there is typically little to no competition among mills for harvested wood, and prices for that wood are not competitive. Mill closings have significant economic repercussions for smaller, often rural communities, as well as for the forest landowners within that 100-mile radius (Jefferies & Tracy, 2017). If one mill closes, wood from the forest landowners near the facility loses value, as there may be nowhere to sell it and a poor return on investment.

In summary, southern forestland is important not only to those who own the land, but to the people of the entire region, as they benefit from the ecosystem services the forests provide and the job opportunities they create. In addition, a network of personnel from federal and state public agencies; universities; non-profit organizations; and more supports the forest industry at multiple levels and is invested in helping create more timber markets. In the next section, I will discuss these organizations and how an intervention among them could aid in that creation.

### *Creating More Forest Markets is a Team Effort*

Forestry markets and timber prices are influenced by a complex web of factors, including – but by no means limited to – demand for wood products; available wood supply; location in relation to a manufacturing facility; and new housing construction. To create new markets for forestry, there must be new facilities to process the wood and manufacture it. Expanding existing mills or creating new ones, both of which multi-million-dollar investments, requires a robust, sustained effort and an enormous amount of input and specialized information from many different organizations. A potential mill might need accurate information on the nearby forest

resource, such as tree species type, abundance, and size classes. Many different organizations need to provide information critical to a forest economic development project – but sharing such information is impeded by lack of connections across organizations. In this action research study, personnel from various forestry and economic development organizations are the key stakeholders.

### *Forestry Stakeholders: Organizations and Functions*

Forestry organizations of all types – publicly funded state or federal agencies; non-profits; private companies; and associations – work toward many of the same goals or compatible goals. These include advocating for forestry and the FPI and increasing forest economic development opportunities in their state or organization's area of interest. A state forestry agency's mission generally includes providing leadership, education, and services for protection and conservation of the state's forest resources. Such agencies offer a variety of technical services, such as reforestation; forest fire prevention and suppression; insect and disease control; and technical assistance for private landowners. Agencies also support the marketing and use of wood (timber) and have communications staff who create and share information with the public and state legislatures.

The Cooperative Extension System (CES) Is the third part of the land grant university mission (the other two are research and teaching). The CES was established in 1914 to facilitate transfer of new discoveries and innovations to farmers, but has grown to encompass many other subject areas (Franz & Towson, 2008). And while the CES does include youth education, the CES has become the largest institution focused on adult education in the United States (Griffith, 1991) and its primary focus is lifelong education about many different subjects, including

forestry (Sternberg, 2014). CES foresters and forestry professors work with a variety of stakeholders on general forestry issues, but some also focus on markets for forest products or analyzing forest economic data. Many Extension forestry professors not only serve to provide research-based information on forestry to multiple stakeholders, but some are also tasked with conducting economic contribution analyses as well. Such analyses, which estimate the economic contributions of forestry within a given area, constitute valuable data for forestry advocacy at the federal and state levels and for economic developers, among others.

In addition, important non-governmental organizations advocate for or support forestry and the forest products industry at county; regional; state; and national levels. Their advocacy can include lobbying state or federal governments for changes in laws or policies favorable for forestry and the forest products industry, or for more funding for forestry-supporting programs or agencies. State forestry associations, for example, support forest landowners through education, technical assistance, and legislative advocacy. Other forestry non-profits have a diverse array of goals, with some focused on technical assistance to forest landowners, others on national lobbyists, and still others on conservation goals. Each of these groups has its own knowledge and uses it in ways that could complement others, but there are challenges for transferring or translating this knowledge among them (Edmondson & Harvey, 2017).

### *Economic Development Organizations*

Economic developers from state or private agencies facilitate development of economic projects that range widely, from supporting the development of new manufacturing facilities to recruiting the entertainment industry for filming and expanding facilities. Economic developers also work on projects related to forestry and the forest products industry, such as creating new

mills, but many of them are unaware of the unique information needed for these projects or how best to obtain that information. Overall, state economic development agencies work to recruit new businesses and provide critical data on workforce; population; nearby businesses; economic impact; and natural resources; they also coordinate project development (Francis, 2016). While economic developers often serve as project coordinators and are the main contacts for forest industry companies, there are also many others involved in the process and much of the information needed is specific to forestry resources. Within this study, I will refer to this group as economic developers.

**The Problem: Stretched Thin**

To increase markets for timber, it is necessary to expand an existing mill or develop a project for a new mill or forest industry. While all of the aforementioned organizations serve different functions and represent various organizational goals, they also all work, in some capacity, to achieve many shared goals. Despite this overlap, connections between economic development personnel; state forestry agencies; forest economists; and other forestry partners are limited by boundaries both geographical (i.e., within and between states) and organizational. Individuals in these organizations all have their own differing expertise – a key source of innovation, as people from different groups or backgrounds can connect their ideas and knowledge together into new and integrated forms (Edmondson, 2012). Crossing these boundaries to increase connections may therefore also increase the groups' abilities to combine their diverse knowledge sets to innovatively identify and address challenges.

However, nonexistent or inconsistent networks, knowledge boundaries, and a lack of social capital among many of these individuals and organizations may limit their ability to share

knowledge with each other and subsequently affect their ability to do their jobs. In addition, the connections that do or did exist among these diverse stakeholders are often based on individual relationships; when one individual takes another job or retires, the other may lose their connection to that organization.

Because Baby Boomer retirements have already affected many public organizations and are expected to accelerate in the coming years (Clark et al., 2019), there is a risk of losing even more of these networks. Exacerbating this problem, many forestry departments have already seen overall reductions: state forestry agencies and other natural resource organizations have experienced steady decreases in funding over the years, mirroring a national trend (Green Investment Report, 2017). When their funds are reduced, either positions are not re-filled when someone leaves or salaries are lower than market value, making it difficult to attract new employees.

Finally, fewer positions overall at these public agencies combined with many retirements result in fewer opportunities to learn from others about the need to connect to different organizations. Throughout the past few years, I have had many conversations state forestry employees about how difficult it is for them to attract and retain colleagues because the salaries are significantly lower than in private industry. There have also been specific reductions in funding for forestry agencies and CES foresters at the state and federal levels, which has resulted in a loss of positions and is made worse by significant turnover at these and other public agencies.

In summary, there are already inconsistent connections among these stakeholders that likely impede forest economic development. This is due to many factors and is likely to become worse in the coming years due to more agency retirements, thus the strong need for creating

structures for connection that can outlast individuals.

**Impacts of the COVID-19 Pandemic on the Forestry Sector**

Every facet of the world was affected by the COVID-19 pandemic, but various industries were affected in different ways:

> Every organization has an emergency plan for incidents like evacuation in case of a fire, chemical leak, or shutting down the plant. Organizations conduct drills routinely to check the efficacy of procedures, train employees, test employees' compliance and equipment. However, none of the [forest products] organizations contacted had a strategy or a plan prepared for a pandemic. (Gurtu et al., 2022, p. 11)

Like nearly all manufacturing industries, employees at mills were sent home or laid off in the early days of the pandemic, which contributed to disruptions in supply chains that reverberated for months and years. However, at the same time, the importance of forest products received more attention than ever before from people everywhere, starting in the earliest days of the pandemic as the general public scrambled to find toilet paper. The President of the United States' National State of Emergency, declared on March 13, 2020, coupled with every media source repeating every government' initial orders to shelter at home, were quickly followed by video footage of empty shelves that should have carried toilet paper. For the stores that did have toilet paper in stock, notes taped on the shelves told consumers that they would only be able to buy one or two packages.

While the U.S. produces the majority of its own paper products, different products are sourced from different materials. There are two major market segments in the toilet paper industry – individuals/families, for home; and commercial consumption, for use in public

facilities – each of which has its own sourcing process for materials and product specifications (Gurtu et al., 2022). And while toilet paper is used the same way regardless of sourcing, manufacturers use different equipment to create smaller home-use rolls or large commercial rolls. In addition, some toilet paper is created using recycled paper, while other manufacturers use new tree pulp, which requires a different process and set-up. And recycled paper was not readily available during the pandemic, because office staff were not present in offices to recycle it. Consumer hoarding of paper products in response to scarcity exacerbated the situation.

By the summer of 2020, the toilet paper situation had improved, but attention to forest products continued. By the first anniversary of the nationwide shutdown, a huge surge in home remodeling and renovation created a drastic increase in the demand for lumber. Sawmills, though, had reduced production in early 2020, as they anticipated a decline in demand for finished wood. The forest products industry experienced a significant loss in value that was experienced by every part of the supply chain, from timberland owners to loggers and truckers (Stanturf & Mansuy, 2021). An estimated 200 to 300,000 truck drivers exited the profession during the pandemic, which exacerbated existing labor shortages (Gurtu et al., 2022). While the overall supply of lumber was reduced throughout 2020 and most of 2021, demand rose dramatically, as did lumber prices. There is not a clear relationship between lumber and "stumpage" prices (the price paid for the raw logs); in 2021, though, the price of both increased, with the magnitude of the increase in lumber much greater (Gan et al., 2022). And while there was a shortage of lumber, there was not a shortage of raw wood. Again, as illustrated in the vignette at the beginning of this paper, the disconnect between high lumber prices and the very modest stumpage prices paid to the forest landowner were a source of consternation. The surplus

of wood across the South and the large timber inventory in the region meant that a rising demand for raw wood could easily be accommodated, which limited its price increase (Gan et al., 2022).

## Relevance of the Study to the Field

As mentioned earlier, the context and situation of this study are relevant to citizens across the South, as they are the beneficiaries of forestland ecosystem services and for the job opportunities that forestry creates. However, this study is relevant to the field of action research for many reasons, including the diversity of stakeholders and geographical locations. The study includes people from multiple organizations related to forestry, but with different expertise and roles within their fields. When a group learns together, it is likelier to engage in novel ways of working that will inform both its members' work moving forward and the larger system. In addition to the diverse forestry stakeholders, other key stakeholders are from economic development agencies, with very different knowledge areas. This project's focus is thus on inter-organizational group learning: connecting stakeholders across geographical and organizational boundaries for engagement with each other, and a practice of learning from each other through working together. There are significant opportunities for learning and knowledge-sharing, but many obstacles to overcome, including geographical boundaries, unique organizational practices, and different forms of knowledge.

Beyond the group learning within this study, I am uniquely positioned in a boundary-spanning position, as my job is to work with many different forestry organizations across the South, and my individual learning may inform others working in similar boundary-spanning roles.

## Situating the Action Research Study in the Literature

In action research studies, theoretical frameworks provide critical guidance. This study is guided by the Community of Practice (CoP) theory, itself undergirded by theories on social capital and knowledge-sharing.

### Connecting Knowledge-Sharing; CoP; Social Capital Theory; and Context

Many different types of social structures in organizations facilitate knowledge-sharing, including learning communities, CoPs, and informal networks, among others (Blankenship & Ruona, 2007). While there are structures that support knowledge-sharing among individuals in an organization, social capital theory explains many cases of knowledge-sharing Click or tap here to enter text.. Social capital theory purports that networks of relationships generate collectively owned capital – a valuable resource for the individual, credentialed members of that network, who gain credit through their participation (Nahapiet & Ghoshal, 1998). Furthermore, Nahapiet and Ghoshal (1998) distill social capital into three elements: structural, relational, and cognitive. The structural component of social capital relates to the "impersonal configuration of linkages between people or units" (Nahapiet & Ghoshal, 1998, p. 244). Social structures, which are described as the common patterns or regular aspects of relationships that typically exist among members of organizations (Scott, 2003), are examples of different structural dimensions of social capital. In short, social structures are the building blocks of the social networks that embody their members with social capital. Knowledge-sharing has been defined as providing or receiving information on tasks and how to do something in order to help others and/or to work together with others to solve problems, develop new ideas or implement a project (Cummings, 2004). It is a voluntary action of an individual, one that, according to social capital theory,

happens because it provides benefits for the individuals and organizations involved (Cabrera & Cabrera, 2005; Nahapiet & Ghoshal, 1998).

Han (2020) argues that while social capital can be examined at the individual level in the context of Nahapiet and Ghoshal's three-dimensional model (1998), it is also an ideal framework for studying inter- or intra-organizational social capital. Southern forestry stakeholders and economic developers have minimal or inconsistent connections and social capital, despite the potential for these connections to assist them in their respective work. For this reason, one goal of this project is to create a social structure – specifically, a Community of Practice (CoP), which will serve as the structural scaffolding (dimension) that builds social capital and ultimately facilitates knowledge-sharing among these diverse stakeholders. In addition, this study explores the creation of social capital among diverse stakeholders based a multitude of organizations across 13 different states.

**Trust**

McEvily, Perrone and Zaheer (2003, p. 92) defined trust as "the willingness to accept vulnerability based on positive expectations about another's intentions or behaviors." They further define trust as an expectation based on perceptions or attitudes, and as a risk-taking act, in that when a person trusts, they are willing to be vulnerable. Their paper focused on trust as an expectation or intention as they were focusing on trust's behavioral manifestations. Furthermore, they describe trustworthiness as "influencing the pervasiveness and efficacy of trust as an organizing principle," (McEvily et al., 2003, p. 93). Mayer and others (1995) also centered trust as being between two individuals, while Fukuyama (1995) views trust as being based on shared norms within a group. Mayer (1995) includes three components in their definition of trust: benevolence, integrity and ability. Benevolence is described as an inclination towards kind acts,

while integrity is described as honesty and truthfulness and lastly, ability is related to competence (Usoro, et al. 2007). Usoro; Sharratt; Tsui; & Shekhar (2007) and Han et al., (2022) discussed that "trust is strongly related to attitudes and outcome expectations of knowledge sharing" (p. 3). All three types of trust (benevolence, integrity, and ability) are significantly related to intentions to share knowledge, according to Usoro and others (2007). In addition, trust is often used as a proxy for social capital.

**Social Capital Theory**

Pierre Bourdieu developed the concept of social capital in 1986, defining it in terms of access to resources through networks and what the sum of those resources entailed. James Coleman extended the concept further, stating that social capital could be found in as many different entities as possible (Coleman, 1988). Coleman's terms for social capital incorporated the idea of it as a resource for individuals in a network, but not one owned by them; instead, the resource exists in a range of different networks, as a means for establishing societal norms, and serves as a public good (Scrivens & Smith, 2013). Robert Putnam also stated definitively that social capital is a public good and couched it as networks of civic engagement, as well as trust and norms of reciprocal behavior (Putnam, 1995, 2000).

Scrivens and Smith (2013, p. 9) state that social capital in its broadest sense "refers to the productive value of social connections," and further summarize social capital as the idea that human relations and behavior norms have an "instrumental value" that impacts people's lives. All the definitions for social capital contain references to human relations of all types, but one of the main differences among these definitions is whether social capital is referred to as a resource for individuals that they possess as a private good, or whether social capital is a public good (i.e., something that creates benefits for other members of society; Scrivens & Smith, 2013). Finally,

Nahapiet and Ghoshal (1998) define social capital as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.

## Different Forms of Capital

In the literature, social capital is described as many things, depending on the author or their perspective. But what it starts with is the term "capital," which Lin et al. (2001, p.62), deriving his definition from the philosopher Karl Marx, calls "an investment of resources with expected returns in the marketplace." Social capital starts with capital and value of an extrinsic nature, and is thus something that can be used or generated – which is process-driven, as Lin (2001) argues. Furthermore, Lin (2001) adds that, in Marx's theory, there are three other concepts linked to capital beyond extrinsic value and process: added value, social activities, and a return on investment to the capitalist. In Marx's definitions, capital is linked inextricably to socioeconomic classes and hierarchy.

### *Human Capital*

Subsequent evolution of the theory of capital eliminates the use of socioeconomic class as required for the definition. For example, the term "human capital" was coined to explain the value an individual adds to their labor through skill-building, experience, and investments in education. This concept is more egalitarian in nature, as the laborer owns their human capital and can choose to invest it and will benefit from the investment through – perhaps – higher wages.

### *Cultural Capital*

Conversely, cultural capital does incorporate some of the Marxist theory regarding class. Bourdieu (1990) states that the dominant social class controls the culture and can train workers to serve its interests through both enforcement of culture and formal schooling. Lin (2001) summarizes the shared attributes of human and cultural capital versus the original definition of capital as a focus on the micro-level of individuals and the addition of individual choice (albeit one still embedded within a structure). Essentially, the individuals may not own their capital, but, according to human or cultural capital theory, they can retain some of their own capital or surplus value from their labor. Social capital, by contrast, describes capital as a social asset whose value is derived from connections and access to resources within the network.

### *Intellectual Capital*

Nahapiet and Ghoshal (1998, p. 245) define intellectual capital as "the knowledge and knowing capability of a social collectivity, such as an organization, intellectual community or professional practice." They offer that there are parallels between intellectual and human capital because both are based on noting the value of acquired knowledge, skills, and capabilities that allow people to act in new ways. Intellectual capital, though, is a focus on the collective human capital of an organization, rather than on an individual. Intellectual capital also has multiple dimensions, including types of knowledge, practical experience-based knowledge (explicit or know-what) and theoretical and / or abstract knowledge based on reflection of experiences (tacit or know-how). Nahapiet and Ghoshal (1998) further suggest that the differences between knowledge can be considered object-versus-knowing, which is an action of engaging with the world. Their definition of intellectual capital further acknowledges the importance of

knowledge's social and contextual forms. Intellectual capital therefore includes explicit / tacit and individual / social knowledge. It is created through incremental change and experimentation or through novel combinations or exchanges of existing knowledge. Finally, Nahapiet and Ghoshal (1998) state that social capital theory explains how intellectual capital is created.

## Conceptualizing Social Capital

Lin (2001, p. 19) distinguishes social capital from capital by describing it as an "investment in social relations" that yields returns. While social capital, a relatively young theory, has been parsed out in many ways, Lin (2001) further posits that all the significant scholars on social capital, including Bourdieu; Coleman; Lin; Burt; Erickson; and others can agree to one shared understanding – that "social capital consists of resources embedded in social relations and social structures, which can be mobilized when an actor wishes to increase the likelihood of success in a purposive action" (Lin, 2001, p.24).

### *Properties of Social Capital*

Lin (2001) offers four explanations for how social capital enhances actions. The first factor is the facilitation of the flow of information, wherein being a member of a social network means that you have access to information. Next, the social ties within that network or among those relationships provide influence, or access, in that a social connection can influence others towards some benefit for you. Third, relationships to individuals or sets of individuals may provide social credentials, in that someone may vouch for you, which means that you benefit from that person's social capital or reputation and are considered "bonified" (Lin, 2001, p. 65). In this type of circumstance, your personal social connection aids their social connection and

builds more social capital by connecting their contact to you, who may be a new employee considered valuable. Finally, social relationships provide identity and recognition as a member and, as such, having access to the resources associated with that identity. Lin (2001) calls this reinforcement.

Much of the early discussion and literature on social capital in the 1990s focused on whether social capital is collective or individual assets and whether social networks could be considered closed or open (Lin, 2001). However, scholars subsequently agreed that social capital includes both the collective and individual goods, in that social relations that include embedded resources will benefit the individual within the group, but also bestow benefits to the group or collection of individuals. Lin (2001) argues that the relational aspect of social capital should be separated from collective assets and goods. Coleman and Bourdieu stated that closed networks were a requirement of social capital as a means for separating in-group versus out-group along clear lines, such as family or other close relationships. However, Lin (2001) and Burt (1992), among others, see no requirement for a closed network, and advocate for the benefit of bridges in networks and weak ties, as they also confer benefits. Burt (2004)Burt (2004) describes structural holes as the space between different, denser social networks where bridges and weak ties can serve as connections between the different networks. Furthermore, Burt hypothesizes and subsequently offers evidence (2004, p. 349) "that people who stand near the holes in a social structure are at higher risk of having good ideas," due to the information flow between the structures. He later explains that the advantage of "brokering these structural holes" is "managers who broker connections across structural holes in their organization are more likely to have good ideas" (Burt, 2004, p. 388).

### *Social Capital Conceptualized in Four Interpretations*

Scrivens and Smith (2013) propose that social capital could be conceptualized and measured in relation to four interpretations: network structure and activities at the individual (personal relationships) and collective (civic engagement) levels; and productive resources at the individual (social network support) and collective (trust and cooperative norms) levels. They described personal relationships as people's networks or the people they know and the social behaviors that help to form and maintain those networks. Forming or maintaining this network means spending time with others or communicating with them through telephone or email. Personal relationships are the scaffolding of an individual's networks and reflect the range of contacts, density, and types of people in an individual's social network. Social network support refers to the benefits or resources (emotional; material; practical; financial; intellectual; or professional) that people derive from their personal relationships. The support that a person may access from their social network is determined partially by the structure of that network, but overall social networks can help individuals thrive or in times of need.

In terms of collective benefits from social capital, Scrivens and Smith (2013) call civic engagement the activities in which people engage that contribute to civic and community life. Their range of activities includes volunteering, group membership, and forms of community action – but, overall, they state that civic engagement includes the nature and extent of collective activities. Lastly, trust and cooperative norms are the productive resources that result from civic engagement and refer to shared values; social norms; trust; and more, in support of societal function and that create the conditions for mutually beneficial cooperation. In this case, productive resources include economic and social components.

### *Social Capital Conceptualized in Three Dimensions*

This study uses Nahapiet and Ghoshal's (1998) three dimensions of social capital, which includes three dimensions: structural, relational, and cognitive. Their definition of a structural dimension is "the overall pattern of connections between actors – that is, whom you reach and how you reach them," which they derived from Burt (1992;p. 244). They further describe this as the presence or absence of actors, the network configuration, and the overall facets of that network. Their relational dimension is centered on personal relationships developed through repeated interactions with each other and further focuses on the respect and friendship within these relationships, which influence their behavior. The cognitive dimension of social capital includes the development of mechanisms that build common understanding, such as shared representations, systems of meaning, and interpretations. Shared understanding can lead to defining collective goals and social norms. By contrast, intra-organizational development of a shared vision or values can develop this cognitive dimension.

Tsai and Ghoshal (1998) conducted a study that supports the argument that social capital facilitates value creation, as they assessed three components of social capital within the context of Nahapiet & Ghoshal's (1998) three dimensions. Social interaction, trustworthiness, and shared vision each significantly affected, either directly or indirectly, the exchange and the combination of resources. Social interaction is considered a manifestation of social capital's structural dimension, as structure type facilitates or impedes it. They also consider trust as a measurement of the relational dimension of social capital, one that can be defined as an expectation of positive results ((McEvily et al., 2003) or as a commitment of resources to an activity where the cooperative behavior of others will determine the outcome (Glaeser et al., 1999). In contrast, trustworthiness is defined as "behavior that increases the returns to people who trust you,"

(Glaeser; Laibson; Scheinkman; and Soutter, 1999, p. 4). McEvily, Peronne, and Zaheer (2003) distinguish trust as the expectation or perceived positive intentions – something distinct from trustworthiness, which is based on actual intentions, motives, and competencies. Tsai and Ghoshal (1998) describe trust as a feature *of* a relationship and trustworthiness characteristic of a person *in* the relationship. Both social interaction and trust relate to resource exchanges across units, which then affect product innovation significantly. In essence, frequent and close interactions among individuals enable them to know and trust each other, leading them in turn to share information and a point of view.

## Boundaries and Boundary-Spanning

### *Boundaries*

Buick, O'Flynn, and Malbon (2019) argue that there are hard, objective boundaries, such as organizational or jurisdictional areas, as well as soft, subjective boundaries, which are more related to perception and mindset, (such as organizational culture). Hard boundaries can include actual physical boundaries, such as geography, or can be based on organizations; states; nations; or industries. The softer, more subjective boundaries can be difficult to clearly define, and vary considerably; knowledge boundaries fit within this category. Beyond the different types of knowledge that exist, the boundaries that must be crossed between people (and/or organizations) include the differences in how language is used (syntactic), different systems of interpretation (semantic), and potentially different and competing interests (pragmatic; Carlile, 2004). The course of this project and study has crossed boundaries of all types. Organizational boundaries have demarcated lines, but the soft, subjective boundaries could also include deciding what is a person's territory – be it a state, a region, or the country, as well as their allegiances. Buick,

O'Flynn and Malbon (2019) define boundaries for public service sectors at multiple levels, including supranational (between and across multiple nations); international (between two countries); national (between states within a nation); sectoral (public sectors, as well as private and third sectors); organizational (consisting of two or more organizations); and group (between more than one group within an organization).

In this study, in addition to knowledge boundaries, there are also national, sectoral and group boundaries that must be crossed, as the study includes people from organizations in different states, some public service sector employees and employees from other types of organizations, and people from within the same organization but doing different work. A Community of Practice can be a mechanism for crossing these boundaries.

### *Boundary-Spanning*

Boundary-spanning can be described as a bridge between organizations and other partners with a focus on processing or exchanging information from outside the organization or a unit within it to another unit or organization (Weerts & Sandmann, 2010). A boundary spanner can be an individual, an organization, or a group. Weerts and Sandmann (2010) further describe individual boundary spanners as people who interact with constituents outside their organizations and present perceptions, expectations, and ideas between organizations. However, within an organization, boundary-spanning roles can represent multiple types of relationships with others outside of the organization or group. Boundary-spanning is complex and is not limited to a single position or entity within an organization, and may also include different manifestations of boundary spanning itself. Weerts and Sandmann (2010) argue that boundary-spanning roles include two domains: task orientation and social closeness. Task orientation is related directly to

an individual person's actual job and can influence their relationship with external constituents. Social closeness refers to the "degree to which the spanner is aligned with the external partner versus the organization that he or she represents" (Weerts & Sandmann, 2010, p. 639).

Individual boundary spanners can be said to have demonstrated abilities, skills, experience, and personal characteristics (Williams, 2002), though there is considerable overlap between personal characteristics and actions. Williams (2002) further states that the abilities to communicate and listen, understand, and manage conflict are important, as is being trustworthy. While high expertise levels can be important in boundary-spanning, the more important factors are a boundary spanner's ability to share ideas and communicate well (Weerts & Sandmann, 2010). Personality traits are also a factor in boundary spanning, as respectful; tolerant; open; and honest people are more likely to be successful boundary spanners. Woo and Myers (2020, p. 87), in a study of communications professionals within public sector organizations, state that

> boundary spanners can be any members with extensive communication links in and outside of their organization. But, some boundary-spanning roles emerge naturally and unintentionally due to certain individuals' exceptional interpersonal skills or social networks, while others are performed by employees whose job duties necessitate regular boundary-crossing interactions (e.g., customer relations staff).

Thus, boundary spanners can refer to many different position types, expertise types, and levels of experience. However, some ideal boundary spanners are people who have experience with multiple organizations and knowledge that spans disciplines, while still having expert knowledge in one discipline and the cognitive ability to be able to make connections.

## Knowledge-Sharing

Knowledge-sharing can be defined in many ways, including "the basic act of making knowledge available to others within the organization," and as a process between individuals wherein one individual's knowledge is presented to another person in a way in which that person can understand, absorb, and use the information (Ipe, 2003). Knowledge shared within a professional setting is commonly divided into two types; tacit knowledge, or "know-how," and explicit knowledge, or "know-that" (Brown & Duguid, 2001). Hildreth and Kimble, (2002) further describe explicit knowledge as "hard'" and "the part of what people know that can be articulated," as compared to tacit or "soft knowledge" which is "the part of what people know that cannot be articulated." Hustad (2017) argues that the social climate and structure, along with the culture of an organization, will affect how knowledge-sharing works within it. And Han (2018) confirms that knowledge-sharing is more likely for an individual who feels a sense of belonging to their organization or for an organization that offers more support for knowledge-sharing. Many factors affect whether knowledge can be shared and the potential for it to be shared. For example, tacit knowledge is harder to articulate and may not be transferred if there is no means to do so that accounts for the difficulty of describing it. Beyond these differences in individual knowledge types (i.e., tacit, and explicit), there are also knowledge boundaries, which can be challenging to cross without the right structure or interaction system.

### *Boundaries and Knowledge*

Boundaries limit knowledge-sharing within and outside of organizations. Forestry and economic development stakeholders have their own differing expertise – which is a key source of innovation, as people from different groups or backgrounds can connect their ideas and

knowledge together into new and integrated forms (Edmondson, 2012). However, knowledge boundaries may limit their abilities to share knowledge and work together, despite connection. "Organization and occupation are two important sources of knowledge boundaries," according to Edmondson (2012, p. 206). Carlile (2004) classifies organizational knowledge as localized (i.e., it exists within a certain context), embedded (tacit and we know more than we can say), and invested (specific to a particular organization). While everyone has their own localized, embedded, and invested knowledge, they must navigate other boundaries when integrating knowledge (Carlile, 2004). These other knowledge boundaries include the differences in how language is used (syntactic), different systems of interpretation (semantic), and potentially different and competing interests (pragmatic; Carlile, 2004). The syntactic and semantic boundaries would not be very strong across different forestry organizations but would be much firmer in comparison with economic development personnel and forestry organization personnel. Pragmatic boundaries would differ depending on the organization and its location, as there might be greater differences between states than within them. Edmondson and Harvey (2018) argue that these boundaries are not particularly visible until people from different groups work together across them. Forestry stakeholders in this study already deal with organizational, geographical and knowledge boundaries; however, the boundaries between the forestry stakeholders and economic developers are even wider. According to Hustad (2017), there is a need for a common information space, or boundary object, to help in knowledge sharing.

### *Intellectual Capital and Knowledge-Sharing*

Nahapiet and Ghoshal (1998, p. 245) define intellectual capital as "the knowledge and knowing capability of a social collectivity, such as an organization, intellectual community, or

professional practice." Thus, the knowledge and knowing capability of an individual are different than collective intellectual capital, which is the same traits but for an organization, community, or group. The different types of knowledge –tacit and explicit – are also part of the intellectual capital concept, though they can be distinguished further to capture the individual and social aspects of both forms. Social explicit knowledge represents the organization's shared knowledge and its social tacit knowledge, which is described as knowledge that is discovered through interaction (Brown & Duguid, 2001). An example of the latter type is a highly trained team performing together: a flight crew, emergency room staff, or military unit. Their social explicit knowledge in these instances is learned and demonstrated through the performance of their work together. Nahapiet and Ghoshal (1998, p. 248) also call this "the learning embedded in their shared experience." Intellectual capital has also been described as the sum of human capital (processes, education, and training to improve employees' knowledge, skills, and abilities), structural capital (non-human knowledge reserves found in an organization, such as data and files), and relational capital (the organization's relationships with customers; government entities; suppliers; and society; (Wang & Wang, 2012). The creation of new knowledge is a product of "incremental change and development from existing knowledge," or results from a more radical change or innovation that arises from a paradigm shift (Nahapiet & Ghoshal, 1998, p. 248). Either way, new knowledge involves a new combination of elements in a novel way.

Furthermore, new knowledge needs four conditions to form: the opportunity to make combinations or exchange knowledge; the expectation of value; the motivation to act; and the capability to incorporate or use the new knowledge. While an individual may be capable of creating and sustaining new intellectual capital, there needs to be an organizational capability to use it. Knowledge-sharing involves the transfer of knowledge between individuals or groups and

is part of the process of creating intellectual capital. Wang, Wang, and Liang (2012), as well as (Hsu & Sabherwal, 2012) found that knowledge-sharing relates directly to performance and affects it indirectly by strengthening intellectual capital. In addition, they also found that explicit knowledge-sharing enhances human and structural capital via sharing documents, reports, or through training and development programs. Relational capital, however, is not improved by knowledge-sharing.

### *Social Capital and Knowledge-Sharing*

According to Nahapiet and Ghoshal (1998), social capital theory explains that knowledge-sharing happens because it provides social benefits for the sharer and their organization. The combination of tacit knowledge and transformation of organizational knowledge can be enabled by social capital (Han, et al. 2022). Knowledge-sharing is a complex action; while organizations can establish structures to encourage it, ultimately, it is an individual's decision to share or not to share knowledge (Cabrera & Cabrera, 2005). Social capital can also influence knowledge-sharing through building trust and creating shared norms and language, as well as an overall individual interdependence.

Cabrera and Cabrera (2005) state that the structural and cognitive dimensions of social capital will determine whether there is an opportunity for individuals to share knowledge with others. If there are opportunities to spend time together, the increased interaction can lead to more frequent and effective communication, composed of shared language and codes (Cabrera & Cabrera, 2005). Han and others (2020) found that the structural dimension of social capital – specifically, task interdependence – had the strongest influence on predicting a knowledge-sharing relationship. If an individual thought that their task was interdependent with another

individual's task, they were likelier to share knowledge. The relational dimension of social capital, which includes trust, personal relationships, or friendships, also influences an individual's willingness to share their knowledge with others. Relationships can be multi-faceted, as individuals can be colleagues in addition to having a second relationship (e.g., neighbors, friends, members of the same faith community or social organization). Some relationships, but not all, may include trust – and trust between two individuals influences the likelihood of knowledge-sharing. Overall, structural and cognitive social capital facilitate knowledge-sharing, while relational social capital encourages it (Cabrera & Cabrera, 2005).

### *Interaction Systems, Boundary-Crossing, and Knowledge-Sharing*

Cronin and Weingart (2007) posit that when people engage in a particular part of an organization or area of expertise, interact with peers, and produce artifacts, they are likelier to create a joint system of interpretation that spans semantic boundaries. Carlile (2002) argues that the three characteristics of an effective boundary object provide: (a) shared syntax or language for individuals to represent their knowledge; (b) a tangible method that allows individuals to specify what they know or do not know in relation to the specific method; and (c) a way to facilitate connections among individuals to jointly transform their knowledge. Tortoriello and others (2012) discuss components of knowledge transfer between organizations, stating that "Extensive interactions with colleagues who work in disparate areas of expertise increase the odds that an individual will become more accustomed to translating and transforming knowledge so that it can be understood and applied in new domains (p. 1027)." Creating a structural mechanism for building social capital offers opportunities for individuals to engage with others and develop a shared language and codes (Cabrera & Cabrera, 2005). Wang and Noe (2010)

state that knowledge sharing can also be embedded in broad organizational networks (or inter-organizational networks), such as communities of practice. The existence of network connections and their related social capital can further facilitate knowledge sharing in a Community of Practice (Nahapiet & Ghoshal, 1998).

**Community of Practice**

A Community of Practice consists of people who define themselves as a group based on the reason they came together, how they relate to one another, and what they do together. Situated learning theory provides the grounding for the concept of CoPs, as the idea emerged as part of a study on apprenticeships and how knowledge was transferred in that context. Within that scope, Jean Lave and Etienne Wenger used the term CoP to describe "a community that acts as a living curriculum" (Wenger, 2015). This living curriculum details a new approach to understanding learning, especially in the workplace (Cox, 2005). Lave and Wenger couched their approach in informal and situated social interactions that lead to authentic learning about real practices in all their complexities (Cox, 2005). Cox (2005) further sums up Lave and Wenger's paper (1991) as an overview of how individuals new to a practice or work are socialized in the process of that practice through their participation. In this work, community is defined in a wider sense as group of individuals who participate in an activity system and share what they understand and are concerned about with their fellow participants (Lave & Wenger, 1991). Snyder & Wenger (2010, p. 109) summarized CoPs as "self-organizing groups of practitioners who *have* the required knowledge, *use* it, and *need* it." They further defined CoPs as practitioners working together to manage knowledge assets and strategic capabilities themselves, as they are the most qualified to do so.

In 1998, Wenger elaborated on the CoP concept and defined it as a group that becomes one through its mutual engagement with an enterprise with which it has a common repertoire. Storberg-Walker (2008, p. 562) writes that Wenger's work on CoPs "illuminate[s] the complex relationship between learning, practice, community, and identity." Both Lave and Wenger (1991) and Wenger (1998) consider that critical aspects of a CoP are its emergent properties, their self-management by the individuals working to improve their practice, and that membership is not mandated.

But subsequent research and case studies, including Wenger's (2015), have not adhered to a self-organizing structure as a critical component. Wenger's seminal work on CoPs (1998) structures them within a four-aspect framework (meaning; practice; community; and identity), while Bozarth (2008) notes that little attention is paid to this framework. Rather, for Wenger's CoP, the structure is usually described as three basic elements: domain, community, and practice (Snyder &Wenger, 2010, Wenger, 2015, Cox, 2005). Strength in all three structural dimensions is needed to have an effective CoP social learning system, according to Wenger (2015).

The domain can be defined as the joint enterprise understood to be the point of the CoP – indeed, it is "what the CoP is about" (Wenger, 2008) and it can be defined and renegotiated by its members as they want. The identity of the CoP is determined by the domain and is part of the means by which people are members or not CoP members (Snyder & Wenger, 2010). Wenger uses the term community as a description of the relationships that emerge from a practice; however, Cox (2005) points out that the word "community," which is poorly defined, has positive overtones, while a CoP may not be friendly or harmonious. Cox further delineates that Wenger's community is purposive and based on a practice, rather than on location. A CoP does not include a random community of people in the sense of neighbors who live in close proximity

but does include a group whose members are working on something in relationship with one another. “Practice” is referred to as the development and sharing of knowledge by the CoP members or practitioners in the given domain and includes elements such as tools, frameworks, and resources (Snyder & Wenger, 2010). Wenger (2015) states that CoP members are practitioners and that the practice or shared repertoire are created through time and sustained interaction. Storberg-Walker (2008) summarizes practice as members of the CoP developing shared meaning through being active participants in the community and active users of the group’s defined tools of the trade.

While shared domain, community, and practice are the accepted dominant structural elements of CoPs, O’Keeffe and others )2019) argue that these elements should also include participation, learning, and knowledge. In the CoP literature, participation has been referred to as the shared construction of knowledge and co-development of expertise (Nistor & Fischer, 2012). Storberg-Walker (2008) summarizes participation as action and connection, whereby participation means that those who participate both use the community’s tools and depend on them. When people initially join the community, they are only peripheral members; but, as they continue with the CoP, they gain expertise and further construct knowledge (O’Keeffe et al., 2019). Learning is fostered through the social process of legitimate peripheral participation, as a participant who starts out as a peripheral member gains more expertise and greater membership through activity in the CoP (Lave & Wenger, 1991). Tacit and explicit knowledge are transferred informally in CoPs as well as created (Sauve, 2007).

These three components of CoPs were studied by O’Keeffe et al. (2019) in a CoP structured to support learning to code by children. They argued that including participation, learning, and knowledge would help to better understand how and why people participate in a

CoP. They conducted interviews of participants in the CoP to validate these structural elements and how they appear in the daily functioning of the CoP. Their overall findings suggest that active participation accumulates expertise and that participation leads to learning formulated by the participant, as well as to knowledge shared through collaboration and communication networks (O'Keeffe et al., 2019).

### *Virtual CoP*

Lave and Wenger's (1998) originally defined CoPs as being both spontaneous, as well as meeting and engaging in person. However, there have been drastic changes in technology since that time, which led to creation of "virtual CoP's," (VCoP) which primarily rely on information and communication technologies for members to connect (Dube, Bourhis, & Jacob, 2006). Lee-Kelly and Turner (2017) describe VCoPs as communities that were created and implemented as an organizational intervention that use multiple platforms for virtual communication synchronously and asynchronously. Dube, Bourhis and Jacob (2006) also noted that VCoPs do not exclude face-to-face meetings, but that the main communication form is virtual. Furthermore, they describe a VCoP as using an array of media from teleconference tools (software), e-mail, on-line meeting space, common databases, websites, and more, where there an be a virtual collaborative space. Dube, Bourhis & Jacob (2006) defined typologies of VCoPs for different characteristics including: demographics, organizational context, membership characteristics, and technological environment. Demographics included the following characteristics of a VCoP: purpose ranging between operational and strategic, the lifespan (temporary vs. permanent), age and level of maturity. Furthermore, they describe the organizational context in terms of its creation process, and level of boundary crossing. Lastly, they discuss the environment wherein

the VCoP exists as being helpful versus obstructive, and having other properties related to the organizational slack (or space to grow), the degree to which it is formally institutionalized, and its leadership. Lastly, a VCoP is characterized by its members including the number, the geographic dispersion, the way that members are added, as well as if members join voluntarily or are required to join, as well as the stability of that membership.

### *CoP Value Creation and Evaluation Framework*

Communities of Practice are frequently described as adding value to their organization or individuals involved and to spurring innovation. However, it can be difficult to capture the value of that work. Wenger, Trayner, and de Laat (2011) developed a conceptual framework and guide to quantifying the value of the creative work in a CoP and for promoting it. They define value creation as the value of the learning enabled by community involvement and networking within a CoP in the form of information sharing; tips and resources; learning from others' experiences; assistance with challenges; professional development opportunities; and more (Wenger et al., 2011). In this framework, they define and provide metrics for five cycles of value creation within the CoP:

1. Immediate value (activities and interactions)
2. Potential value (knowledge capital)
3. Applied value (changes in practice)
4. Realized value (performance improvement)
5. Reframing value (redefining success; Wenger, et.al., 2011)

They also emphasize the power of narrative for generating stories about value-creation for promotion of the CoP and describe it as follows:

> As human experiences that evolve over time, communities and networks have stories- how they started, what has happened since, what participants are trying to achieve. It is in the context of these narratives that one can appreciate what learning is taking place (or not) and what value is created (or not). Framing value creation through narratives emphasizes the importance of audience and perspective. (Wenger, et.al., 2011, p. 13)

Within their framework, they provide guidance for how to build the full picture of value creation through leveraging the measured values of their five cycles and connecting them to complementary narratives. This framework has been cited more than 500 times since it was published in 2011. Below is information on the knowledge capital aspect or potential value cycle area of the framework.

In addition to the knowledge framework above, the maturity of CoPs has been defined along a five-point continuum (Wenger, et al., 2002). The stages range from potential, where a loose group of people are beginning the planning process to coalescing, where the CoP is officialy launched, having activities and establishing value. From there, the CoP matures as it has a "stronger sense of itself," (Wenger, et al., 2002, p. 69). As it matures, there is greater trust amongst CoP members, and a greater body of knowledge developed among them. At the Stewardship phase, the CoP is working to sustain its momentum, and at the transformation stage, the CoP may be fading away due to significant change in members, leadership, etc, or there may be a need for a reassessment for it to continue.

### *Knowledge-Sharing and the Benefits of CoPs*

Knowledge creation and exchange are key and widely accepted components of communities of practice (Wenger et al., 2002). The concept of a CoP has been recognized as a

potentially useful tool for knowledge management since its emergence, especially for knowledge is deemed tacit, implicit, or "less structured" (Kimble & Hildreth, 2005). Sustaining organizational knowledge through knowledge transfer and systems for managing it are critical for the long-term success of organizations; much of what is focused on is this soft knowledge. Cox (2005, p. 535) described communities of practice as "the classic conceptualization of knowledge management as more than information management: a social, not individual or technological solution, about tacit not codified knowledge."

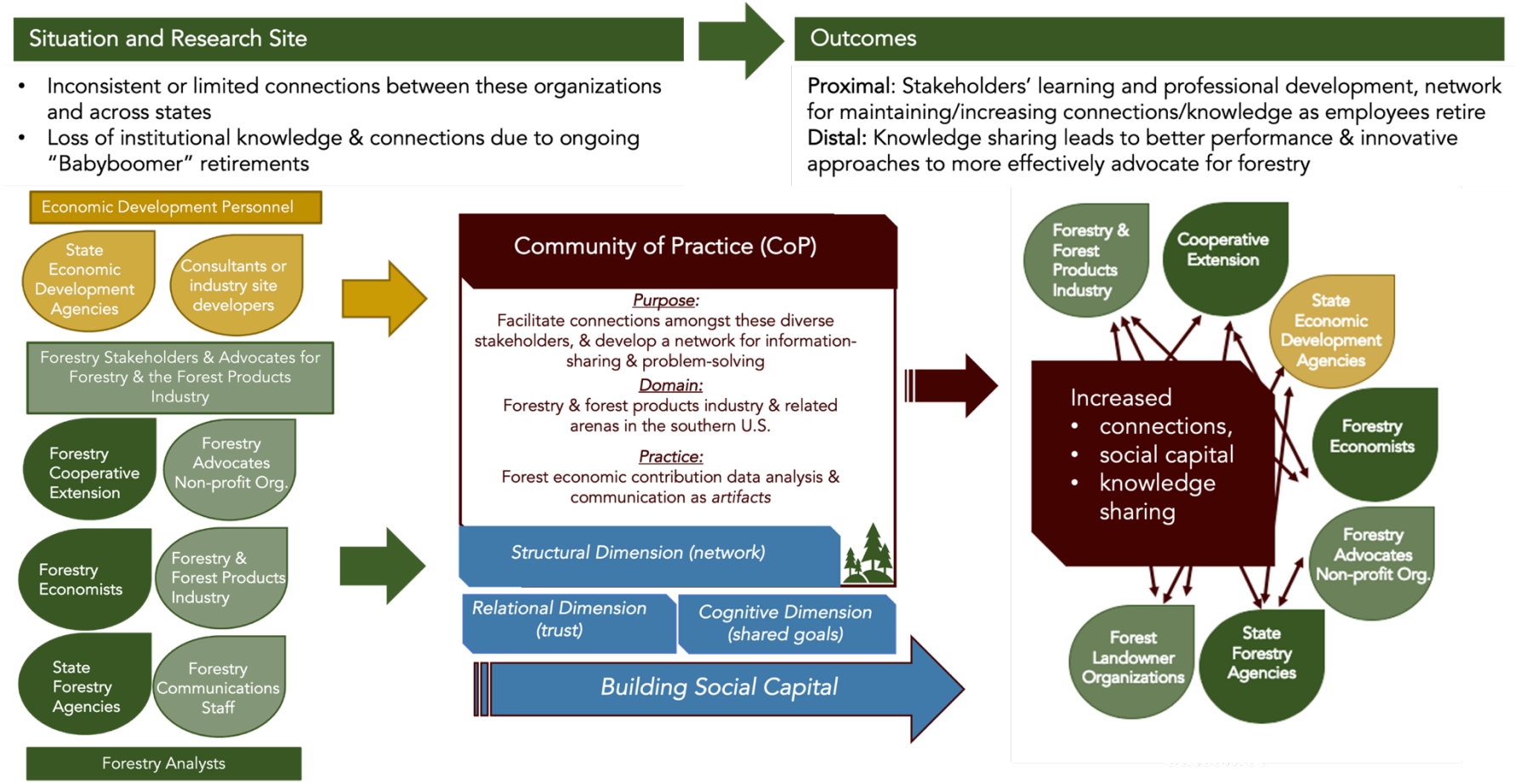
One of the benefits of a CoP structure is that it can be very efficient for increasing information flow, participation, and sharing or generating new content (Jagasia et al., 2015). Especially for an international or dispersed business, CoPs can help to optimize inter-community and inter-company collaboration, which improves overall organizational efficiency (Jagasia et al., 2015). Han (2018) confirms that knowledge-sharing is more likely for an individual who feels a sense of belonging to their organization or to one with more organizational support. Since a successful CoP is dependent on participation, if participants feel a sense of belonging within it, they are more likely to share their knowledge. In addition, Hernández-Soto and others (2021) reviewed 42 studies related to VCoPs and knowledge-sharing and found that there were personal factors, interpersonal factors, contextual factors and technological factors that impacted members' intentions to share knowledge. They described personal factors as being expertise, helping behaviors, need for affiliation, self-directed learning and beliefs and expectations about outcomes. Interpersonal factors were described as trust and justice, expert status, leadership, social ties, the relational structure of the VCoP and the level of empowerment of VCoP members. They further described trust as being established at member-member, member-manager, member-institution and member-channel (for knowledge exchange) levels. Contextual

factors related to knowledge-sharing behavior in VCoPs included the community's characteristics (its degree of openness, the domain and the level of autonomy), its cultural context (national or regional culture) and the parent organization (the values and norms of the parent organization influence knowledge-sharing behavior). Technological factors were described as including individual components (an individual's comfort level with the technology), the quality of the technology and then technical support for members.

At this research site, there are many different individuals who are members of different organizations, in different states and have different position types. Although most of these positions are different even within the forestry field (forestry stakeholders), they still typically have more in common with each other than with the other stakeholders from economic development. In addition, all stakeholders are found across the 13 southern states, but their occupations or position types may be a greater point of connection than being located in the same state. Similarly, they could be more connected within their state to other stakeholders, but not connected to individuals in other states who do the same work. Figure 1.1 depicts the situation and research site, as well as relationships between stakeholders. It also shows how multi-organizational, multi-state networks for knowledge -haring can be informed by theories on social capital, knowledge-sharing, and CoP. The CoP is intended to function as a structure by which stakeholders can connect to each other and increase social capital, so that they increase their likelihood to share knowledge. Community is a significant piece of the CoP; in this situation, the CoP becomes a professional learning community.

**Figure 1.1.**

*Theoretical Framework for Creating a CoP for Forestry Stakeholders and Economic Developers*



**Community of Practice as a Theory**

The concept of CoPs has existed for just over twenty years. While it was promoted quickly to practitioners and has been used in many situations, many components still need definition or have multiple definitions. Wenger has been described as more committed to the practice of sharing and promoting the CoP perspective for use on real world problems rather than focused on rigorous theoretical analysis, which led to the concept being "many different things to many different people" (Storberg-Walker, 2008, p. 565). The CoP literature has neither a clear overall definition nor a clear explanation of the learning processes (Storberg-Walker, 2008). Cox (2005) reviewed four seminal works used as references for CoPs and discusses how within these papers alone – three of which share Wenger as an author – there are significant divergences in terms and concepts. After parsing the four works, Cox (2005, p. 538) defined Community of Practice with respect to the organizational literature as a "relatively informal, intra-organizational group specifically facilitated by management to increase learning or creativity."

Li and others (2009) discuss how the CoP was originally developed as a learning theory that focused on self-empowerment and professional development. They further argue that as the theory evolved, it was turned into a management tool, which created tension between meeting the needs of individuals for their own personal growth and ensuring the organization's success. And Storberg-Walker (2008) argues that CoP is not even a concept within a theory, but that it is one way to label collective learning processes:

> In applied fields, scholars and practitioners often use the word theory, when they are. describing a collection or list of variables, concepts, elements, or categories, and so forth. This collection could lie anywhere along the ladder of abstraction, from

> variables (low abstraction) to speculative concepts (high abstraction). A collection or list, no matter where it lies along the ladder of abstraction, is not a theory. (p. 557)

After applying the general method of theory building to Wenger's (1998) CoP concept, Storberg-Walker (2008) further posited that Wenger had built a mid-level or abstract theory on social phenomena. They suggest that this is fine for many situations, but its use in human resource development needs to be changed into an applied theory that is less abstract and can be operationalized to guide practices and interventions.

Bozarth (2008) explored the concepts (meaning; community; identity; and learning) of Wenger's four-aspect framework that Storberg-Walker had proposed would be the building blocks of an applied theory for CoPs. He tested this framework and the concepts within it for their ability to help understand the internal dynamics of a Community of Practice. What Bozarth (2008) found is that the framework was useful for understanding the central features of a CoP and how it operated, as well as for providing structure to understand the three dimensions of CoPs (how it functions, what it is about, and its full repertoire of resources).

Despite the usefulness of the framework in these components, Bozarth (2008) also found that within Wenger's framework were three significant limitations: the analytic components had too much overlap in words and concepts; the lack of applicability of the framework to all CoPs; and the lack of guidance for studying an individual member of the CoP as a unit of analysis. He proposed a revised framework, one that resolves some of these issues and offers clarification on overlapping terms that could be used for research design, data collection, and coding data. While Community of Practice as a theory is still debated, as a practice, it has evolved considerably, leading to its implementation by practitioners in multiple organizations, situations, and even virtual applications.

**Assessment of Empirical Research**

Communities of practice have been examined in many contexts, leading to studies that parse out factors critical to the success of a CoP (Jagasia et al., 2015; McDermott, 2000). Other studies discuss frameworks that promote and assess value creation (Wenger et al., 2011) or examine leadership in a CoP (Smith et al., 2019). Hafeez and others (2018) study how entrepreneurs engage in online learning in a CoP. Blackman (2018) studies the factors of a successful CoP and organizational learning in a government system in Canada. Kisilu & Kinyua (2020) studies organizational learning and the effectiveness of a CoP in a government system in Kenya and documents some of the values of a new Community of Practice in a smaller area with unique challenges. Their findings point towards the need for the government to facilitate resources for the organization and to design a structure that builds trust and connection among diverse community members while still allowing for different tribal cultures, languages, and organization styles. Other studies provide examples of how CoPs can be used to bridge the gap between scientific research in natural resources and the managers who need to understand the science in order to implement best practices (Roux et al., 2006). Another example of similar interdisciplinary work in natural resource science and management/implementation connections through communities of practice is Watkins et al. (2018). Below are summaries of selected empirical research and a brief discussion on how they relate to components of my study, as well as to gaps in the literature (Table 1.1).

**Table 1.1.**

*Empirical Studies of Communities of Practice*

| Author(s)/year published | Title | Findings |
|---|---|---|
| Johannesson, P. (2022) | Development of professional learning communities through action research: Understanding professional learning in practice | Action research is part of the shared activities of a developing professional learning community (CoP) of teachers. Development of the CoPs were examined within the three dimensions of a CoP composed of teachers. The study finds that teachers were able to practice teaching and action research as part of their engagement in the CoP and that the community was able to learn by developing new forms of working together and aligning and refining their practices. Recommendations for an organization to support learning are to define end goals for the learning, define actions to achieve the end goals, and make the learning process visible, especially to newcomers. (n=18) |
| Mavri, A., Ioannou, A., & Loizides, F. (2021) | Value creation and identity in cross-organizational communities of practice: A learner's perspective | A virtual CoP, composed of both students and professionals, was created to enhance learning in a web design course for students in their third year of study. In addition to regular meetings, there were technological tools that could be used synchronously and asynchronously. Results of the qualitative data (focus groups, one-on-one interviews, and participant narratives) were collected and analyzed via Wenger's (1998) value creation framework. Results suggest evidence of learning; shifted perspectives; new relationships; co-created artifacts; and more. (n=39) |
| Blackman, D. (2018) | Knowledge management and communities of practice: Supporting successful knowledge transfer | This qualitative research case design reveals three distinctive themes in terms of why the community remained successful both in its ongoing membership and its capacity to create and transfer knowledge: recognition of value-adding by both the members and the organization, the role of personnel support in the Community of Practice, and championship, not management. The phenomena to be studied were participant and organizational perceptions of whether the CoP was successful in terms of creating and transferring knowledge; and, if so, what that meant. The study finds clear evidence of mutual engagement, effective learning and developing, and even new trajectories of |

| | | |
|---|---|---|
| | | learning. In this research, the case boundary was around the membership of National Managers' Community, as it sits within the wider Canadian Public Service. The broader community includes ~40,000 people. |
| Lee-Kelly, L., & Turner, N. (2017) | PMO managers' self-determined participation in a purposeful virtual community-of-practice | An action research team of academics with industry experience collected data over two years. They concluded that it is possible to design, create, and maintain, over a substantial period, a virtual and purposeful CoP; and that sharing tacit knowledge for mutual problem-solving is possible in a virtual CoP. The PMO teams were transitory. (n=180) |
| Ji, H., Sui, Y., & Suo, L. (2017) | Understanding innovation mechanism through the lens of communities of practice (CoP) | Nahapiet and Ghoshal's (1998) three dimensions of social capital are studied in relationship to innovation performance, intellectual capital, and psychological safety. There was a strong positive link between structural capital, relational capital, and innovation performance, but a weak link between cognitive capital and innovation. When intellectual capital and psychological safety with structural capital are analyzed in relation to innovation performance, the original relationship weakens. Thus, intellectual capital and psychological safety are strong supporting factors for innovation. (n=325) |
| Jagasia, J., Baul, U., & Malik, D. (2015) | A framework for communities of practice in learning organizations | This study created a mathematical model to connect organizational and technological environments, along with people (participation, trust) and knowledge processes (including creation and transfer) to CoP effectiveness. Their multi-factor analysis confirmed a positive relationship between individual motivation and willingness to participate and between suitable technological support systems and CoP effectiveness. (n=223) |
| Materia, V., Giare, F., & Klerkx, L. (2015) | Increasing knowledge flows between the agricultural research and advisory system in Italy: Combining virtual and non-virtual interaction in communities of practice | Participants in a CoP from two areas of an agricultural collective composed of multiple unique organizations were studied to ascertain their motivation to participate; level of involvement; degree of satisfaction; and perceptions of the CoP, along with their suggestions for improvement. CoP participants are more engaged and find more value in an interactive community versus a more directive community. In-person CoP activities and more focused learning groups are more effective at eliciting new members and/or engagement from existing members in the CoP, as well as in motivating and reinforcing virtual CoP interactions. (n=153) |

### *Model for CoP Effectiveness*

Jagasia, Baul, and Malik (2015) created a mathematical model that includes organizational; individual; technical; and knowledge-based process factors they identified as contributing to CoP effectiveness; they measured these as skill transfer, development, and enhancement. They define skill transfer as "the ability to transfer the performance competencies of a particular job to the performance competencies of another job," while skill development increases job proficiency through doing or training (Jagasia et al., 2015, p. 5). The enhancement of skills emphasizes increasing the individual's ability to adapt to changing workplace demands and to advance. The model created by the study's authors was designed to help organizations measure their CoP effectiveness overall, so they can use results from the model to refine their approach and better allocate resources to their CoP. Data were gathered by sending questionnaires covering five broad areas of organization; technology; people; process; and effectiveness of CoP to organizations that had implemented knowledge-management initiatives. The authors conducted a multi-factor analysis and found a positive relationship between people and technology factors and the CoP's effectiveness. Essentially, if the potential CoP members are "willing and motivated to participate and contribute, and the technology support system is in place, then the CoP can be effective" (Jagasia, Baul, & Malik, 2015, p. 13). There are limitations to this study, which was restricted to organizations in India and included a relatively small number of study participants. However, according to Jagasia, et al. (2015) models that can confirm the factors critical to CoP implementation success can be valuable to knowledge management and organizational learning.

### *Successful Approaches in Governmental CoPs*

Blackman (2018) analyzed a successful CoP to discover the strengths and the four main practices that encourage organizational learning. Their study focused on participant and organizational perceptions of the success of a National Managers' Community CoP that measured success in terms of creating and transferring knowledge. In this context, the Canadian Public Service created the CoP to facilitate knowledge and expertise sharing across thousands of employees in nearly 100 different departments. The CoP had emerged organically as a tool by for the managers to find the expert in a given department and to facilitate ways for the expert to share their expertise. The first theme Blackman (2018) linked to success in this CoP was its creation of value for members and for the organization. Another key to the CoP's success was its "network support personnel," which consisted of seven people who worked to support it and who see their roles as "enabler to support knowledge transfer" (Blackman, 2018, p. 236). Continuous support from the sponsor, ensuring that the network could reach its intended audience, was another important piece of the CoP. Finally, senior leadership worked to promote the CoP to middle managers and worked with network personnel to promote the CoP to other senior managers as well.

### *Social Capital Strongly Influences Innovation Performance in a CoP with Mediating Factors*

There is extensive support for CoPs role in innovation, but Ji, Sui and Suo (2017) explored the mechanisms behind a CoPs relationship to innovation performance. They proposed that the "essence of a CoP is social capital" (Ji, et.al, 2017, p. 206). As such, they connected Nahapiet and Ghoshal's (1998) three dimensions of social capital to innovation performance, intellectual capital, and psychological safety. The three dimensions of social capital were

hypothesized to positively affect the practitioners' innovation performance. Intellectual capital is also measured in the study, as its authors wanted to capture the individual's knowledge and competence, key network relationships with stakeholders, and supportive structures, such as institutional norms, databases, procedures. In addition, psychological safety are used in the context of a psychological atmosphere of mutual trust and support, and intellectual capital and psychological safety are hypothesized to be affected positively by the three dimensions of social capital. Questionnaires were sent to practitioners in creative and technology companies in Beijing; more than 300 were returned fully completed. The study's results indicate a strong relationship between structural social capital and innovation performance; but, when intellectual capital and psychological safety are added to the relationship, they had a moderating effect on that connection (Ji, et.al., 2017). Thus, those two factors are suggested to be strong supports for innovation performance overall.

***Collaboratively Creating an Intentional Virtual CoP in Large, Multi-National Organization***

In this study, the researchers were invited, as consultants and researchers, by the Hewlett-Packard (HP) company to develop a professional project management office (PMO) community organized and led by specific goals, accountability, and clear oversight (Lee-Kelley & Turner, 2017). HP is an organization that develops applications; business process software; infrastructure; and other products and services based on knowledge. It employs more than 50,000 people across the world who often work in independent PMO's that, due to geography or temporary or shifting composition, do not share knowledge easily across groups. The researchers were invited to co-develop a virtual CoP to share effective practices and knowledge between dispersed and unconnected groups and individuals in what can be considered a top-down

approach. However, the study's purposes were to evaluate the success of this deliberately planned virtual CoP and how it compared to traditional, emergent CoPs (Lee-Kelly, Turner, & Ward, 2014), as well as to investigate the motivations of the those involved (Lee-Kelley & Turner, 2017). The researchers measure success of the CoP based partly on the fourteen different indicators of a CoP (Wenger, 1998, 125-126). In addition to the CoP literature, the study authors rely on self-determination theory to guide aspects of the study (Lee-Kelley & Turner, 2017). Self-determination theory (SDT) is based in motivation literature and underpinned by needs for autonomy, competence, and a sense of belonging (Deci and Ryan, 1985). The authors conclude that it is possible to design, create, and maintain, over a substantial period, a virtual CoP that is purposeful; and that sharing tacit knowledge for mutual problem-solving is possible in a virtual CoP.

### *Creating Professional Learning Communities While Practicing Action Research*

Teachers in Sweden are mandated to "adopt research findings and scientific methods in their daily work," and they meet regularly to use action research to improve their teaching processes through work in professional learning communities (PLC) (Johannesson, 2022, p. 412). These PLCs use of action research (AR) as a tool for professional development or classroom AR, which can be differentiated from using AR as a research strategy but still includes an emphasis on planned change situated in current practice. The study author is also part of the AR team and among the team that trained the teachers in the use of AR. Johannesson (2022) uses the three dimensions of a CoP (shared repertoire, mutual engagement, and joint enterprise) to analyze and describe the development of these PLCs, as well as testing these characteristics empirically. Their definitions for the three dimensions are ways of doing things and materials the

community has produced (shared repertoire), relations within the CoP and engagement among participants (mutual engagement), and what the CoP was created to do (joint enterprise).

Overall, the goal of this study was to increase understanding of how the PLC developed and what it means in relation to teacher learning in practice. Results from interviews with 18 of the 22 teachers in the two PLC's are presented under the three dimensions of a CoP but then characterized as either a local activity or part of the action research focus of the groups. For example, under joint enterprise, Johannesson describes the local aspect as "improving practice towards the school's specific goals and developing a culture of inquiry," whereas the AR aspect is "trying to understand and conduct AR" (Johannesson, 2022, p. 417). Johannesson (2022, p. 424) argues that clarification on goals for the PLCs is important and that theoretical concepts can be used to make visible the "professional learning in practice" via reviewing the repertoire, engagement, and work towards goals. This study includes a small sample size – only one organization with one type of professional – but essentially creates the learning communities as AR teams. While these conditions are not applicable to my study, the relationship between AR teams as part of a learning community has interesting implications for understanding individual learning among my AR team members.

### *Value Creation in a Cross-Boundary CoP*

Mavri and others (2020) studied a virtual CoP composed of both students and professionals created to enhance learning in a web design course for students in their third year of study. In addition to regular meetings, where the professionals offered feedback to the students, there were technological tools that could be used synchronously and asynchronously. Results on the learning in the CoP were collected and analyzed through five of Wenger's (1998)

value creation framework cycles: value creation immediately; potential value creation (knowledge capital); applied; realized; and reframed value creation. The extensive qualitative data includes documents; interactions on tech platforms; focus groups; one-on-one interviews; and participant narratives. Part of this framework includes indicators for each cycle of the value creation framework. Narratives from participants provide evidence for the quality and value of the CoP activities, as do documented interactions on the tech platform. Potential capital includes measurements related to human capital in feedback from the professionals to the students, followed by social capital, captured by measuring community-wide relationships, which were positive in nature.

Overall study conclusions focused on assessment of the value of the learning in the CoP and the learner identity. They found that there are extensive learning and collaboration exchanges through the CoP; a shift in learner perspectives; emergent relationships; co-created artifacts and more (Mavri et al., 2021). The study also found that the connection of the technological, epistemic, and social designs is critical to creating a setting in which the virtual CoP can thrive. While this study includes college-level learners, two different organizational types – student and professional organizations – are like this proposed study.

### *Knowledge Flows Between Related Organizations in Virtual and In-Person CoP*

In this study, Materia, Giare and Klerkx (2015) investigated how learning, knowledge co-construction, and relationships are affected by participation in a combination virtual and non-virtual CoP among members of the Italian Agricultural Knowledge System (AKS). The AKS is a set of organizations, both public and private, that focus on agricultural education and research and provide advisory services to farmers or other users of the knowledge. While these

organizations are considered part of the AKS, they operate under the policies of each of the three focus areas listed above and are managed or impacted by different institutional levels of government. For example, some may be managed by central government, while others are managed by regional governments. Thus, the AKS is a set of dispersed organizations that can benefit from a connective mechanism and from creating more opportunities for collaboration and knowledge-sharing. A project team – which was different from the study authors – received government funding to create a means for improving knowledge flow between the research and advisory systems. This team created a CoP that met via face-to-face and virtual means and focused on generating opportunities to engage and to facilitate learning and knowledge co-construction. The CoP developed in stages, with in-person meetings used as launching points before incorporating a web e-learning platform, Moodle, for enabling participants to share information and knowledge with each other asynchronously.

Materia and others. (2015) found that fewer than a quarter of CoP members indicated that they were full and active participants. Another 50% indicated that they were passive participants whose their engagement was accessing the materials produced on the Moodle platform. The remaining 27% barely engaged. Overall participation did increase over the three years of the project, but a little more than half of survey respondents said that their initial involvement was not based on their personal preferences, but by orders from their supervisors. However, The CoP evolved into disciplinary learning groups (such as the cereal group or the viticulture group), which included more interaction and demonstration workshops.

The CoP also began with a more traditional one-way flow of information; but when it became more interactive, participants' attitudes toward it became more positive and engaged. Addition of these face-to-face interactive meetings and expansion of the CoPs to include farmers

often spurred more virtual CoP engagement. On occasion, virtual interactions did lead to in-person engagement, but those were rarer. Results from this study indicate that the virtual and non-virtual CoP activities were mutually reinforcing and complementary. Thus, the virtual CoP opportunities helped to sustain engagement created initially in a face-to-face activity. This study site most closely corresponds to my site, as it includes geographically dispersed organizations and a virtual CoP, but also includes face-to-face activities. However, this study focuses on broader measures of participation in the CoP and the interaction of virtual/non-virtual interactions versus more specific factors of knowledge-sharing.

**Summary of Empirical Studies**

The theory of Community of Practice is not well-bounded, as there is still considerable debate about what an applied theory of CoP should be and even frameworks for functioning CoPs are debated. There are more opportunities to better understand what O'Keeffe, et.al (2019) stated about how or why people participate in CoPs. There is also a continued need to test the multiple proposed frameworks and continue to measure the components of CoPs. Many different types of studies assess CoPs across different organizations and sizes of organizations using different frameworks or values. The selection of empirical studies above provides insights into some of the different research aspects; for example, Johannesson (2022) provides a connection between AR and CoPs. Most of these studies include some component of a virtual CoP (Blackman, 2018; Lee-Kelley & Turner, 2017), while Materia, et.al., (2015) is the only study that has a combined face-to-face and virtual CoP. Many studies capture some of the best practices that help create successful CoPs, such as creating value for its members, having support from the organization to engage in the CoP, and ensuring enough structure that there are

opportunities for participation and engagement (Blackman, 2018). In addition, results from Lee-Kelley and Turner (2017) confirm that there is added extrinsic value to the CoP. Many different CoPs study large populations within the same government (Blackman, 2018) and organization (Lee-Kelley and Turner, 2017). In addition, these studies measure multiple components, though some focus on the three dimensions of social capital and capture knowledge-sharing and / or trust. Though none of these studies has the same characteristics as my proposed study, the context of the Mataria, et.al. (2015) study is most like my study site.

## Gaps in the Literature and Implications for Research

This study's results will be a novel contribution to the literature, based on the many unique characteristics of the project: it is a combined virtual and face-to-face CoP composed of geographically dispersed, diverse organizations with different job types. Overall, this study will help to explore creation of trust and knowledge-sharing in a mixed in-person / virtual CoP. While communities of practice have been used in many situations, organizational types (or non-organizations), and locations, aspects of the concept remain unresolved. There has been little empirical research regarding mixed in-person / virtual CoPs. Due to geographic limitations, this proposed CoP would need to be convened mostly in a virtual space, as everyone belongs to different organizations; however, there will be face-to-face interactions among some members of the CoP, due to one intervention and to subsequent meetings and conferences at which members can overlap.

While there have been many studies about CoPs and social capital, few include members from multiple organizations and capture trust and knowledge-sharing. For example, most studies of CoPs focus on a CoP within one organization, whereas this study will focus on multiple types

of organizations within and across states. In addition, I found only one study that combined action research and a CoP. This research will support the body of research on Communities of Practice, social capital, and knowledge-sharing in a unique setting.

In addition, in a recent review of the state of CoP's, Nicolini et al. (2022) make a case for three learning lenses through which to view the CoP literature: learning, innovating, and defending. The learning lens is characterized through a focus on CoPs as "ways of circulating knowledge across organizational, generational and practice boundaries" (Nicolini, et.al., 2022, p. 690). They describe studies, viewed through the learning lens, on providing accounts of how individuals develop competencies, share knowledge, and work cross-boundary with the CoP, but posit that this lens has its origins in pre-industrial apprenticeships. As such, they advocate for studying the mechanisms of the learning lens further through empirical investigation, to clarify whether these mechanisms are still accurate in a post-industrial society. This study addresses the gap in the literature described by Nicolini and others (2022) through its focus on knowledge-sharing, learning, and cross-boundary work.

## Significance of the Study to the Field

Creating social capital, in the form of trust; shared norms; shared language; and interdependence, will also build the connections among stakeholders that allows for knowledge-sharing. A CoP provides the structural dimension to create opportunities for forestry and economic development stakeholders to interact and engage with each other and build trust, shared norms, and language. The context and situation of this study is relevant to citizens across the South, as they are the beneficiaries of ecosystem services from privately owned forestland and the job opportunities that forestry creates. As stated earlier, increasing markets for timber

from privately owned forest land is of critical importance to retaining southern forestland. While this project is not likely to directly affect the creation of new markets for forest products, it can facilitate connections among various stakeholders that will aid in development of these new mills or factories. Forestry stakeholders and economic developers serve different functions and have a range of organizational goals – but they all work, in some capacity, to achieve many shared goals. However, despite the overlap in their work and goals, connections among these stakeholders are limited by geographical and organizational boundaries. In addition, the connections that do exist among these diverse stakeholders are often one-on-one relationships, which can be lost easily when one person takes a new job or retires. Furthermore, many of these stakeholders are government agencies facing significant loss of institutional knowledge as Baby Boomer-generation workers retire. In addition to this loss of knowledge, the employee's organization is also losing that employee's connections to other forestry stakeholders and economic developers. Thus, there is a great need for a means to create connections and social capital among these stakeholders, which can then facilitate knowledge-sharing. Enhanced connections would, in turn, benefit these stakeholders' organizations and have the potential to benefit the development of new markets for forest products.

## Significance to the Field of Action Research

With respect to the field of action research, this study is significant for many reasons, including its diversity of stakeholders and geographical locations. The study includes people from multiple organizations related to forestry, but with different expertise and roles within the field. In addition to the diverse forestry stakeholders, the other key stakeholders are individuals from economic development agencies whose knowledge areas are very different. Therefore,

there are significant opportunities for learning and knowledge sharing, but many obstacles to overcome. In addition to the group learning within this study, mine is a unique boundary-spanning position, as my job is to work with many different forestry organizations across the South and my individual learning may inform others working in similar boundary-spanning roles.

## Purpose and Research Questions

Purposes for the action research study and the project differ, as the study will be informed by the literature and address gaps in knowledge, while the project's goals are practitioner-based. This study takes place in a system with two different types of stakeholders: (a) diverse forestry stakeholders, from organizations such as state forestry agencies; industry representatives; non-profit organizations; and communications specialists; and (b) economic developers from state agencies or other organizations. The purpose of the action research project was to assess challenges for forest economic development in the South, design, implement and evaluate interventions (including creation of a Community of Practice) that enhances knowledge-sharing among diverse stakeholders. Communities of Practice are regularly used within organizations to enhance knowledge-sharing; however, there are fewer examples of them being used across organizations. This study includes an action research team with members who represent different types of forestry organizations or positions as well as economic development. Ultimately, the CoP's multi-tiered connections and knowledge-sharing could lead to more collaborative work and facilitate development of more mills or markets for forestry and forest products. The project will provide momentum for creating connections among these stakeholders in the immediate

future and may lead to a stronger network, one that serves future stakeholders beyond the scope of this study.

**The purpose of this action research study was to explore social capital and knowledge-sharing in a multi-state, multi-organization Community of Practice, consisting of diverse forestry and economic development stakeholders of the southern United States.**

*This study's overall research question is to explore what is learned at the individual and group levels that advances theory and practice in an intervention among diverse forestry and economic development stakeholders of the southern United States*.

Our specific research questions are as follows:

RQ1: In what ways are individuals' and groups' abilities to build social capital and willingness to share knowledge enhanced by engagement in an inter-organizational, combined virtual and face-to-face Community of Practice?

Hypothesis 1: Engagement in CoP activities will increase trust and relational social capital among CoP members.

Hypothesis 2: Increased trust and relational social capital among CoP members will increase knowledge-sharing.

RQ2: In what ways are individual's abilities to perform their jobs enhanced by sharing knowledge within an inter-organizational, combined virtual and face-to-face Community of Practice?

Hypothesis 3: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the individual level.

Hypothesis 4: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the group level.

Hypothesis 5: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the system level.

RQ3: How have engagement and learning in an inter-organizational, combined virtual and face-to-face CoP created novel outcomes at the individual, group and systems levels?

Hypothesis 6: Engagement and learning in the CoP will increase the initiation of innovative approaches to working together, as well as positive outcomes.

These research questions will guide initial inquiry in this study. Subsequent chapters in this paper will discuss the methodological approach.

# CHAPTER TWO: METHODOLOGY

Chapter Two will detail the methodology for this action research study, starting with purpose and research questions. This chapter also includes an overview of the action research methodology and its application in my research context. Data collection methods, samples, and data analysis procedures for this study will be included, as will my strategies for ensuring trustworthiness in the data and my subjectivity statement.

## Purpose and Research Questions

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Purposes for the action research study and the project differ, as the study will be informed by the literature and address gaps in knowledge, while the project's goals are practitioner-based. This study takes place in a system with two different types of stakeholders: (a) diverse forestry stakeholders, from organizations such as state forestry agencies; industry representatives; non-profit organizations; and communications specialists; and (b) economic developers from state agencies or other organizations. The purpose of the action research project was to assess challenges for forest economic development in the South, design, implement and evaluate interventions (including creation of a Community of Practice) that enhances knowledge-sharing among diverse stakeholders. Communities of Practice are regularly used within organizations to enhance knowledge-sharing; however, there are fewer examples of them being used across organizations. This study includes an action research team with members who represent different types of forestry organizations or positions as well as economic development. Ultimately, the

CoP's multi-tiered connections and knowledge-sharing could lead to more collaborative work and facilitate development of more mills or markets for forestry and forest products. The project will provide momentum for creating connections among these stakeholders in the immediate future and may lead to a stronger network, one that serves future stakeholders beyond the scope of this study.

**The purpose of this action research study was to explore social capital and knowledge-sharing in a multi-state, multi-organization Community of Practice, consisting of diverse forestry and economic development stakeholders of the southern United States.**

*This study's overall research question is to explore what is learned at the individual and group levels that advances theory and practice in an intervention among diverse forestry and economic development stakeholders of the southern United States*.

Our specific research questions are as follows:

RQ1: In what ways are individuals' and groups' abilities to build social capital and willingness to share knowledge enhanced by engagement in an inter-organizational, combined virtual and face-to-face Community of Practice?

Hypothesis 1: Engagement in CoP activities will increase trust and relational social capital among CoP members.

Hypothesis 2: Increased trust and relational social capital among CoP members will increase knowledge-sharing.

RQ2: In what ways are individual's abilities to perform their jobs enhanced by sharing knowledge within an inter-organizational, combined virtual and face-to-face Community of Practice?

Hypothesis 3: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the individual level.

Hypothesis 4: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the group level.

Hypothesis 5: Knowledge-sharing across boundaries within the CoP will lead to improved job performance at the system level.

RQ3: How have engagement and learning in an inter-organizational, combined virtual and face-to-face CoP created novel outcomes at the individual, group and systems levels?

Hypothesis 6: Engagement and learning in the CoP will increase the initiation of innovative approaches to working together, as well as positive outcomes.

These research questions will guide initial inquiry in this study. Subsequent chapters in this paper will discuss the methodological approach.

## Overview of Action Research

### Definition of Action Research

While action research (AR) has been put into practice for decades and there are a variety of applications of action research, different definitions are used and a common understanding of it is challenging (Dickens & Watkins, 1999). Coghlan and Brannick (2014) frame AR as process-driven research that's cyclical, with repeating periods of constructing; planning; acting; and evaluating. Unlike a typical research study, AR is also practice-based, in that it is focused on a group working to determine what the problem is and taking steps to solve the problem. Coghlan and Brannick (2014, p. 6) called it "research in action rather than research about action." AR is led by a team, rather than an individual; and, in AR, the person studying the AR process is also a

member of the team. There are two main components to AR: the core project, which is the practical problem that the AR team works to identify and solve; and the scholarly component, whereby the action researcher not only participates in the process of the core project, but studies the process as well.

In AR, there is a specific situation or context to address, and one of the first steps is to identify the key stakeholders who can be on the team. Composing the correct team is critical, as key stakeholders need to be involved for the team to be able to identify the right problem (Coghlan & Brannick, 2014). As Stringer (2014, p. 8) defines it, "Action research is a collaborative approach to inquiry or investigation that provides people with the means to take systematic action to resolve specific problems." Identifying the issue that needs to be addressed is done by the AR team, which gathers and assesses relevant information. Using that information, the team can propose solutions or actions. Implementing the solutions is also dependent upon having selected the appropriate AR team, as solutions created by a team that does not include those who will take the actions are more likely to fail. Next, the team needs to review the actions and reflect on their effectiveness. Based on this reflection, the team can modify its actions or solutions and implement them again, as the cycle continues.

**Operationalizing Action Research and Fit**

This project focused on a region of 13 different states that have enough common issues and characteristics to make it worthwhile to work together, but are also distinct entities. The general issue of interest was creating connections among these different stakeholders (different state and organization types) in a CoP. There are unique constraints for each state or stakeholder, making the situation more complex than might be assumed at first. For a project that involved

change for multiple stakeholders of different types of employment positions and interests, action research is a natural fit. The overall purpose of this project was to create connections and knowledge-sharing among these diverse stakeholders to facilitate easier forest economic development and advocate more effectively for forestry. To create more connections and knowledge-sharing, we need to change the behavior of individuals – and, ultimately, organizations. Organizational change is the amalgamation of actions that individual members take; larger change requires individual members to change and to implement those changes (George & Jones, 2015). Therefore, individuals need to agree with the changes and take the steps to put them into practice. In any such process, there can be resistance to the proposed change. Resistance itself is not a negative or positive attribute; it is situational and can be positive in that it helps to challenge strategies and action plans (Erwin & Naman, 2009). Some components of resistance can also be related to an individual's readiness for change, and especially how they perceive the change, their ability to change, and their trust, efficacy, and organizational commitment (Holt & Vardaman, 2013). However, resistance to change also relates to involvement in the process, as resistance is decreased by greater involvement in the process (Erwin & Naman, 2009). By design, AR is collaborative (Stringer, 2014) and process-driven (Coghlan & Brannick, 2014), which means that involvement is critical and drives the process. An AR approach with a team working together will have a greater opportunity for success and reduced resistance than an alternative approach might.

For this project, AR was operationalized by creating a team with at least four different types of stakeholders from five of the 13 states to lead the effort. While the AR team cannot represent every different type of stakeholders from all the different states, those who were included were appropriate stakeholders, which is important towards identifying the correct

problem (Coghlan & Brannick, 2014). AR was also a good fit for this project because the problem of focus, was identified from earlier iterations of this project. While AR was not applied to this ongoing project in its earlier work, there have already been what could be considered equivalent cycles of constructing; planning; acting; and evaluating (Coghlan & Brannick, 2014). Those earlier cycles in this arena started in 2013 and included some of the same individuals who were part of the final AR team.

Conversely, the goal of this project was more complex and involved more stakeholders, making success much more likely with an AR approach, where involvement in the change process can improve the process and decrease possible resistance to change. In addition, this project was initiated by stakeholders and individuals at mostly similar levels of their organizations, and not at the top. While there was some support from higher-level administrators in some of these agencies for this project, involvement in earlier versions was driven by stakeholders' interests and not necessarily by requirements. This project's earlier iterations also included a smaller group that was more homogenous; however, the group, in its concluding state had more diverse stakeholders and was intended to drive changes about which higher-level administrators may be more concerned. Using an AR approach for this project increased opportunities for involvement at multiple levels and for communication between different levels of stakeholder organizations, which can also reduce resistance to change (Andersen & Andersen, 2012).

**Personal Approach to Action Research**

For more than a decade, I have served as a boundary crosser in my job, as I work with over 30 organizations in differing capacities for different subject matter and/or projects. In my

job, I am a convener, a facilitator, and often the person who carries out the work that has been determined by a larger group. In addition, I have no positional power or authority: others only work with me if they want to. As such, the core principles of action research were a good fit for my work on this project. Early iterations of this AR project started about 10 years ago and have been ongoing, involving many of the individuals who are a part of the AR team. The difference with the AR approach is that the group was convened more formally and was subsequently informed by formal AR principles and theories related to Community of Practice, such as social capital, knowledge-sharing, and situated learning. While this AR project was originally intended to focus on creating a standard protocol for analyzing and communicating forest economic data, it evolved into a more complex project, based on AR team discussions, interviews, and preliminary needs assessments. In addition, my job is to act as a boundary spanner among organizations, geographical locations, and more, but my AR team members have jobs with very different responsibilities. I know and understand the type of work that my AR team members do, but I have never done their jobs, and, as such, I would not have pushed forward an intervention or idea that is solely mine, as it would not work. I am a creative and constructive problem solver; however, my ideas were only relevant if they resonated with the AR team.

## Overview of Research Plan

I developed my proposed research based on initial data collection and work with my action research team. An overview, featured in Table 2.1, has been organized chronologically and includes the type of data collected, a listing of the sample population, and the level of individual or group level for the information.

**Impacts to the Study from COVID-19**

For this project and study, COVID-19 impacts on the industry, which were mentioned in Chapter One, caused numerous disruptions, but had more minimal effects on this project specifically. Work on this project and study were ongoing in 2020 when the pandemic began. A problem identification and solving intervention, in the form of a summit, had been planned for March 2020; serendipitously, the dates of the summit (March 9-10) coincided with the last days of travel allowed by participating organizations. In the days immediately prior, some people who had registered could no longer attend, due to new restrictions on travel from their organizations.

In addition, as co-organizer of the summit and project leader, I felt increasingly nervous about the potential risk for participants, but was also aware of the time and money invested in this meeting. At that time, we knew very little about how the virus spread, and nothing about the protection that masks provide. I consulted with my co-organizers, who indicated that they still planned to attend and had no restrictions on travel from their organizations. However, I wrote an email to all participants on March 7th – the day before the travel day – explaining what we knew about the virus, what measures we would take to protect attendees, and that summit participants who were presenting could do so remotely if they desired. I stressed that there were still many unknowns and that everyone had to decide what they were comfortable with, given their own health status, risks, and particular set of circumstances. The measures we took to protect attendees were modest and consistent with guidelines at that time: avoided shaking hands and sharing writing items and provided abundant hand sanitizer. In the end, about twelve registrants did not attend the meeting, but we were able to achieve our meeting objectives, although on day two more than half of the participants' organizations had declared an end to travel. Given the importance of the summit to my study, I was very lucky that it took place. I did not hear any

reports of anyone testing positive for the virus after the summit, despite the location (New Orleans) being declared a hot spot a few days later. While COVID-19 did not affect that project intervention, it did delay continuance of the study, as I dealt with the personal challenge in being one of two parents working full-time while home-schooling and supervising young children for months on end.

**Table 2.1.**

*Overview of Research Plan and Data Collection for AR Study*

| Type of Data Collected / To Be Collected | Sample | Timeline | Level |
|---|---|---|---|
| **Document Collection:** AR team meeting notes, agendas, recordings & handouts | AR team (7) | January 2019 – Present | Individual, Group |
| **Survey:** Interest level in attending & topics of interest for planned intervention | Potential summit attendees, including forestry and economic development stakeholders (number unknown); 37 respondents | July 2019 | Group, System |
| **Individual Interviews:** Critical Incident Technique Interviews | 3 AR team members | October 2019 | Individual |
| **Document Collection:** Personal journal entries & research notes | Many | January 2019 – Present | Individual |
| **Document Collection:** Notes recorded at summit by participants | 66 summit participants | March 9-10, 2020 | Group |
| **Survey:** Post-summit evaluation | 66 summit participants (79% response rate, 64% completed) | March 2020 | Group |
| **Focus Group:** AR team meeting to capture reflections on summit | 9 AR team members plus additional summit planners | July 2020 | Individual, Group |
| Document Collection: Community of Practice development documents | 8 AR Team members | January 2021 – July 2023 | Individual, Group |

| | | | |
|---|---|---|---|
| **Individual Interviews:** Unstructured interviews | 5 AR team members | February-March 2021 | Individual |
| **Document Collection:** Summit report | 66 summit participants, 9 report co-authors | September 2021 | Group, System |
| **Survey:** Interest level in attending & topics of interest for planned CoP | ~60- 70 potential participants in CoP | November 2021 | Group |
| **Document Collection:** Community of Practice development documents, meeting agendas, other notes | | December 2021 – Present | Group |
| **Focus Group:** Capture reflections on trust, knowledge-sharing, our work together, etc. | 8 AR team members | August 2023 | Individual, Group |
| **Survey Instrument** | ~60-65 participants in CoP | September 2023 | Group, System |

## Data Collection Methods and Sample

### Initial Data Collection and Strategies

Work for the current iteration of the project began in January 2019. Table 2.2 provides an overview of action research work and interventions conducted throughout the project. This project began partly based on fulfilling the deliverables that were written into a funded proposal, which included funding for an educational event of some type. In the proposal, the event had a narrower focus of providing education on one of the other deliverables (a standard methodology or protocol for conducting forest economic analyses). However, as the AR team began to discuss

the purpose of this educational event, it became clear that the event, as proposed, would not be of interest to most individuals. Data was collected from AR team meetings and input-gathering sessions with larger groups in January and February that helped to identify a need for an educational event encompassing multiple forestry stakeholders as well as economic development personnel. The March 2020 event, the Forest Economic Contributions Summit: Strategies for Development, Communication, and Education on the Sector's Role in the Southern Region, became both an intervention for the system and a mechanism for clarifying the problem and identifying further solutions.

**Table 2.2.**

*Cycle of Interventions, 2019-2021*

| Overall Interventions | Justification & Outcomes | Specific Activity Description |
|---|---|---|
| ***January through April 2019*** | | |
| -AR team convened<br>-Shared information about the project & the innovation of the standard methodology with a wider group of stakeholders | **Justification**<br>-Bringing more knowledge sources to problem-solving<br><br>**Outcomes**<br>-Refined problem identification<br>-Early awareness of the new protocol<br>-Input changed the intent of the educational event | AR team meeting<br>Problem ID: Individual discussion about the project standard methodology development and the educational event<br>Awareness, Problem ID: Shared with a wider group the details of the funded proposal and the ideas for the educational event and collected input.<br>Problem ID: Utilization & marketing (UM) annual meeting – presentation & discussion<br>Interview: Interview to learn more about Forestry Econ. Development<br>Awareness, Problem ID: Meeting with a wider selection of forestry extension economists to tell them about the proposed summit<br>AR team meeting |
| ***May through July 2019*** | | |
| -Economic Development contact list created<br>-Connection with interested team in agriculture economics<br>-Shared project info & the new protocol with forestry agency heads | **Justification**<br>-List connects to new potential team-members<br>-Agency leads may join team & have influence<br><br>**Outcomes**<br>-New connections, more support for project & bigger team | Intervention: Assembled list of regional Economic Development contacts<br>AR Team Meeting<br>Awareness: Meeting with three agriculture economists who are interested in replicating this project<br>Agenda Discussion<br>Awareness & Input: Presentation & awareness at regional forest agency leadership meeting<br>- AR team meeting<br>- Planning logistics |

| | | |
|---|---|---|
| ***August through September 2019*** | | |
| -Collected data<br>-Formed plan for educational event (summit)<br>-Promoted summit to others<br>-Targeted summit promotion through personal networks | **Justification**<br>-Collected data on interest in summit<br>-Increase team diversity by inviting economic development contacts.<br><br>**Outcomes**<br>-Feedback on summit plan & more team members | email to Extension Forestry Listserv<br>Meetings:<br>1. Planning logistics<br>2. Agenda discussion<br>3. Agenda/registration/invite only<br>4. Awareness/Marketing: Marketing the summit was conducted via emails to forestry U&M committee members for them to contact personal economic development or other forestry stakeholder contacts & to the Economic Development email list |
| ***October through December 2019*** | | |
| -Continued logistics planning shaped by interest in summit & outside feedback<br>-Data collection (Critical Incident Interviews)<br>-IRB<br>-Summit Marketing & registration continued | **Justifications**<br>-Constructing the summit agenda poses discussions about intent and outcomes of the summit<br>-CIT interviews provide data on problem<br><br>**Outcomes**<br>-Data to support problem identification & summit goals<br>-Learning within AR meetings & planning sessions as AR team learns from each other | Four meetings for planning logistics<br>Critical Incident interviews with three AR Team members<br>Meeting: Discussed scope of summit and intentions<br>Awareness & Input: Poster presentation at forestry Conference<br>Awareness & marketing: Marketing the summit via 2 emails to the Economic Development contact list (& via Constant Contact newsletter system)<br>Awareness & marketing: Marketing the summit via emails to forestry U&M committee members for them to contact personal economic development or other forestry stakeholder contacts<br>Submit IRB<br>Meeting: Continue planning logistics for the summit<br>Intervention: Structure meeting registration to ensure that spots are available for economic development contacts and others who are not forestry economists or from state forestry agencies<br>More AR team meetings to finalize meeting logistics, review lightning presentation abstracts, and finalize agenda |

| | | |
|---|---|---|
| | | Intervention: Plan the structure of the small group discussion times and formats |
| ***January through December 2020*** | | |
| -Forest Economic Contributions Summit | **Justifications**<br>-Meeting included opportunities to meet, share knowledge & co-construct together<br><br>**Outcomes**<br>-New connections among stakeholders<br>-Findings from small group discussion<br>-New AR team member | -1.5-day meeting held March 9-10, 2020<br>-The summit convened ~60 stakeholders from the identified groups for presentations & small group discussions.<br>-Plenary sessions to orient various stakeholders in other arenas.<br>-Small cross-sector group discussions around general themes<br>-Group discussion outcomes shared out to larger group.<br>-Start of COVID-19 pandemic declarations worldwide |
| **January 2021 through December 2021** | | |
| -Forest Economic Summit Report<br>-Surveyed potential CoP members to discover what their interests are<br>-Started Community of Practice meetings | **Justifications**<br>-The Summit Report was co-created by the AR team to summarize findings from the summit<br><br>**Outcomes**<br>-Report on Summit findings<br>-Creation of initial CoP | **AR Team Meetings** to discuss summit report, discuss CoP construction, purpose<br><br>**Intervention**<br>-Held two CoP meetings virtually<br>-Created google group for connection & invited anyone to present<br>-Co-development of Summit Report; presentation of its findings to the CoP group and externally |

## Methodologies for Collecting Data

Data was collected at multiple stages within the cycles of action research, from identifying and clarifying the problem to planning and evaluating the summit (first major intervention) and planning the Community of Practice (CoP). Quantitative and qualitative data have been collected throughout this study, which focused on learning at the individual, group, and system levels, as well as building social capital and increasing knowledge-sharing behaviors among diverse stakeholders within the scaffolding of a CoP. To measure the effectiveness of the CoP (intervention) and the group learning, I measured variables related to trust, social capital, and knowledge-sharing via notes and documents created from virtual and in-person meetings, including the 2020 Summit, and from a survey instrument that included scales adapted for the audience for trust, knowledge-sharing, and the three forms of social capital. The AR team has also undergone a process of learning, as it went through the action research cycle, from constructing to planning, acting, and evaluating. The team's personal knowledge and experiences informed the diagnosis and clarification of the problem in our team meetings, as well as in individual interviews and group reflections. As such, many different documents from the AR team were analyzed as data, including notes from our meetings, agendas, and co-created materials, such as fliers, reports, and other informal documents. Table 2.3 shows the research questions in relation to the data collected and the sample for that question.

**Table 2.3.**

*Research Plan for Data Collection in Relation to Research Questions*

| Research Question | Data collected | Sample |
|---|---|---|
| In what ways are individuals' ability to build social capital and willingness to share knowledge enhanced through engagement in an inter-organizational combined virtual and face-to-face Community of Practice? | -Notes & documents from 2020 summit, AR team meetings, CoP meetings & focus groups<br>-Survey instrument measuring trust, knowledge-sharing & social capital | AR team & CoP members |
| In what ways are individuals' abilities to perform their jobs at the individual, group and systems levels enhanced by sharing knowledge within an inter-organizational combined virtual and face-to-face Community of Practice? | -Team reflections<br>-Focus group<br>-Critical incident interviews<br>-Individual interviews<br>-AR team meeting notes<br>-Summit outcomes report | Action research team & CoP members |
| How have engagement and learning in an inter-organizational, combined virtual and face-to-face CoP created novel outcomes at the individual, group and system levels? | -Interviews<br>-Survey data<br>-Notes<br>-Evidence of outcomes | Action research team & CoP members |

### *Document Collection*

In an action research study, the project is situated within an ecosystem of ongoing work that includes numerous documents related to that work, as well as personal notes that may also be relevant. In a qualitative study, publicly available documents such as fliers; articles; factsheets; reports; and more; and private documents, such as personal notes; journals; emails; and letters can be used as data (Cresswell, 2014). Throughout this study, I collected documents that are relevant and / or were produced as part of this project, including AR team notes and many different co-created materials. Below are descriptions of the types of documents used as data (the documents are not listed in any order).

**Action research team documents.** Discussions among the AR team within the phases of action research provide a rich source of information on how the problems were identified and refined, the planning of the intervention, and more. There are also recordings of our ongoing AR team meetings, although the meeting notes are detailed enough to capture how ideas changed and the group learned. In addition to notes and agendas, action items listed on those notes reveal the priorities for the group's next steps at that time. The AR team also created many materials in the course of promoting and planning the Forest Economic Summit, such as website copy, fliers, and emails. The sample for this collected data included the six AR team members, who gave permission for the notes to be shared and for meetings to be recorded.

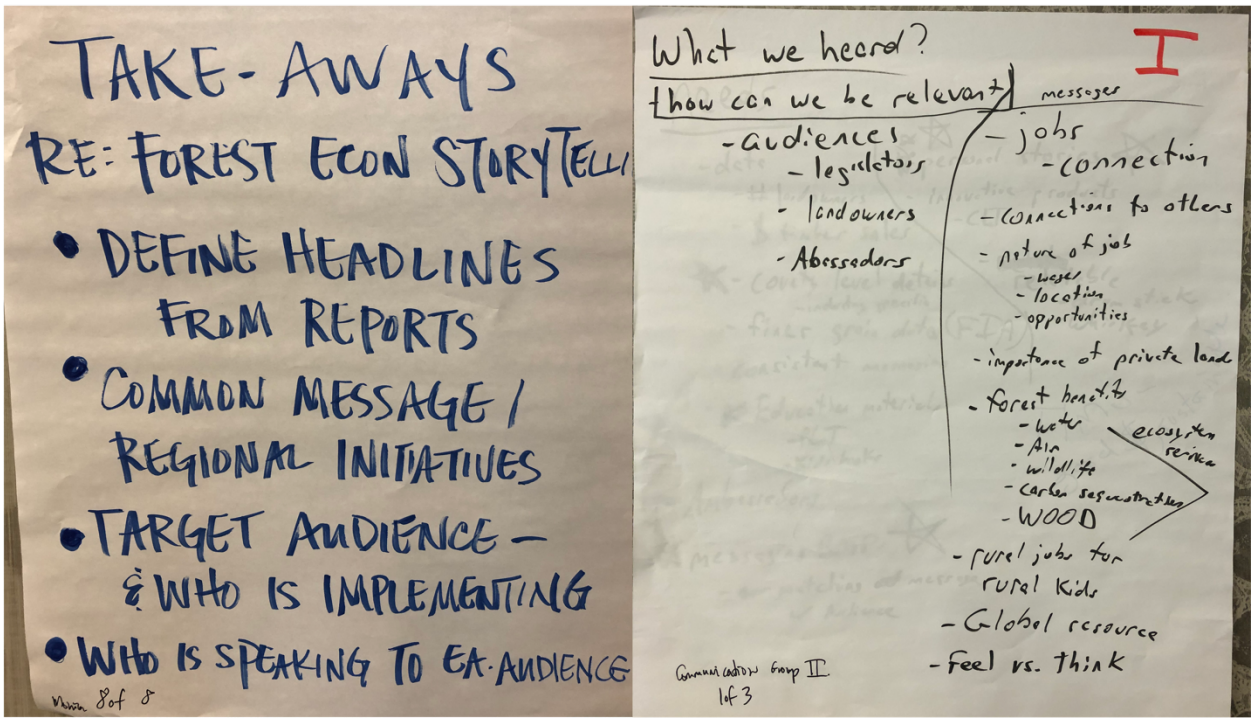
**Forestry Documents.** This AR project involved creating connections among diverse stakeholders in forestry and economic development and many activities centered around forest economic data. As such, there were many documents related to forestry from multiple sources, including AR team members and summit participants' organizations. All these documents are

publicly available and contribute to understanding context and informing further development of the project.

**2020 Forest Economic Summit Documents and Report.** One of the significant interventions in this AR project was the 2020 Summit, where more than half of the time was spent in small group discussions with notetakers. The purpose of the summit was to create connections among the relevant stakeholders and opportunities to learn from each other. The small groups were structured, and individuals were assigned to different groups based on their backgrounds, so that the groups included a variety of stakeholders. Groups were assigned various questions to answer together before presenting their information to the rest of the attendees. Figure 2.1 includes a sample of different notes from the small group discussions, including: "take-aways re: forest economic storytelling," and "What we heard? That can be relevant." The AR team consolidated the Summit notes into a report.

**Figure 2.1.**

*Sample of the Notes Taken During Small Group Discussions at Summit*




**Personal Research Documents.** As both an AR team member and the active researcher studying the learning occurring within the AR team and the project, my personal notes and reflections are important documents to include in data collection. This project began in January 2019, and my notes and reflections date from that time up to the end of the project. In some cases, I added my personal reflections to the AR team notes. Other documents include research memos, emails, and my research journal. These notes serve as a record of my own first-person learning, as well as a record of my thoughts and decisions throughout the process and a place where challenges and lessons learned were noted.

**Strengths and Limitations.** Documents serve as a record of the process and can help when there is a question about a past idea or interpretation. Yin (2018) states that one of the most

important use of documents is for corroborating and augmenting evidence found from other sources. The strengths of using documents for data collection are the stability of the source (i.e., it can be accessed repeatedly), and specific information on sources or details of events that may cover a broad span of time, events, or settings; furthermore, some documents may be available but not created from the study itself (Yin, 2018). However, Yin (2018) further states that it may be difficult to access all the documents in a useful way due to the sheer number of them, and that they may be biased as a collection (if incomplete) or as a matter of the document's author's personal biases. Lastly, some unavailable documents may be important, too.

### *Interviews*

Interviews are an important tool in qualitative data collection; as Yin (2018, p. 118) points out, they "can especially help by suggesting explanations (i.e., the 'hows' and 'whys') of key events, as well as the insights reflecting participants' relativist perspectives." In general, interviews took place face-to-face with participants, via Zoom meeting software. There were different types of interview styles, but they were generally open-ended, so that interviewees could continue to provide all the information that they found relevant. For this AR study, three types of interviews were conducted.

**Critical Incident Interviews.** Data from critical incident interviews are included in this study and were created using criteria referenced in Butterfield; Borgen; Amundson; and Maglio (2005). "Incident" can refer to an event or occurrence within specific parameters. Their criterion for including incidents is: (1) the incident provides a context for what happened; (2) the incident or experience is described in detail; and (3) the interviewee describes the outcome of the incident. Three critical incident interviews were conducted with AR team members in October

2019 (Appendix A). Analysis of these interviews yielded important insights into clear identification of the real problem and likely solutions.

**Semi-Structured Interviews.** Four individual, semi-structured interviews, approximately 30 minutes long, were conducted with AR team members in the spring of 2021 to inform the development of the domain, practice, and community of the CoP. The interviews' purpose was to discover the AR teammember's perspectives on our shared purpose; their motivations for participation; what challenges they anticipated; the activities they proposed; membership of our proposed Community of Practice (CoP); and what they hoped our CoP's outcomes might be. These interviews included five questions from prompts, but I followed up with further questions for clarification or to expand on each answer. According to Yin (2018), case study interviews such as these operate on two levels – ascertaining that your questions (or line of inquiry) have been answered and simultaneously following up with relevant, friendly questions (level 2).

**Focus Groups**. Interviews with six to eight interviewees are called focus groups and typically involve unstructured and open-ended questions, according to Cresswell (2014). One focus group interview was conducted after the Forest Economic Summit as an after-action review among the AR team members. An additional focus group was held in August 2023 to grant AR team members an opportunity to share their reflections on trust; knowledge-sharing; group processes; and more. (Focus group questions were held as a semi-structured interview; questions can be found in Appendix D.)

**Strengths and Limitations**. Qualitative research often includes interviews with subjects to provide further clarification about observations or information gleaned from surveys. They can yield valuable information when participants cannot be observed directly or when participants refer to historical events or information, and they allow the researcher to control the

questions (Cresswell, 2014). However, there are many ways which interview data can be limited. Information from interviews is indirect and filtered through both the participants' and researchers' perspectives. In addition, some interview subjects may not be especially perceptive or be willing or able to communicate fully or articulately (Cresswell, 2014).

### *Surveys*

Surveys and the way they are designed provide a "quantitative or numeric description of trends, attitudes or opinions of a population by studying a sample of that population" (Cresswell, 2014, p. 155). Surveys are designed in a generally standard format and include information on the population of study and procedures for selecting a sample of the population, though, in some cases, the entire population can be accessed. In addition, there are recommended procedures for sending out the survey, including pilot testing; creating a timeline; checking for response bias (often done by comparing early and late responders); and follow-up contact procedures (Dillman et al., 2014).

There was one survey that was specifically intended to generate data for the study, the survey's introduction included information on consent from participants and on the study and possible risks. For any internet-based communication, such as digital surveys, a consent form was included, so that participants could have read a statement approved by the Institutional Review Board and provide their consent. CoP participants were sent the survey using the Tailored Design Method (Dillman, Smyth, & Christian, 2014). There were other evaluations and surveys sent to Summit participants, CoP participants, and the population of interest, and data from those evaluations is included in this study. However, those evaluations and surveys were created with other purposes rather than research.

**Data from Surveys Related to Forest Economic Contributions Summit**. The 2020 Forest Economic Summit included two surveys. The questionnaires focused on determining the level of interest in a summit around forest economic contributions and included open-ended questions to find out specific topics of interest. This survey data informed the development of the meeting style and agenda. A post-summit evaluation was sent to the attendees. Evaluations are commonly given to participants of conferences or meetings, and they are expected by the attendees. This evaluation survey included Likert-style and open-ended questions to ascertain participants' level of satisfaction with the meeting; whether the meeting met its intended objectives; ratings on the productivity of the small group discussion sessions; and questions that asked whether participants would take action based on what they learned and allowed them to select as many choices as they desired from a list of potential actions (Appendix B).

**Survey of Potential CoP Members to Determine Level of Interest and CoP Purpose**. Potential CoP members, consisting of attendees from the 2020 Summit, were surveyed in November of 2021 to determine why they may want to join a Community of Practice, what types of activities they would be interested in, the desired frequency of meetings, prioritizing possible actions derived from the summit, their interest in presenting to the group as well as demographic data (Appendix C).

**Survey Questionnaire Measuring Trust, Social Capital, and Knowledge-Sharing.** The focus of this tool was on capturing measures of trust and knowledge-sharing among CoP members. Many mediating behaviors are linked to knowledge-sharing. For example, individual's intentions to share knowledge are highly correlated with actual knowledge-sharing (Reychav, & Weisberg, 2010). In addition, many situational (organizational climate, leadership, etc.) and dispositional variables (personal attribute, attitude, etc.) are connected to knowledge-sharing

intentions (Han, 2018). Survey instrumentation is an important part of rigorous data collection (Cresswell, 2014). Surveys should be named, and it should be indicated if they are a particular existing protocol or modified. If it is a particular tool, then it is important to indicate if it has been validated for specific measures and demonstrated internal consistency (see table . The survey questionnaires were adapted from a combination of scales from Ganguly et al., (2019), Leana & Pil, (2006) and Wang & Wang, (2012) and can be found in table 3.10 in the next chapter. There were scales included in the survey to measure trust, relational social capital, cognitive social capital, structural social capital, tacit knowledge sharing and explicit knowledge-sharing. The survey we created collected demographic data to help to distinguish some knowledge boundaries that are captured by the organizations they work for and the positions they hold. In addition, demographic questions were included in each survey to discover the person's position, organizational type, state, area of expertise, years of experience in the organization or industry, as well as a question about their attendance at the March 2020 summit.

**Measuring Trust, Social Capital, and Knowledge-Sharing Within the CoP**

The survey was sent to CoP members in August 2023 to measure their levels of trust, social capital, and level of knowledge-sharing within the CoP. All 60 members of the CoP were sent the survey. The major intent of this study was to capture the degree to which CoP members increased their trust, built social capital, and shared knowledge. However, CoP members are employees of many different organizations which have their own levels of trust, social capital, and knowledge-sharing. While there had been some recruitment of potential CoP members as part of recruitment for the 2020 summit, the summit attendees-CoP members were generally self-selected and were not be required to attend any meetings. Therefore, they likely joined the CoP

out of their own desire to connect and learn. However, although there were many motivations for CoP members to share knowledge to benefit themselves, there is some competition between states regarding forest economic development. As such, there may be some information that CoP members were not willing to share. In addition, most of the CoP members serve roles in their organizations that require a high degree of collaboration within their organization and often with partners outside of their organization, especially ones located within the same state. Thus, comparing individuals' levels of trust, social capital, and knowledge-sharing among CoP members who attended regular meetings as compared to those who were on the listserv, but did not attend, yielded interesting insights. Lastly, the survey included questions to capture participants' perceptions of the value of the CoP, if information from the CoP had affected their work, a question about the meaningfulness of their work, and an opportunity to share any other thoughts.

## Data Analysis Procedures

Data was analyzed in multiple ways depending on type, but for much of the data an inductive and deductive approach was used wherein patterns, categories and themes were built by organizing the data into basic units (Cresswell & Cresswell, 2017). Data from other interviews and meeting notes were all generally coded in this manner and analyzed for themes. However, data from critical incident interviews was analyzed using constructivist approaches outlined in Ellinger and Watkins (1998) to better understand interviewees' mental models, situations, and outcomes from their actions or inactions.

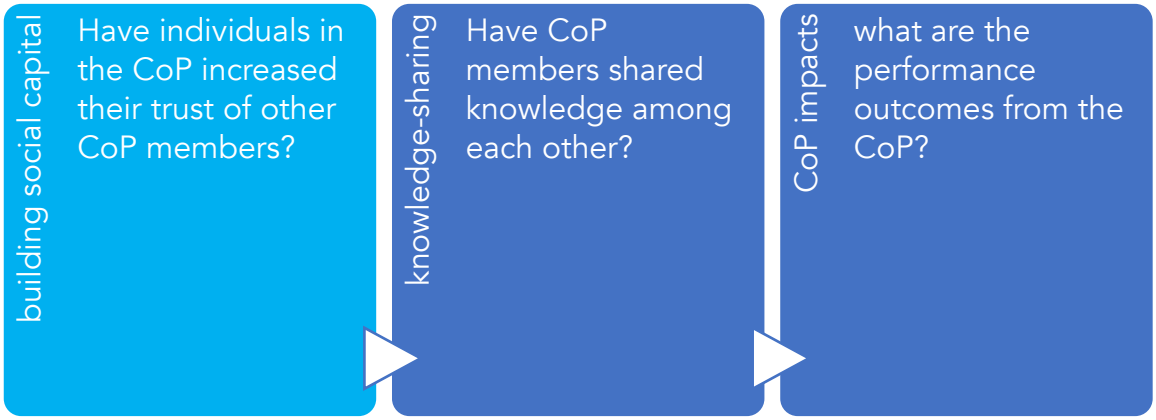
Survey data included Likert-style questions that allowed for quantitative analysis in addition to including sections for comments which were similarly coded and analyzed. The

overall goal of the study was to explore what is learned at an individual, group and system level and therefore, data analysis also considered all these perspectives. For example, the action research team or even the summit attendees were considered part of the group level. For the AR team, individual interviews, meeting notes and critical incident interviews were also used to capture their learning. For the group level, the summit attendees (which also include the AR team), provided information via a post-summit survey which were used in addition to meeting notes and reflections. Data were stratified to reflect the summit event versus the action research team specific data. Finally, data were interpreted collectively to help determine what was learned at the group level. Data analysis was conducted in an emergent design manner, as is common in qualitative research (Cresswell & Cresswell, 2017).

Survey data was used to measure the impact of the interventions (summit and CoP) on individuals and to help identify trends (Cresswell & Cresswell, 2017). Figure 2.2 summarizes a few key questions that were answered from survey and other supporting qualitative data. Demographic data were collected in the survey in order to analyze trends within different sets of participants or to compare them to each other. Some of the demographic data was based on the three stakeholder categories as well, since the intention of the intervention was to increase connections among the groups. Survey data is commonly examined to compare early responders to late responders to identify possible biases; however, the overall sample size was not large, so it would not be possible to test these biases (possible sample size was 60).

**Figure 2.2.**

*Three Major Questions for Analyzing Data Related to Building Social Capital, Knowledge-Sharing, and Assessing CoP Effects*




**Analyzing Survey Data**

While increased social capital has organizational impacts, ultimately, it is built on relationships between individuals. As such, multiple forms of data were analyzed at an individual level to capture levels of trust and compared to knowledge-sharing levels. Specifically, data were analyzed to assess hypotheses H1 and H3. Survey data were analyzed for descriptive characteristics including correlations and regressions to compare multiple dependent and independent variables to each other at the same time (Ganguly et al., 2019). In addition, data from the survey were connected to qualitative data from interviews, focus groups and documents to assess any additional positive outcomes from the CoP.

**Analyzing AR Team Data**

Individuals in the AR team have engaged in learning at a different level then CoP members and their perceptions of learning were assessed via a focus group interview and analysis of documents and artifacts from our work together. Critical incident interviews were

also analyzed to identify clear stories and themes that were repeated (Butterfield, Borgen, Amundson, & Maglio, 2005). Additional individual interviews with the AR team members in spring 2021 were analyzed inductively and offered further clarification on the challenges for these stakeholders, specifically the limitations in capacity and pending institutional losses of knowledge from retirements. In addition, these interviews offered clarification on the domain, purpose, and practice of the proposed CoP. Finally, a focus group was held with AR team members in August 2023 to explore their perceptions of trust, knowledge-sharing, job performance and novel outcomes among the AR team and among the group.

**Ensuring Trustworthiness**

Action research is personal and professional, as the dual roles of scholar and practitioner on the same project can be challenging, and as such, it is critical to have a means for confirming the trustworthiness of data collected. To ensure rigor of data, there must be numerous ways of checking the data to ensure that outcomes from the research are trustworthy (Stringer, 2014). Trustworthiness can be established by confirming study credibility, transferability, dependability, and confirmability (Stringer, 2014). Credibility or integrity is one of the most fundamental issues for action research so that data and outcomes will be trusted, and it can be gained through a process of triangulating data, extended observations and providing opportunities for participants to check the data, analyses, and reports. Triangulation is a matter of using multiple sources of information to verify different findings of the study. Action research includes multiple perspectives and co-creating as well as meaning making. Just as the team is improved through appropriate membership and perspectives, the data and meaning made of the data is similarly improved through this ground-truthing process. Other means for ensuring trustworthiness are to

include enough description of the situation, events, activities and more, so that the transferability of the outcomes of the project and findings from the study can be assessed. Lastly, dependability and confirmability are the final factors towards ensuring trustworthiness with the firs referring to clearly defined research procedures and the second is an audit trail. An audit trail is a clear record of the data collected from meeting minutes, to interview data, launch of surveys, journal entries and more. It is this record of the data that allows for the data to be confirmed.

**Action Research Strategies**

Throughout the entire action research project and study, I tracked data collected, activities carried out and details regarding that data. In addition, data has been shared back to the AR team for member checking regarding the data analysis and the meaning made. Individual interviews conducted at different times have also yielded specific feedback on our process, conclusions, and next steps. My AR team members have different positions than me and work in different organizations in different states and so our perspectives differ considerably, which is a strength of the project and a strength for checking assumptions and conclusions. Personally, I have kept a research journal and written periodic reflection memos to sort out my own thoughts and capture my perspectives at a given time. In addition, my different positions relative to my AR team and the stakeholders also ensures that if the directions I want to pursue or the conclusions that I am drawing are not correct, then the AR team will correct me quickly. Lastly, writing reflective notes, also helped me to assess my personal biases and motivations that could affect my research.

**Subjectivity Statement**

This action research project has been ongoing in an active formal form for the past five years and informally since 2014. Prior to the onset of the formal theory-informed AR project, I had worked with some of the members of the AR team as well as some of the other stakeholders in the area related to forest economics and forest economic development. However, though I have worked with some of the individuals for many years, there have been people who joined the project and left the project throughout that time, so that there were enough newly involved people to inform the project work with their questions and perspectives. But I do have a bias towards action, and a tendency to do too much of the work and a proclivity for speaking too much, if I do not watch myself. I have worked hard to address these issues by mixing up meetings with different flows and allowing time for others to respond or following up with one-on-one discussions for those individuals that took more time to provide input. Lastly, my AR team identified lack of capacity as a significant issue that affects the problem as we identified it, and yet, this lack of capacity also posed challenges for meeting to share knowledge. Therefore, we worked to generate CoP activities that were valuable for a larger group to have opportunities to build trust and generate additional value.

# CHAPTER THREE: ACTION RESEARCH STORY

## Seeing the Forest and the Trees: A Boundary-Spanning, Learning, and Growing Story

This action research project begins and ends with forestry, but even forests are about people, as this AR study delved into relationships among people from many different groups, organizations, states and more. While the AR story started with one idea, we added a few plot twists along the way, a worldwide pandemic and the usual ebbs and flows of working together over five years. Boundaries are a significant factor in this AR study, and this chapter is an attempt to create a structure for the AR story.

### The System, Context, and Setting

Alabama; Arkansas; Florida; Georgia; Kentucky; Louisiana; Mississippi; North Carolina; Oklahoma; South Carolina; Tennessee; Texas; and Virginia are the 13 states that comprise the southern region of the United States of America. The southern region is ecologically distinct from other regions and marked by its high levels of forested land which cover more than 40% of the region's territory (Abt, 2013). There are also numerous 'southern region' organizations that bring together state organizations to share knowledge, work together on common issues and more. The Southern Group of State Foresters (SGSF), for example, is a non-profit organization made up of the 13 southern state forestry agencies (southernforests.org) and that works together on multiple levels. In addition, my own organization, Southern Regional Extension Forestry (SREF), is tasked with promoting communication and collaboration in forestry across the region

(https://sref.info). The system could be considered the southern region forestry and forest products industry technical advisors, caretakers, economic developers, advocates, communicators and more. The system though is composed of numerous organizations that function at a county, state, or regional level and that serve different functions and goals. Although, there are shared goals among the members of the system, they have their own organizational goals and reward structures. However, these organizations form a system based on their location within the southern states, and in working towards compatible or shared goals.

The context and setting within this system have been described in other sections, but essentially, these general types of organizations have had connections on many levels and have worked together on many problems in the past at different scales. Most of the organizations in this system work collaboratively with outside partners in various projects, and so this project is situated in a group of organizations that have expectations that their employees will have partnerships and collaborations. While there are connections between and among these organizations, the ties between forestry stakeholders and economic developers are much weaker than ties among the other organizations and becoming weaker. Despite the general orientation of these organizations towards partnerships and collaborations, the scope of them and/or the areas in which they collaborate are different than this AR project. However, the proposed AR project focuses on creating a Community of Practice among these stakeholders to improve knowledge sharing and collaboration, as well as creating a network of forestry analysts, advocates, and economic development personnel.

## Leading Change and Positionality

As both the scholar and the practitioner, I operationalized AR so that I appropriately fit into the action research team and my involvement in the project was accepted. Figure 3.1 depicts the different analysts and stakeholders involved in this project, and Table 3.1 describes the different stakeholders. With respect to that diagram, I am the lead of a forestry cooperative Extension organization, that works across the thirteen states of the southern region to facilitate multi-state and regional collaboration in a variety of forestry programming areas, one of which is forestry economics. My organization is unique within cooperative Extension, as most Extension positions are based in states, working only for that state, whereas we work for the entire thirteen-state region. Most of the AR members have specific responsibilities that are focused on the state level and while this project is beneficial for their work, they likely do not have time to lead the entire effort. As part of my job, I was the project coordinator and lead for this project through previous iterations. Furthermore, I co-wrote a funded grant, which was the impetus for this project. Finally, since I have worked with many of my current collaborators in the earlier iterations of this project and partnered with some of them to write the original grant, we were already aligned towards the defined problem.

## Stakeholders and AR Team

Forestry and the forest products industry are supported by a host of state and federal agencies as well as by various advocates (Table 3.1). There are forestry agencies in each state whose missions generally include providing leadership, education and service towards protection and conservation of the state's forest resources. These agencies offer a variety of technical services including reforestation, forest fire prevention and suppression, insect and disease control

as well as providing technical assistance to private landowners. They also support marketing and utilization of wood. The Cooperative Extension Service, which is based at the land-grant universities in each state in the entire country, provide research-based information on a variety of subjects, including forestry. There are many Extension professors (or specialists) whose primary responsibilities are forest economics, there are also other professors who are forest economists and conduct economic contribution analyses. For the purposes of this study, I referred to these three types of professionals as the forest analysts.

**Table 3.1.**

*Types of Positions and Organizations Considered Stakeholders for this Project*

| Organization or Position | Type of Organization | About the Organization or Position |
|---|---|---|
| **Forestry Analysts** | | |
| State forestry agencies | Government | Provide leadership, technical support for, and education about their state's forest resources |
| Forestry economists | University | Analyze forest economic impact data and create reports |
| Cooperative Extension service | University | Provide research-based information on multiple topics to multiple audiences; every state has Extension personnel |
| **Economic Developers** | | |
| Economic/rural Development | State & County Government | Recruit new businesses; help local businesses expand |
| Consultants | Non-governmental | Assist in finding new sites for businesses and/or recruit new businesses |
| **Forestry Advocates** | | |
| Forestry & Forest Products Industry | Non-governmental | Forestry companies and timber investment organizations that grow and sell trees; forest product companies process wood and create forest products |
| Forest landowners' associations | Non-governmental | Support private forest owners with technical assistance; lobby state or national governments for funding or policies; advocate for laws that are favorable for forest landowners |
| Forestry advocates | Government & non-governmental | Advocate for forestry and FP industry; advocate for private forest owners; lobby for funding and favorable policies |
| US Forest Service (USFS) | National government | Sustain the health, diversity, productivity of the nation's forest and grasslands to meet the need of present and future generations; maintain programs that support state and private forestry |

In each state, there are also economic development agencies/programs that work to recruit, expand, and retain businesses (classified as economic development personnel in the theoretical framework). Since forestry is an important part of the southern region economy, these agencies can help create or expand businesses that would provide markets for the wood fiber or timber produced by forest landowners. There are also private consultants who also serve similar forestry economic development roles. This stakeholder group is referred to as "economic developers."

There are other important non-governmental organizations that advocate for or support forestry and the forest products industry at county, regional, state, and national levels. Their advocation can include lobbying state or federal governments for changes in laws or policies that are favorable for forestry and forest products industry. They also may advocate for more funding for programs or agencies that support forestry and forest products industry. These organizations may provide direct support to private forest landowners such as educational opportunities or materials, newsletters, or technical assistance, etcetera. For this study, I classified all other forestry organizations that may serve this role as "advocates." The potential sample size or population of interest for this project is determined by the number of positions within each organization and the number of organizations overall that would qualify within one of these categories. The AR team was initially composed of six individuals which included two forestry economists, three utilization and marketing foresters, one current state agency forester who recently retired from conducting forestry economic development for the past 20 years and two AR members who work as communications managers for state forestry agency. Since the start of the project, one of the individuals who worked for the state forestry agency as a utilization forester has retired and the communication managers for the forestry agencies are no longer with

the project. Figure 3.1 shows the composition of the AR team up to the time of the summit and immediately after. Figure 3.2 shows the AR team that evolved after the summit.

**Figure 3.1.**

*The Action Research Team in the First Year of the Project*

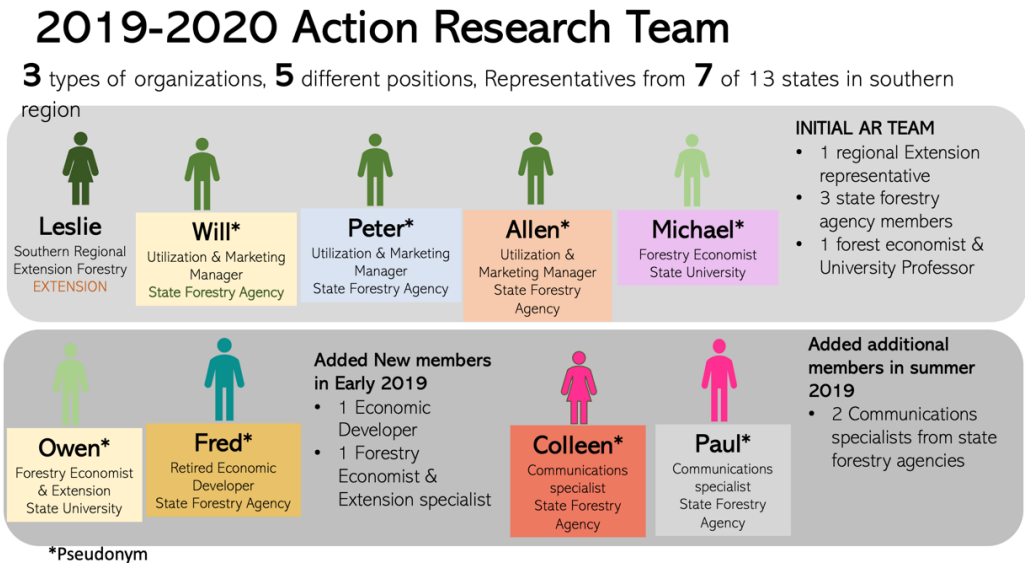
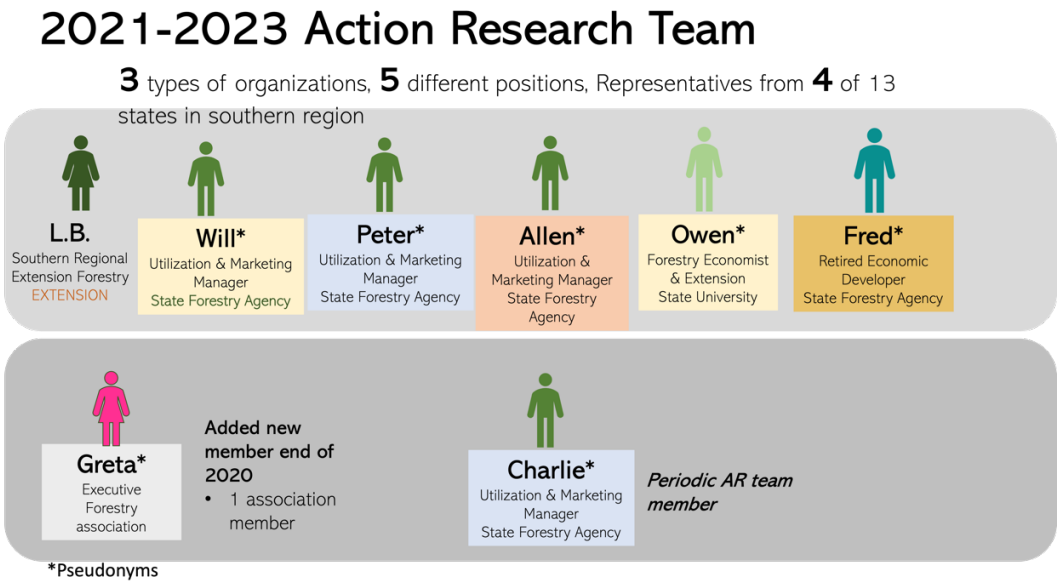



**Figure 3.2.**

*The Action Research Team from Late 2020 to Now*



## Problem Framing

### Apples-to-Apples Comparisons

It all started with a funded proposal. The AR team was composed of a few of us who co-wrote a proposal related to analysis and communication of forestry economic contributions data. As one of the deliverables for the proposal, we were going to plan an educational event around forestry economic data. In the proposal, the event had a narrow focus of providing education on one of the other deliverables (a standard methodology or protocol for conducting forest economic analyses) as well as communicating that data effectively. Initially, we had identified the problem as being lack of standardization in forestry economic contribution analyses and lack of understanding of this data as well as poor ways of communicating the data. This project builds on earlier work that was started in 2013 and has included some of the same individuals that are part of the current action research team. (Descriptions of the earlier iterations of this project, which include stages like action research such as problem identification, interventions, and data collection, are listed in Table 3.2.)

Forestry economists from universities and state forestry agencies and others analyze forestry economic contribution data that can be used to advocate for the industry and their organizations. However, there have been many challenges for how this data were analyzed and issues with comparing states, as the analyses were so different, that it was not possible to compare "apples to apples." A few years earlier, most of us had worked on a project that was focused on addressing disparities among states in their economic contribution analyses of forestry and the forest products industry (Henderson et al. 2017; Joshi, Henderson, Tanger, Boby, Pelkki, and Taylor, 2017). In 2015, approximately 30 individuals working as forest

economists or in state agencies or Extension (all from the southern region), met and identified nine specific issues surrounding analyses of forestry and FPI economic data (Henderson et al. 2017). Based on these issues, the group followed this meeting with a survey of the individuals at the meeting and others who also conducted these analyses, created reports from this data or used the reports (Joshi, Henderson, Tanger, Boby, Pelkki, and Taylor, 2017). Joshi and others (2017) proposed that a reference protocol for analyzing forest economic contribution data was needed to address many of the issues discussed at the 2015 meeting. One of the deliverables from our grant were to take the results of this survey and create a reference protocol for analyzing forestry economic data as a means for partially addressing issues identified and discussed in 2015. This grant proposal was submitted in 2016, rejected and then resubmitted in 2017. We had not updated the proposal in between, and in the time between when the proposal was submitted until the time that we began work on educational event, a protocol had been developed and generally accepted. The protocol was eventually published in a peer-reviewed journal as well.

**Table 3.2.**

*Cycles of Identification and Action, 2013-2018*

| Year | Action | Description of Work or Intervention | Who Was Involved? |
|---|---|---|---|
| 2013 | | Creation of regional forest economic reports | Forest economists |
| 2014 | Problem Identification (ID) | Series of informal discussions about forest economic reports | Forest economists, state forestry agency utilization and marketing (U&M) committee members |
| 2015 | Problem ID & data collection | Forest Economic Summit (~30 individuals)<br>Identified nine major issues with forest economic reports | Forest economists, state agency U&M committee members |
| 2015 | Data collection | Survey of forest economists & state forestry agency personnel who use or produce the reports | Forest economists, state agency U&M committee members |
| 2017 | Data summary & intervention | Peer-reviewed journal articles on the summit and the survey | All 2015 Summit attendees listed as co-authors; 5 forestry economists and Leslie |
| 2018 | Proposed intervention | Proposal written and funded to:<br>1. Develop standardized forestry economic analysis methodology<br>2. Host a meeting for educational opportunities regarding this methodology<br>3. Create a template for a factsheet that can be used by states | Some members of the state agency U&M committee, plus one forestry economist |

### Uncontroversial Protocol & Communication

We had proposed that we would share this reference protocol in a meeting with a stakeholder group like the 2015 forest economic summit. This protocol, we thought, would be innovative and we were planning to share what we had projected to be an innovation, to all the stakeholders in a meeting that would include components similar to a large group intervention process (Winby & Worley, 2014). We were wrong. While the new protocol is innovative, it was created iteratively by many different stakeholders, because of earlier interventions such as the 2015 summit. I had anticipated that there might be controversy around the protocol, but I was wrong. In separate discussions with two forestry economists, they both said that they would not be interested in a meeting that was focused on this new protocol, because it would be too simple for them. They said they would only need to read the protocol and could use it from there. When we proposed this same idea to other utilization and marketing agency foresters (three of whom were in the initial AR group), they said that most of them do not really analyze the data, and so this topic would not be relevant to them either.

### Rounding Out the Team

Another part of the planned educational event was to learn how to better communicate forestry economic data, as developing an updated factsheet template for communication was another deliverable in our proposal. In addition to inconsistent analyses of forestry economic data, communicating forestry economic data is a challenge, as there is great potential to present the data in different ways to better advocate for forestry (Parajuli et al., 2018; Parajuli et al., 2019). As our group discussed how to proceed with the project, we also added two new AR team

members, one was a communications specialist at a state forestry agency and the other was a retired economic developer who was working part-time for another state forestry agency.

The AR team were scattered across six states and multiple organizations. We met almost exclusively via Zoom meeting software. Our meetings were spent planning different components of the overall funded project as well as discussing our proposed educational event. However, because our meetings included time for brainstorming, this space encouraged conversation among the AR team. Fred, the retired economic development specialist, had experience that was much different than the rest of our team and he suggested that we include economic developers in our meeting planning. By March of 2019, notes from our meeting show that we had changed the idea of our educational event to a "Region wide facilitated symposium," and planned to include economic development as a topic (Boby, unpublished notes, March 26, 2019). As our team continued to meet, everyone agreed that adding economic developers would be a key group to connect with and learn from.

## Collecting Data and Reframing the Problem

### Tell me About a Time When

As the AR team continued to meet to plan the Forest Economic Contributions Summit, more stories and discussions emerged about forestry's connection to economic development. In addition to AR team discussions, meetings, and presentations to external audiences, three critical incident interviews conducted in October 2019 provided support for more clearly identifying the real problem. Interviews which use a critical incident technique are designed to capture information from people that encompass their own observations of their behavior and that of others (Woolsey, 1986). In the critical incident techniques, respondents are asked to share stories

or incidents that were of significance to them and that relate to the phenomena of interest (Ellinger & Watkins, 1998). The purpose of these interviews was to gain insights into action research team members' perspectives on forestry economic data, economic development, and their jobs. Through conducting these interviews, I selected to study how their experiences have informed the changed goal of a proposed forestry economic educational meeting. Interviews were conducted with two members of the action research team who are Utilization and Marketing foresters (Will and Allen) and one individual who was in Economic Development (Fred).

**Working Together? Relationships, Trust, and Knowledge-Sharing Across Organizations**

The themes that emerged from these incident interviews related to optimal vs. frustrating ways to work together, relationships and trust, as well as the power of data and transparency. One theme that seemed to emerge in most incidents was that being invited to work together early on in a project was the most efficient and satisfying way to work, as was the opportunity to meet in person early in the connection. One interviewee said, *"*I'd rather work as a partner to ensure that we had continued success and to get that opportunity in place because being at the table is of utmost importance*."* Overall, data from these interviewees confirmed our identification of inconsistent or limited connections between forestry personnel and economic development personnel as a problem, and conversely identified that when those connections are good, that it is helpful to everyone's work.

It was clear that the AR team members interviewed felt that they wanted to work together with their counterparts in economic development agencies towards a common goal. However, data from these interviews suggest that their counterparts did not necessarily feel the same way,

and perhaps perceived the relationship as one where the forester provided a service, but was not necessarily a team member. In these interviews, when examples of situations that were positive were discussed, the interviewees indicated that it was a situation where they were working together with the economic developers. Working together, in the past, has been built on relationships among these stakeholders built over time, where there was trust and they knew what types of knowledge they each had, and how that might help each other. While ultimately, more openness among these stakeholders and greater willingness to approach their overlapping work as a team would be most beneficial, there are particular constraints from individual organizations that are beyond the scope of this AR project, but we could impact their lack of connections. This AR project is focused on creating a mechanism (a Community of Practice) to increase connections and the consistency of those connections among these stakeholders. For this project, we hypothesized that stronger connections and relationships would help these stakeholders increase their level of trust among them, and lead to a better understanding of what knowledge they hold that the other needs, and more willingness to share that knowledge. In turn, these connections, trust, and knowledge-sharing would lead to more effective work together and ideally, more forest economic development projects.

**"A Huge Amount of Teamwork"**

Successful economic development projects of any type require teamwork to finish, according to AR team member Fred, who stated as much in an October 2019 interview:

> When you have a major economic development announcement, what has occurred in the background has been a huge amount of teamwork of obtaining the correct data, understanding, and interpreting that data and making sure that data is valid for the

> industrial client. Because the industrial client is about making a sound business decision for a long period of time and making sure that business decision is going to make a return on investment. The teamwork is both private and public, and these team members range from local professional economic developers, regional development organizations, state agencies, resource agencies such as [state] forestry commissions and others, but it's also private sector such as your utilities or gas or water and sewer boards or those kinds of entities. You must have the correct data and make sure there is the capacity to understand transportation and/or utility infrastructure. This makes sure that the existing industry, if they are to expand, on the exact location where they are and if you're going to grow a preponderance of economic development opportunities, particularly in forest industry, that there's an understanding that there's not a limitation or constraint within those opportunities.

To develop a project for a new mill or forest industry, an incredible amount of data is needed to ensure that it is a sound financial investment for the company. Economic development agencies work to recruit new businesses to their states and provide this needed data on workforce, population, nearby businesses, economic impact, natural resources and more. They also serve to coordinate project development (Francis, 2016). Economic development projects are incredibly complex and involve investments of millions of dollars and so a company will need to do considerable research before committing to a project. While the economic developers often serve as project coordinators and are the main contacts for the companies, there are also many others involved in the process. The other individuals' involvement can be easier or harder, based on how they are invited into the process.

**“I Don’t Know What They Want”**

State economic development agencies are responsible for expansion of existing forest industry and recruitment of new forest industry, but connections between these economic development personnel, state forestry agencies, forest economists and other forestry partners are limited within many states, and between states. In addition to typical economic development data needed, forest economic development projects require specialized resource data such as available timber supply, timber input-output data and information on other nearby mills. Utilization and marketing managers from state forestry agencies regularly provide this data to anyone who asks, as part of their jobs. But not everyone knows to ask them. Often when they are asked for help with these types of projects, they are contacted by an economic developer who does not understand forestry, and so does not understand what information the utilization and marketing manager needs to respond to the request. In a critical incident interview with AR team member Will in October 2019, he discussed how an economic developer’s lack of understanding of forestry made a project more difficult:

> I’ll give you an example of a paper mill in Western {state} that I recently provided a resource analysis for. It’s very typical for an economic development cabinet to contact me and ask me for information. Sometimes I don’t know exactly what they want, so I kind of had to fish the information out. I found out, in this case it was a paper mill that was relocating to western {state} and coming into an old, existing facility which they were going to remodel. I had to ask a lot of questions, to see exactly what kind of information that they were seeking, because they wouldn't let me talk to any representatives from the paper company. It got to the point where I asked for their operations officer, or if they had a forester on staff and they wouldn't go that far. I said,

> with the paper, they probably want to know, the amount of hard wood or soft wood that's in each radius. And they said, yeah, let's go down that route. So, [the economic development contact] found out that [the company] were interested in the resource about a 200-mile radius from the facility that they were considering revamping. I was able to go in and look at the inventory data and query a bunch information in general in terms of how much hardwood and softwood there was in the multi state area [in the far West] and including neighboring states. A lot of times you are trying to figure out exactly what their needs are while going through a person that's not familiar with the forestry profession and it's difficult at times. I would like to stress to our partners that we're all looking for a common result of bringing economic opportunity to the States that we're representing, and I know that a lot of information must be confidential, but I'd rather work as a partner to ensure that we had continued success and to get that opportunity in place because being at the table is of utmost importance.

While economic developers and forestry stakeholders have varying levels of connection and interaction, everyone is generally working towards the same goal of advocating for forestry and the forest products industry (FPI) and increasing economic development opportunities for them in the region. Each of these groups has their own knowledge and uses it in ways that could complement others and help everyone do their job better, but there are challenges for transferring or translating this knowledge among them (Edmondson & Harvey, 2018).

**“They Didn’t Withhold”**

In the story above, Will recount a situation that was difficult. However, AR

member Allen, in his critical incident interview, shared a story about a time when the process went well:

> They wanted to come to America to build a plant, they had ties in [state], and they came to us first instead of the department of commerce [economic development]. The state…tries to have one point of contact for economic development, it is usually a project manager with the department of commerce. If they approached that department first, then they're assigned a project manager as their one point of contact, and they generally are tight with information. They don't want a lot of rumors spreading out there. And most of the communication must be between the project manager and the company. It makes it very difficult because the company might ask for some technical information that the project manager has no knowledge of what questions to ask and maybe doesn't understand the issues. Then they come and ask us questions that may not even make sense. And then it's got to go back and forth, and I'll say, "Well, would you please ask them this?" And I restate it and I try to home in on what the issue is, and it makes it very awkward.
>
> They were primarily interested in the forestry commission, and they sat down with us, told us their goals and what their ideas were. The thing that made this project so enjoyable, and it's probably my number one project I've ever worked with, is that they didn't withhold. The more we know about the project, the easier it is to help them, but there are a lot of confidentiality issues in economic development projects. I didn't sense they were holding back, and they laid all their cards on the table and said, "how can you help us?" Their request was for us to come up with our top three sites…for their mid-sized pellet project. They came over several times, conducted a series of meetings with

> their key people. They brought their project manager, the person who was going to take over and lead to the president of the company and a forester that worked for the parent company. The forester's role was to look out and make sure that good decisions were being made. We did our role and they ended up going with our number two site, because someone else purchased our number one site. They came here, they operated successfully for several years and eventually sold it to another company which is now operating that plant. That was very enjoyable, we provided them all the information they needed. The more transparent their relationship, the easier it is for us to help and to be responsive to a company's needs. We had the information they needed and where we didn't have the information that they needed, we put them in touch with the correct people at the commerce department to help. That was the best example of how it would work. I think I had a good bit of impact because they trusted my judgement. I could tell they did.

In this anecdote, the project was easier to work on for the forester because they were able to be involved early on, and to provide the appropriate information in a timely manner. Will shared a similar story of a successful project that was satisfying to work on, where he was involved more directly with the client.

> The contact person from economic development asked for a meeting up front. In my experience of dealing with the economic development, it's usually a lot of back and forth before you get to a personal meeting phase. When I compare it to past inquiries that we get, I would say knowing your partner, your customer's needs and having a face-to-face meeting was valuable. I don't get that opportunity at all.

The interviewees emphasized how these situations for them were not typical, but that ideally, this is how they would prefer to work on projects.

**“They Knew Who to Call”**

As the AR team has met and discussed problems and possible solutions, again and again, the presence or absence of connections to economic development were mentioned. When those connections were stronger, then it was easier to work together and often yielded more successful projects. This project is focused on the entire thirteen state region of the South, and each state operates slightly differently. Some states have more resources, while others are far more limited. Allen described how he took initiative to become more involved with the economic development departments in his state, through attending their meetings as well as financially investing some of his agency’s budget to increase that connection.

> There are so many different levels of economic developers from the County to the state that having open lines of communication is probably the single best thing. One way I tried to do that is by joining [the state] association of economic developers. I'm a member of that and when I first got started about 15 years ago, I attended all their meetings and got to know the people. So, I think they generally know who I am. They know who to call if it’s forestry related. So, that's probably one of the most important things. Well, I'll mention, it's related to that. We pay $35,000 or so to the department of commerce. What that gets us is not just a dedicated agribusiness project manager, but we meet with our department of commerce, our agency head. And for probably 10 or more years have had an annual or semi-annual meeting one on one with the department of commerce or secretary of commerce to talk about forestry. And so, I think that's the biggest reason why we contribute to their cause and participate. Because otherwise, I'm not sure we would

have that meeting. Now if a forestry project comes to the state, and knocks on the door, they will provide a project manager, whether we're contributing to that or not.

**“There’s a Gap”**

In a more recent semi-structured interview in March 2021 with Will, he mentioned other more recent departmental challenges that impeded the relationship between forestry and economic development.

> At your professional level here in [state], there's a gap. It may have been better in the past, when my predecessor was in the position, but with the turnover of staff, both on forestry agency and economic development sides, it seems there's not one point person like we've talked about in our discussions. My discussions have been with, probably three to four different economic development cabinet individuals, and probably I’m down to knowing only one now. Others have moved on in the last couple of years, and so I see this turnover. I see a need for us to be talking, for the benefit of the industry for economic development.

Each state in the South has its own state budget and funds their state agencies differently. Some states have more resources and/or prioritize agencies, so the forestry agencies and departments of commerce may be better or less funded than other states. The employee turnover mentioned above may be particular to this state, and may be due to low salaries, or better offers, or several factors. However, all states are currently experiencing or are expected to face significant turnover in the immediate future as the ‘baby boomer’ generation retires.

### "Stretched Thin"

Turnover at many public agencies and other organizations as baby boomer generation personnel retire is a significant concern for nearly all organizations (Clark et al., 2019). Although greater turnover is expected in all organizations soon, which will include fewer individuals to hold institutional knowledge, in many forestry departments, there have already been reductions in positions overall. State forestry agencies and other natural resource organizations have experienced steady drops in funding over the years, mirroring a national trend (Green Investment Report, 2017), when those funds are reduced, then either positions are not re-filled when someone leaves and/or salaries are lower than market value and so it can be difficult to attract new employees. Throughout the past few years, I have had many conversations with individuals in state forestry agencies who have discussed how it is difficult to attract and retain employees in their organizations because the salaries are significantly lower than what is paid in private industry. In an interview with AR team member Greta (in March 2021), who works for a forestry association but engages with many agency employees, she noted, "from my perspective, what I've seen even with our project is the state forestry agencies are stretched thin, and so it depends on really sometimes the desire and the motivation and energy of an individual within that agency."

### Keeping Forests in Forest Use

There were multiple problems to be addressed by this AR project, and opportunities to create change. This AR project was focused on creating connections and knowledge sharing among multiple organizations in multiple states to address organizational challenges and better ways to work together. Improving the way that these stakeholders work together can lead to new

innovations, but ultimately to an increase in the number of successful forestry economic development projects. These projects include new or bigger mills to process timber or new manufacturers who use wood as the raw material in their projects. As such, more forestry economic development projects mean more mills or manufacturers using wood and thus new markets for forest products. The larger issue which guides this action research project is the importance of keeping forests as forests, and to influence that problem, more markets for forest products are needed. While there is a specific domain of the planned CoP related to facilitating forest economic development, the background story is the focus on promoting forest markets. AR member Greta stated what she considers the focus of the whole CoP:

> …This group is coming together to discuss the obstacles, the situation analysis, what is the current situation with markets related to forest landowners and how can we improve the markets or increase the awareness of the forestry-supply chain and its importance to keeping forests as forests and landowners economically viable.

She further elaborates that her reason for participating in this AR project is that it is directly in line with her organizations' whole purpose, which is to help forest landownership to continue to be economically viable. And Greta also added:

> If the landowner who owns the bulk of forest land for timber production can be successful, then so many more stakeholders will be successful and so many more objectives will be successful. And so much of it is tied to markets.

Every other AR team member has also indicated that promoting forest markets are their major focus as well. Will summarized his perspective by saying, "If there wasn't an (forest) industry around there wouldn't be any need for professional foresters."

## Interventions and Implementation Plans

This action research project has included small and large interventions into the system as well as changes in theoretical framework guiding the project and intentions of the AR team. The original intention of this project was to focus on cross-boundary teaming as a theory to guide team building in this system (Edmondson & Harvey, 2018). However, the scope of this project was bigger than a team, even one that accounts for multiple states and organizations.

The first intervention to the system provided clarification that it was not an appropriate theoretical framework to inform this work. Instead, this project was focused on creation of a Community of Practice (CoP) and thus the CoP theoretical framework is guiding this project. The three main components of a CoP include establishing the domain, community, and practice. Interventions that have already been conducted and that are planned are focused towards establishing these three CoP components.

### Forest Economics Contribution Summit Just in Time

One of the main interventions to the system was the "Southern Forest Economic Contributions Summit: Strategies for Development, Communications and Education on the Sector's Role in the Region," (the Summit), held in New Orleans, Louisiana in March 2020, three days before the Covid-19 Pandemic declaration was made by the President of the United States. The meeting was planned to start Tuesday morning (March 9), and the Friday before, one university banned its employees from travelling- but not my university. I listened to the news, and worried about what I should do in response to this news. At the time, people were taking the normal precautions as relates to a general virus, such as no handshaking, coughing into your arm and lots of handwashing. It was a very stressful few days, as I thought about all the hard work

my AR team and I had put into planning this event, and about how it would affect my dissertation if I were not able to hold the meeting. Prior to that time, Covid-19 had not been found in the United States in very many places, but the number of locations with Covid-19 cases was growing, as was an awareness of its potential negative effects. However, in this short time window, we knew enough to feel anxious about the possibilities, but we did not have any sense of what would come. I was the main leader of this summit, I felt responsible, and I considered what our options were.

**Holding a Meeting in the Days Before a Pandemic**

There was no common protocol, at that time, for cancelling a meeting, and there were potential financial repercussions from not filling hotel rooms for the meeting, at the agreed-upon rate. On Saturday, I contacted my fellow organizers to ask them if they had concerns about the virus and the meeting, or if they had constraints from their organizations. They were not worried, and were still planning on attending, and no one else's organization had banned travel. That afternoon, I emailed all the registered participants and let them know that that we didn't know anything more than the news and that we would still be holding the summit as planned. However, I also said that they should make their own personal risk assessment and decide if they still wanted to attend. In my email, I reiterated what we did know at the time about Covid-19, such as special concerns for individuals who were immunocompromised. I also let registrants know that one university had banned travel. At least three people decided to skip the meeting. Another federal natural resource agency employee travelled from his house that Monday, and made it halfway, before he was instructed to turn around and go home. I asked one of the local meeting organizers to purchase as much hand sanitizer, and individual markers, pens, sticky

notes, and wipes as he could, to use for the summit (at that time, they were being rationed at stores). I adjusted my opening presentation to include a slide that emphasized the need to take precautions to minimize the spread of any viruses, by skipping handshakes and washing hands frequently, etc. (Figure 3.3).

**Figure 3.3.**

*A Slide Depicting Handshake Alternatives, Introduced at the Summit*

While it was stressful, I felt comfortable with our decision to move forward at the time, given what we knew then, and the instructions we were receiving from our own organizations and the Centers for Disease Control. We were in limbo then, as was the rest of the world. Leaders bear responsibility for making hard decisions, but I never thought that I might have to consider potentially contributing to an outbreak of a virus, and I had never anticipated that the first pandemic in 100 years would be declared two days after my meeting. Of course, as we learned later, sixty people in a small room was the risk, and not the handshakes, though luckily, there were no reported cases of COVID-19 from that meeting.

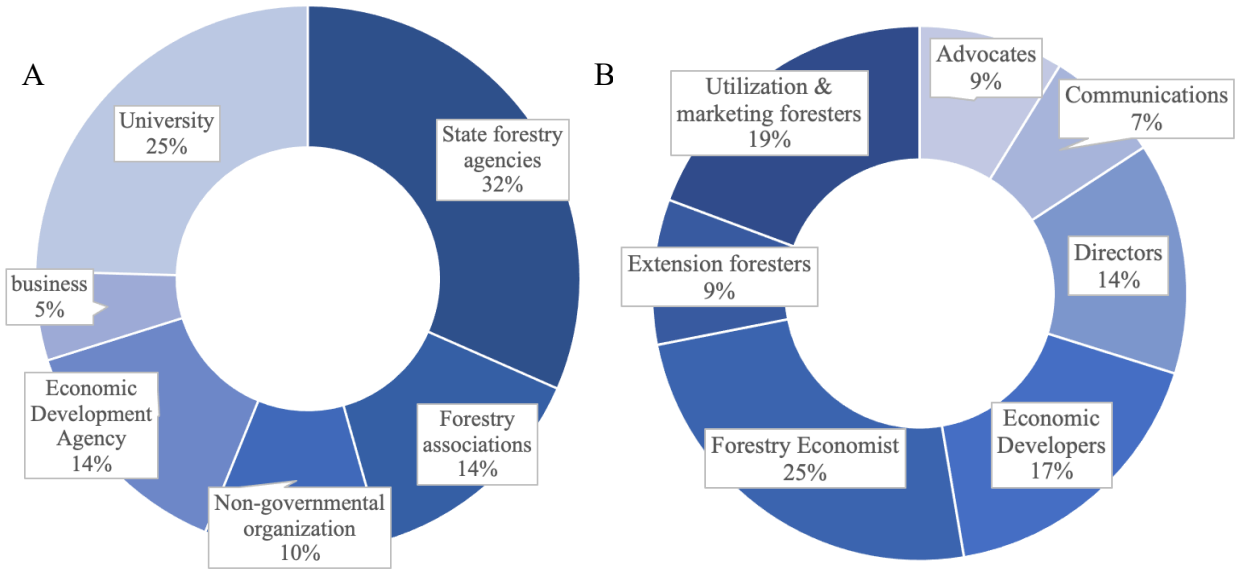
**Reaching Out to Cross Boundaries**

Despite the growing anxiety around the newly declared pandemic, 57 people (out of the 65 registered) traveled to the meeting and the summit was a huge success. In a little intervention and in preparation for this meeting, we put together a list of approximately 330 possible economic developers from each state. We obtained their names and emails from publicly available websites. We searched out agencies for each state that work in economic development. However, position titles for economic developers are vague, so the list was only targeted in that they may have worked for an economic development agency but may not have been economic developers or worked in areas related to forestry. The 330 contacts were emailed approximately five times to let them know about the Summit (over the course of 6 months), and to formally invite them to attend or to connect in another way if they were interested in the topic. We do not know if our invitations were a success, as we did not ask registrants how they heard about the meeting, though 14% of our attendees were from economic development agencies.

About 1/3 of attendees were from state forestry agencies, 25% from universities, and addition to non-governmental organizations, forestry associations and some private businesses (figure 3.4a). We did not ask people to classify themselves when they registered and position titles are not always tied to actual work, but we grouped everyone into seven position types for loose classifications (figure 3.4b). While only 14% of attendees were from economic development agencies or organizations, 17.5% of attendees (10 people) can be identified as being economic developers in some capacity, three other economic developers were registered for the event, but did not attend. Therefore, our efforts to invite economic developers to the meeting were a success, though perhaps the "cold call" email invitations did not contribute to that success. Anecdotally, I think that the economic developers that came were either already tied to forestry or had personal invitations. For the purposes of this Summit though, we had enough representation from economic developers to positively impact the event.

**Figure 3.4.**

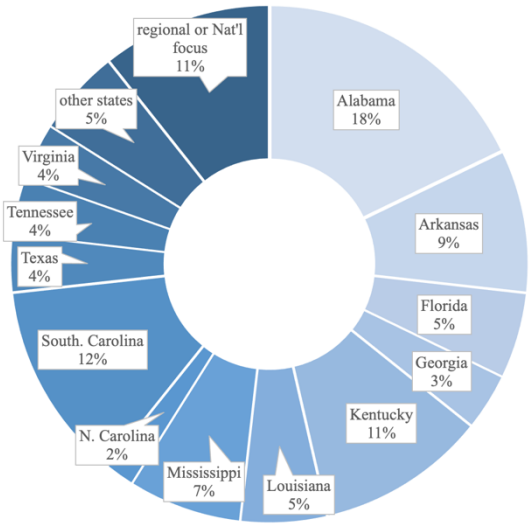
*Summit Attendees Grouped by Organization Type (A) and by Position Type (B; n=57)*




We had hoped to have attendees from across the South, and while some states had considerably more people attend (Alabama and South Carolina), at least one person came from each southern state, and these numbers did not include the 8 people who were registered but did not make it. There were also attendees from Maryland, Idaho, and Ohio. Six of the attendees, including me, have a regional or national focus to our work, and rather than list state of residence, they are listed as "regional or national focus" in Figure 3.5.

**Figure 3.5.**

*Percentage of Summit Attendees from Each State or with Regional or National Responsibilities (n=57)*




## Clarifying Problems and Sharing Knowledge During Limbo

The summit began the first morning with a mixture of presentations from invited speakers from each of the three sectors (forestry economics, communication, and economic development) in order to set the stage and provide common ground for all attendees. There were also other general presentations and shorter lightning-round presentations interspersed throughout the meeting. There were small-group sessions in the Summit totaling nearly four hours, spread out over the day and a half meeting. These structured small group discussions were based on participant choice, cross-sector pairing and task-oriented.

### *Pick Your Topic*

In the first small group discussion, groups were divided by general topics, and participants were able to select which group they would like to join and further refine the topic.

Topics included: agriculture and forestry economic analyses, communications, forest economic development, import-output, and forestry economic storytelling. The purpose of this session was for participants to discuss what they learned that morning, their interest in the topic, what new resources or networks are needed, what can be done about it, etc. After the 1 hour and 15-minute session, then each group reported out to the larger group. In the second small group session, 5-6 people were assigned to different groups so that individuals from different sectors and different states could be purposefully connected in groups. The goal of this session was to have participants create a vision of what we could or should do with all the information that we had learned throughout the day. One of the prompts was: "After everything you've heard, what are the 3-5 things that we can do to improve the forest products industry and economic development?" Further prompts included defining what our collective role in this type of work might be. The final small group session was focused on creating actionable items for working together. Overall, these group sessions were planned as opportunities for connection, problem-solving and knowledge-sharing.

In the two days of the summit, nearly half of all participants' organizations declared travel bans, and so this was the last trip that anyone took for work, for a very long time. Approximately 30 of the 57 summit attendees completed the follow-up evaluation for a 53% response rate, which is remarkable considering that a global pandemic was declared a few days after the event. It was hard to determine the exact number of participants, because some people who were registered did not attend after all. Summit participants rated the event highly with an average score of 4.3 on a five-point Likert scale ranging from not very satisfied (1) to very satisfied (5). Attendees were asked to rate their perceptions about whether the summit had met its stated objectives which included connecting forestry economists, economic development

specialists, and advocates, creating opportunities to learn from each other, and improve understanding of forest economics, forest economic development and communication. Overall evaluation respondents indicated that we had either met or closely met objectives 1) connecting forestry economists, economic development specialists, and advocates and 2) creating opportunities to learn from each other (table 3.3). About a quarter of attendees thought that they improved their understanding of forestry economics, and another two-thirds thought it was very close. Nearly 40% felt that they improved their understanding of forestry economic development and communication significantly, while a little more than half felt that it was very close. Overall, attendees found the small group sessions to be very good (48%) or good (42%), and three-fourths of them found these small groups to be productive (43%) or very productive (33%).

**Table 3.3.**

*Summit Evaluation Respondents' Average Rating of how Close the Summit Came to Meeting its Objectives, from 1 (Not Close at All) to 4 (Right on Target; n=30)*

| Summit Objectives | Did the Summit Meet its Objectives? (1-4) | Quotes from Participants that Relate to Meeting Summit Objectives |
|---|---|---|
| 1. Connecting forestry economists, economic development specialists, and advocates | 3.6 (s.d. 0.56) | *"The conference was very well organized. There were multiple opportunities for input, questions, networking and connecting with potential resource organizations and people. Economic Development is all about Relationships with people and resources."* |
| 2. Creating opportunities to learn from each other | 3.7 (s.d. 0.45) | "*Thanks for the creation of this meeting. I thought the event was well thought out and well executed. Optimistic that longer-term good will be realized thorough some of the information shared and contacts created*." |
| 3. Improving our understanding of forest economics | 3.2 (s.d. 0.59) | *"...the meeting had great content, great idea sharing and certainly helped my understanding of forest economics - challenges as well as possible opportunities."* |
| 4. Improving our understanding of forest economic development | 3.3 (s.d.0.64) | |
| 5. Improving understanding of communication | 3.3 (s.d. 0.65) | |

Three-fourths of participants (77%) stated that they intended to act based on what they learned at the summit. One comment in the evaluation perfectly summarized the intent of this summit, as a stepping stone toward change:

> The meeting was great it is the next steps that are important. How do we get this to a coordinated effort of actions and not everyone going back to doing their own thing or another paper collecting dust? Everyone is very busy. Need to find a person(s) that can dedicate significant focused time on this effort.

Eventually, a report summarizing ideas and recommendations from the summit was put together and shared with summit attendees, and a wider audience (Boby et. al 2021).

**After-Action Review, Pandemic Life, and Who Wants to Continue?**

The AR team conducted an after-action review a few weeks later and shared their thoughts on multiple aspects of the summit. Concurrently, COVID-19 restrictions were implemented nationwide, which slowed the AR group's collaboration for some time. While the AR team was working together in an AR project, after more than one year of planning for the summit, not everyone was willing or able to continue their engagement. As the leader of the AR team, I invited all previous AR team members to continue working together and expanded our team to include a summit attendee who had been engaged with many members of the team because of the summit connections. Notes from the summit included many action items that have been pursued by some of the AR team members, in their roles within other groups. However, despite interest in continuing to work together and to create a Community of Practice, our ideas of what this CoP might be, were undefined.

**Up-and-Down Momentum as We Move Toward a Community of Practice**

In moving towards creation of a CoP or expansion of our very small AR team CoP, it is critical to define the domain, practice, and community. Our group had been loosely structured around forest economic development, and the need for different, loosely defined groups (forestry analysts, forestry advocates and economic developers) to share knowledge and work together. This loose structure guides our domain but does not define it. Therefore, our next step was to fully develop the domain, practice, and community of our CoP. To address these elements, I conducted semi-structured interviews with four of my action research team members in February/March 2021. The purpose of the interviews was to determine the AR teams' individual perspectives on our shared purpose, their motivations for participation, what challenges they anticipated, activities that they propose, membership of our proposed Community of Practice (CoP) and finally, what they hope might be outcomes from our CoP. Essentially, these questions centered on how we would create a Community of Practice around forest economic development in the South and next steps for the team. Table 3.4 displays activities and timeline of activities for 2020-2021.

**Table 3.4.**

*2020-2021 Interventions and Activities*

| Timeline | Interventions and/or Activities | Details and/or Outcomes |
|---|---|---|
| January through March 2020 | • CMS 1 defense<br>• Forest Economic Contributions Summit | • New theoretical framework to guide AR project.<br>• Summit included opportunities for the three major stakeholder groups to engage.<br>• new connections among attendees, a summary report, and ideas for new projects |
| April through July 2020 | • Summit follow-up | • A focus group was held to allow AR team to reflect on the summit and share their thoughts, ideas<br>• The AR team further developed and shared an idea for an innovative resource with summit attendees who would be the invested stakeholders |
| July through October 2020 | • Multi-state & organization collaboration on forest economic infographic factsheets | • As a result of the summit, one attendee engaged the AR team to collaborate on development of forest economic infographic factsheets<br>• Co-creation of thirteen state infographic factsheets with stakeholders from each state and new connection from summit |
| January through December 2021 | • CoP planning | • Invitation to AR Team to continue<br>• Adding additional AR team member<br>• Interviews with four AR team members<br>• Developing Domain, Community and Practice for CoP<br>• Launch first meeting of CoP<br>• Surveyed potential CoP members for CoP activities and topics |

**We Came Together and Shared Knowledge – What's Next?**

Communities of Practice are described as having three basic elements: domain, community, and practice (Cox, 2005; Snyder & Wenger, 2010; Wenger, 1998). Wenger et al. (2011) also describe a CoP as a learning partnership among a group of people who want to learn from and with each other in a particular area of interest or domain. Domain can be defined as the joint enterprise that's understood to be the point of the CoP, and one which can be defined and renegotiated by its members as they want (Wenger, 2010). Identity of the CoP is determined by the domain and is part of the means by which people are members or not members of it (Snyder & Wenger, 2010). While the word community can refer to a random group of neighbors, community in a CoP is purposive, and based on a practice and not a location (Cox, 2005). Practice is referred to as the development and sharing of knowledge by the CoP members or practitioners in the given domain and includes elements such as tools, frameworks, resources, etc. (Snyder & Wenger, 2010).

While the AR team guiding the development of the CoP included nine members (two of whom were brand new), the interviews were conducted with four AR team members. Three of them were on the original planning team, Will, Peter, and Fred (pseudonyms). The fourth interviewee, Greta (pseudonym) was an attendee at the summit and subsequently collaborated on a project with the team in summer 2020 and became a member of the group. Furthermore, while the first listed interviewees were part of the original AR team and all work for state forestry agencies, Fred spent his career in economic development and works part-time for the state forestry agency after retiring from his original job. Greta is an executive of a forestry association, and she could be described as a forestry advocate. Her organization has a different purpose than the other three AR team members, as it is focused exclusively on what forest landowners need.

In Table 3.5, the interviewees are classified by their organization type, position and a key quote which summarizes their personal and organizational perspective on the CoP. This concept table includes both demographic characteristics, but also distinguishes between key variables of interest for the study (Miles et al., 2020). Table 3.5 includes the AR team member's pseudonym, their organization, their descriptor type (forestry analyst, economic developer, or forestry advocate) and a supporting respondent quote which captures their perspective.

**Table 3.5.**

*Description of Action Research (AR) Team Members with Illustrative Quotes About Their Perspectives on the CoP*

| AR Member | Organization & Position | Sector | Supporting Respondent Quote |
|---|---|---|---|
| Will | State forestry agency Utilization & Marketing Manager | Forestry Analyst | "We watch out for both existing forest industries as well as the new opportunities to come along. It's vitally important that we fill that role. I don't want us to be considered economic development experts, but I think we can facilitate economic development in forestry, probably better than some of the staff with agriculture, because they've got a multitude of concerns and we've got a specialized focus." |
| Peter | State forestry agency Utilization & Marketing Manager | Forestry Analyst | "My own motivation to me, I think, is just to help us all, better. Better understand and communicate forest economics to the public and then, if there's a specific group, like foresters who may have a little more interest in it, how better to communicate with them, and to be more effective at our jobs with utilization and marketing." |
| Fred | State forestry agency Forest Economic Development | Economic Developer | "It's also a vital networking group. Because having the common denominator of marketing and rural development with the tools that each of us bring to the table, I look at that as economic development overall. So, I think, I look at our group as a creative blank sheet, to look at going forward with the tools and the information that we have and how we can better apply or more efficiently apply the information we have with those decision makers, maybe outside of our normal realm of influence." |
| Greta | Forestry Association Executive | Forestry Advocate | "The way I see it, is this group is coming together to discuss the obstacles, the situation analysis, what is the current situation with markets related to forest landowners and how can we improve the markets or increase the awareness of the forestry-supply chain and its importance to keeping forests as forests and landowners economically viable." |

## What This Group is Talking About

There are two levels to every action research project, though they intersect at multiple points. Theory informs the action research project at all stages, but there are also project level activities that may not be of interest at the theoretical level necessarily. The data collected for this analysis was aligned with the main functional aspects of a CoP, as well as some characteristics that may or may not be as related to the theoretical outcomes. This project has evolved from its first focus area and this data is being used to assess what the next steps are. One newer member of the AR team (Greta) and an attendee at the summit succinctly describes our overall pre- and post-summit themes in the following manner:

> Initially, I got involved with the forest Economic Summit in New Orleans and, as I understood the purpose of that was "How can we make sure we're talking about forestry numbers and economic impact as apples to apples, using same data?" Because every state does that [data analysis] and I think we've addressed some of those challenges, and this group has kind of moved off that I don't see us talking about that so much.
>
> What this group is talking about is a couple of different things and lately we've landed on, and we seem to be focusing in on: how do we create better awareness among the economic development department and the State commerce of the state's opportunity to bring forestry related companies.

While we have this general theme of forest economic development, that can mean many things to different people and the data collected is helping to parameterize this theme. Most of the AR team has opted to continue with the project, and though we added a new AR member, it was still approximately the same core team. However, to move forward as a CoP and to fully define and meet our general goals, we needed to add more members, including attendees from the summit,

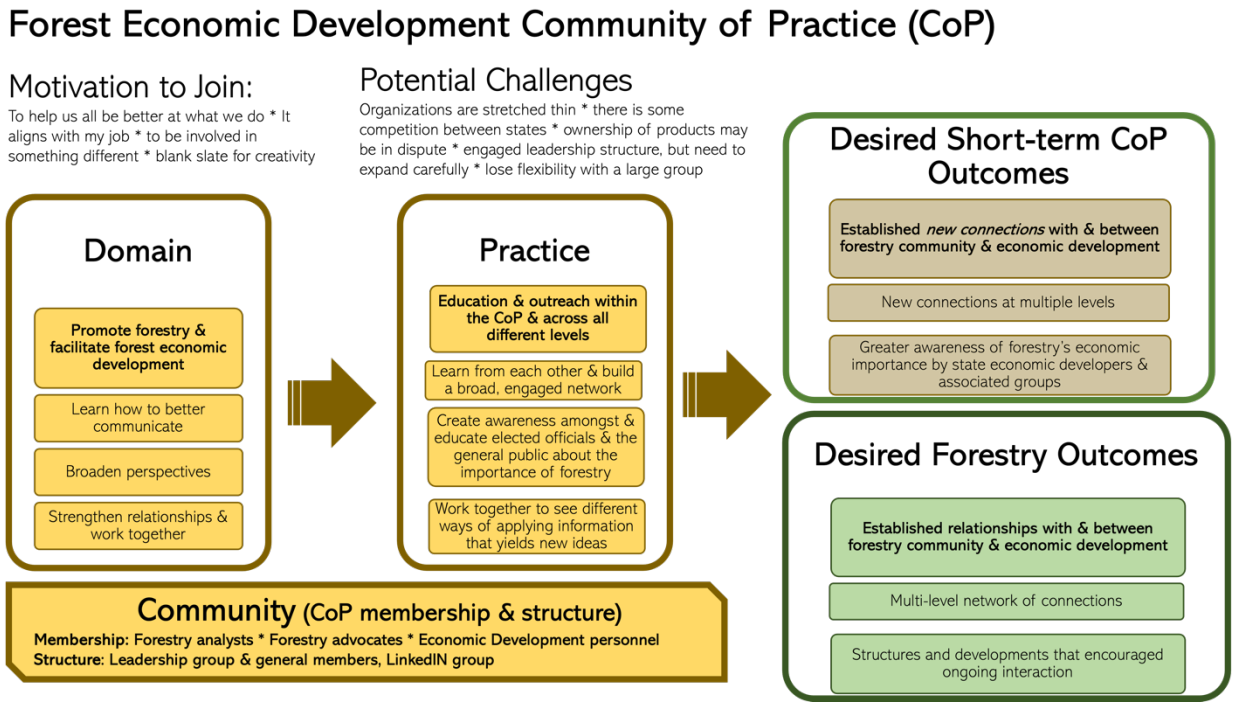
who were already engaged at one point. Adding more people to a group though, posed challenges, as our core team has worked so well together. Greta captured this sentiment here and reinforced my reasons for conducting these interviews:

> I think we've got a good group right now that is engaged, we were having good interaction. I would say, keep it at the level we are now until we really develop some products and maybe some one-on-one calls, you should have with others to get buy in or ask them. I'm a little hesitant of getting too big of a group, because then, suddenly, you get new ideas, not that new ideas are bad, but I feel like we've got a good path forward and we can go ahead and achieve some products, some content, some wins with where we are in the group we have.

Essentially, we needed to carefully define the domain and practice of our CoP as we would like it to be, so that new members can join the group to share our vision. CoP's can be redefined, but as the CoP is launched, we need to be careful that we have effectively communicated what the CoP is about. Figure 3.2 is a thematic array diagram, which depicts the key themes from these interviews in context with the functions of a CoP. This figure was not planned to be a substitute for a logic model; however, one of my themes is outcomes and there is an order from purpose to practice to outcomes. My challenge in analyzing this data was distinguishing between purpose and practice, as some of the codes that I generated for purpose or domain, could also be considered practice. Figure 3.6 was my attempt to make sense of and summarize these themes.

**Figure 3.6.**

*Thematic Array of Major Themes from Data Analysis in a Relational Manner*



**Purpose or Domain**

The overall purpose of our forming a CoP is to promote forestry and to facilitate forest economic development based on data from the interviews. Part of our domain, though, is also to learn how to better communicate about our industry; develop and strengthen relationships with others; work together; and broaden perspectives. Fred described our purpose as "bring a fresh discussion of economic development, and forest industry to the table and also review the tools that we have that could help them and then vice-versa, emphasize the information that we have." He further states that our purpose is "facilitating job creations that would be either supporting our existing industry or new industry recruitment or retention." Will described our proposed CoP as "a big thing to conquer, because we have multiple players, and a lot of different players." As a state agency forester, Will further focused on feedback he has heard about our efforts from his co-workers. He stated, "first, we want them to understand, we realize that we are not trying to be an economic development specialist, we're just trying to facilitate." Greta sums up the domain of our CoP as:

> This group is coming together to discuss the obstacles, the situation analysis, what is the current situation with markets related to forest landowners and how can we improve the markets or increase the awareness of the forestry supply chain and its importance to keeping forests as forests and landowners economically viable.

In addition, she further states that her involvement in this group comes from a desire to broaden her organization's perspectives:

> I'm talking to landowners every day, but when I hear what Fred has to say, or I hear what Peter's faced with, or what the challenges are within the utilization & marketing

committee, then I'm able to focus on that, so it helps provide a broader perspective, because I don't really think about the state forestry departments and their challenges.

Overall, forestry in the South is a relatively small industry and while there is quite a bit of engagement across organizations, there are not always opportunities to fully engage these partners in a more comprehensive way. This forming CoP is being planned to address these issues.

**Motivation to Participate**

Each member of the AR team comes from a different state and different organization, yet all have indicated that they want to continue to work together. The AR team worked collaboratively to plan the March 2020 summit and had already spent dozens of hours meeting and planning together. When I asked them in the interviews what their personal motivation was for continuing in this group, their answers varied. Nearly everyone said that our proposed work together aligned with their work. Peter stated that his motivation was to be more effective in his job as well as better communicating information to the public. Fred, who has already retired from one career and is working part-time in this post-retirement job stated his reasons for working with this group as primarily having fun:

> I think that the fun aspect of working with this group is to capture their experiences, as I had been away from the core marketing and utilization job. Coming back now and looking at or observing or evaluating utilization and marketing experiences from other states which are different from my state but the cumulative knowledge of the group. Finding a way to integrate my experiences in economic development and to provide maybe, another perspective of looking at the marketing aspects of forest wood products. I

> look at our group as a creative blank sheet, to look at going forward with the tools and the information that we have and how we can better apply or more efficiently apply the information we have with those decision makers, maybe outside of our normal realm of influence.

Will's motivation for working together is partially based on his job but is also couched in a larger context. He has stated in the past in personal conversations that he fears the collapse of the forest industry in his state entirely. In this interview he said, "I'm motivated, because I've always, promoted forest industry – if there wasn't an [forest] industry around there wouldn't be any need for professional foresters."

**Community**

AR members were consistent on whom they felt should be members of our CoP but want to be careful how the CoP is formed. Greta summed up her concerns as:

> I think we have a good group right now that is engaged, we are having good interaction, so I would say keep it at the level we are at now until we have time for one-on-one calls with others to ask them to join. I'm a little hesitant of getting too big of a group.

Everyone interviewed was supportive of labelling themselves as part of the leadership committee of the CoP and agreed that expanding the CoP should be done carefully and thoughtfully. There were mentions of creating products or a plan first before conducting outreach to our intended CoP members.

**Practice**

Overall, the AR Team was most interested in creating a multi-level network as part of our practice. They envisioned our CoP functioning in the role of launching semi-formal education, training, and outreach opportunities to CoP members as well as creating those products as part of CoP work to be used with other outside stakeholders. They also perceived our practice as one of creation of new ideas from our knowledge-sharing and more. In addition, there were many comments about the need to educate across and within CoP members' organizations. For example, Will discussed the need to build the CoP at multiple levels, connections at the top organizational level; i.e., from the state forester to the head of the state economic development council:

> There are different degrees that we can be involved with the economic development in the industry and, are we committed to do it on the peer-to-peer level, With state foresters to the state economic folks? Or is it more at the staff level?

Lastly, some of the other components that were cited by all in the interviews was the need to create awareness and understanding of the importance of forestry and the forest products industry among economic development agency personnel (especially at the director level), as well as county, state, and federal election officials. Thus, the practice of the CoP is one of internal education of its members, but also creating resources that can be used for external education.

**Challenges for Creating a CoP**

While the AR team was invested in creating this CoP and embracing more members, they all pointed out challenges that the group might face. For example, Greta noted that in her more

recent interactions with state forestry agency employees, she noted the lack of capacity, which makes it more important to her that other forestry associations are also invited to the CoP, as they have the potential to assist. Peter and Fred also noted that while the forestry community works well together across the region, there is competition within and between states for new investments in forestry. For example, while new mills, for example, may purchase timber from a multi-state region, at the end of the day, the economic developer from one state will compete with an economic developer from another state so that a new mill will be theirs. There are also many trade secrets in economic development, as Fred said, and there may be reluctance on the part of some economic developers to join a CoP like this and/or to truly engage. Other challenges might arise from joint creation of materials together and ownership of projects within the CoP, or other such politics, as noted by Greta. Lastly, Fred discussed how changing how things are done is not always well-received:

> There are challenges to being involved in something that might be a little bit different, I don't want to say radical, but something a little different, out of the norm for going forward. Secondly, and I don't mean this in a negative sense, we have a lot of circles that don't integrate themselves. They stay in their own groups. I think we're going to find that overlap and but finding a path for that might not be easy. There could be some roadblocks and there could be some areas that we might have a problem, pushing through anything. That's our own politics. If you deviate from whatever they have been doing for years like that of messaging of the economic contribution of forestry, you don't want to deviate too far, because that could be a political hot potato.

While I don't think of this CoP as particularly radical, Fred's point about deviation from the norm is something that may be a significant point of resistance as the CoP forms and learns and works together.

### Moving Forward Together in Data Analysis and CoP Development

Data from these interviews provided a solid grounding for developing the domain, practice, and community of our intended CoP. In addition, collecting this data was valuable for creating an opportunity for four of my AR members to reflect individually on what we have worked on in the past together and how that influences what they think we can do next. Each person had a slightly different perspective that when put together assisted in the development of the practices of our CoP. These interviews helped me to reflect on our work together and where we are headed next. Since these interviews were semi-structured and more of a conversation than strict questions and answers, I was asked nearly as many questions as I asked. They asked me to explain what I meant by the question and what my thoughts were on the subject. Since I know all these AR team members well after working together so much, I was not concerned about influencing their answers. In the end, the interviews were also a period of reflection to me. I had to explain what I thought to them, and while I had a pretty good idea of what I thought we would do next, I had not fully explained my ideas before. Figure 3.7 is a word cloud which depicts words from the coded portions of the interviews in a shape and form that creates a larger word depending on how many times the word was cited. While I found creating a word cloud with all the coded data a little challenging, it is helpful to see what words and concepts are emphasized. The phrase that I see most prominently in the word cloud is "good people think different," I

cannot say that is profound, but I hope that our continued creation of our CoP will generate different thinking.

**Figure 3.7.**

*Word Cloud of Coded Words from All Four Interviews (Larger Words are Those that Appear More Frequently)*

**Structural Logistics of the CoP: What It Does**

We surveyed potential CoP members to find out more about their reasons for joining the CoP, their interest in timing, frequency, and activities at meetings. A general survey link was sent to summit attendees (and those who had registered for the summit but were unable to attend due to Covid-19), and they were encouraged to send the link to other colleagues who may also be interested in joining the CoP. 18 people responded to the survey and were most supportive of quarterly or bi-monthly meetings. Of the suggested activities listed in the survey, respondents were most interested in issue-driven discussions and presentations / Q&A sessions with invited speakers and CoP members. In addition, there was some interest in a mixture of whole group or smaller zoom room discussions, and idea or project development assistance (Table 3.5). Since this CoP involves people from multiple organizations and states, participation cannot be required, and therefore motivation to join the CoP is important. Respondents were asked to select their reasons for joining the group (or thinking about joining the group). The top reasons selected were to meet the needs of the constituents I serve, learn from others and to connect to a network (Table 3.6).

**Table 3.6.**

*Potential Activities to Include in the CoP, Ranked from Least (1) to Greatest Interest (4; n=18)*

| Types of Potential CoP Activities | Ranked by Level of Interest in the Activity – Mean Rank (s.d.) |
|---|---|
| Issue-driven discussions | 2.5 (0.71) |
| Presentations / Q&A sessions with invited speakers | 2.2 (0.38) |
| Presentations /Q&A sessions with members | 2.0 (0.59) |
| Idea/project development assistance | 1.9 (0.80) |
| Whole-group discussions + small-group Zoom rooms | 1.9 (0.76) |
| Whole-group discussions | 1.8 (0.86) |
| Problem-solving sessions for members who request help | 1.8 (0.92) |
| Grant development assistance | 1.7 (0.96) |
| Individual Zoom rooms for different discussions | 1.3 (0.84) |

**Table 3.7.**

*Reasons for Joining (or Thinking About Joining) the CoP, Ranked by Percentage of Respondents who Selected Each Reason (respondents could select as many as they liked; n=18)*

| Suggested Reasons for Joining the CoP | Percentage of Respondents |
|---|---|
| Helps me to meet constituents' needs | 83.3% |
| Learn from others | 72.2% |
| Connect to a network | 72.2% |
| Working together on projects or goals | 61.1% |
| Improved communication skills about forestry | 38.9% |
| Learning about economic development | 27.8% |
| Because this group has all the cool people in it | 16.7% |
| Generate or test out ideas | 11.1% |
| To make my job easier | 5.6% |

Based on information from these interviews and a survey of potential CoP members, an agenda was set for the first few CoP meetings. There are various projects that I am working on within my job that also involve many of the CoP members and/or could be informed by all, that overlapped as an area of practice for the CoP. In addition, there are many ideas derived from the 2020 forest economic summit that were included as topics for presentations and discussions for the CoP. Recommendations from the 2020 summit report suggested that statewide meetings like the regional summit should be held. Since the southern region area includes thirteen different states with various capacities and organizational relationships, there is the potential to co-create agendas for separate meetings and support other CoP members in planning, implementing, and

evaluating state meetings. To date, this has not occurred. Table 3.8 is a summary of activities, interventions, and outcomes from this study in 2022-2023.

**Table 3.8.**

*2022-2023 Interventions, Activities and Data Collection*

| Timeline | Interventions and/or Activities | Details and/or outcomes |
|---|---|---|
| January through December 2022 | • Held three CoP meetings<br>• Defended CMS2 | • Three CoP meetings with 2-3 speakers at each, followed by informal discussion (February, May & August). Presentations included state forestry agency members, forestry economists, economic developers, etc.<br>• Obtained funding to create a forest economic development workshop for foresters |
| January 2023-September 2023 | • Held four CoP meetings<br>• Surveyed CoP members<br>• Focus group | • Four CoP (February; April; May; and July) meetings which included presentation / discussions about different states' approaches to forest economic development; wood product pricing trends; workforce development; forest certification. and a marketing campaign for forestry<br>• Obtained funding to update a website that is used by state forestry agencies to promote their mills nationally and internationally<br>• Surveyed 60 CoP members<br>• Held focus group with 7 AR team members |

**Launching the CoP- What We Did**

We collected data from multiple sources, surveyed potential members and moved forward in fits and starts. The CoP was launched with an introductory meeting and an overview of the report created to document findings from the 2020 Summit. In all, the listserv for the CoP has varied from about 55-65 or so people, depending on retirements, changes in jobs, etc., but is currently 60 people. Some people asked to be added to the group after hearing about it from their

colleagues or from me, and others were added based on their registration or attendance for the 2020 summit. Eight virtual meetings were held over the course of a year and a half. The AR team has had limited time to plan specific activities too, as we are all time-strapped and planning for meetings has been a little haphazard and has been based on individuals' interest in presenting or idea sharing or based on something that I heard about that seemed relevant to the group. Meeting attendance has also been mixed. Meetings have not been held at specific days or times, because some of the speakers are not available at those times. However, typically there were 3-6 weeks of notice about an upcoming meeting. From my personal experience in planning meetings with busy professionals, if their attendance is not required specifically, then no matter how much notice is given, a conflict may come up. All the CoP meetings included a presentation and question and answer (Q&A) session, but the topics and presenters varied considerably, and are listed in Table 3.9. There were also issue-driven discussions, as well as meetings that focused on specific idea/project development. I led the first two meetings, as the first one was the introductory meeting and a summary of the findings from the 2020 summit and the second CoP meeting focused on a tool that is relevant to all the CoP stakeholders. Each meeting was held via Zoom software and was 60-90 minutes depending on the number of speakers and topics to cover. Meetings started with attendees introducing themselves, discussing how their work relates to forest economic development, and other prompts, such as, "what are you working on right now that is a challenge?" or "what do you hope to get out of attending these meetings?" Meeting attendance varied considerably at CoP meetings, with the smallest meeting included only six people and the largest meeting was around 30 people. Typical meetings were around 8-12 people.

A generic Google email address was created for the group, and the Google drive associated with that email address is used to store meeting notes, recordings, and other related resources for all CoP members to access. A Google Group listserv is used to send messages to members and allows members to send messages to the group directly.

**Table 3.9.**

*Timeline; Focus Area; Speaker; and Activities of the 8 CoP Meetings (activities are described with the same terms found in the survey of potential CoP members)*

| Month/year | Topic/ focus area | Meeting Activities | Presenter |
|---|---|---|---|
| December 2021 | Overview of 2020 Summit Report and outcomes | • Presentations / Q&A sessions<br>• Idea / project development assistance | Leslie |
| February 2022 | Forest products tool (soliciting feedback for updates) | • Idea / project development assistance | Leslie |
| May 2022 | Forest economics analysis in novel situation | • Presentations / Q&A sessions | Extension Forester; Forest Economist |
| August 2022 | 3 Forest Carbon Programs related to state forestry agencies | • Issue-driven discussions<br>• Presentations / Q&A sessions | State Forestry Agency Personnel |
| February 2023 | Forest economic development strategies | • Presentations / Q&A sessions | State forestry agency U&M and Economic Developers |
| April 2023 | Wood products pricing and workforce development approach | • Presentations / Q&A sessions<br>• Invited speaker | Extension Foresters |
| May 2023 | Forest landowners' certification program | • Issue-driven discussions<br>• Presentations /Q&A sessions | Forestry economist; Extension Forester |
| July 2023 | Forestry advocate (information about their | • Presentations / Q&A sessions | Forestry advocate; CoP member |

| | | |
|---|---|---|
| | approach, new developments, and updates on the forest products tool) | • Invited speaker<br>• Idea/project development assistance |

Overall, from my observations of the CoP meetings, there was good engagement from attendees. For the most part, attendees kept their cameras on, which can be an indicator of engagement. Many of the CoP members are located in rural areas or may be working from home, and often they may leave their cameras off to preserve bandwidth, but the majority had their cameras on. In each meeting, many different people asked questions, rather than the meetings being dominated by only one or two people. Of the 60 or so people in the CoP currently, about half were at the 2020 Summit, but the group seemed to be comfortable with each other, and presentations often led to new discussions. I have met just about every CoP member in person, as in my position, I work across the region and connect with many different people as part of my job.

## Evaluating the CoP

### Surveying CoP Members to Measure Social Capital, Trust, and Knowledge-Sharing

#### *The Survey*

The AR project goal was to create a means to continue connecting multiple stakeholders related to forestry economic development to learn from each other and build a network. The AR study goal was to build social capital through a CoP in order to encourage knowledge-sharing. To that end, we surveyed CoP members in August 2023 to assess if they had built social capital among each other (relational, structural, and cognitive), and were sharing knowledge. The online survey was sent to the individuals in the CoP listserv directly via SurveyMonkey online survey software. Our survey protocol followed the Tailored Design Method (Dillman et al., 2014) and

included emails to CoP members to alert them of a survey coming, then emails with a description and purpose of the survey, a disclaimer about research purposes, etc. and more. Emails were sent directly from SurveyMonkey software directly to each individual CoP member and follow up emails were sent three, eight and twelve days later to those who did not start the survey and those who had not completed it. Survey respondents were asked if they had attended any CoP meetings, how many they may have attended, their reasons for attending or not attending meetings, and if they had attended the 2020 Summit. Some questions in the survey focused on their level of satisfaction with the CoP, if the information from the CoP had affected how they do their work, how meaningful they found their work, types of activities they would like for future meetings, comment space for ways to improve the CoP, and a space for them to express interest in assisting or leading the group in the future. Demographic data collected included type of expertise; position type; current organization of employment; state of residence; and years working.

### *Measurement Scales*

Scales for measuring trust, social capital (relational, cognitive, and structural) and knowledge-sharing (tacit and explicit) that are reliable and all had Cronbach's alpha scores higher than 0.70, were adapted and included in the survey (Table 3.10). The scales used in the survey were found by reviewing the literature, and then selecting scales that were used in studies with similar elements of social capital, CoPs knowledge-sharing, etc. For example, in Leana and Pil (2006), they surveyed teachers across an entire urban school district to measure trust among the teachers. In addition, the scales were also selected for brevity and for easier adaptation to fit the group being surveyed. Since the CoP includes individuals from multiple organizations, some

of the scale items in particular scales could not be easily adapted. For example, The CoP has been called the Southern Forest Economic Development Working Group, and so in the survey, the CoP is referred to as the Working Group.

**Table 3.10.**

*Measurement Scales Used in the Survey, Including Scale Items and Reliability*

| **Measurement Scale** | **Scale Items (adapted for this questionnaire)** | **Reliability (Cronbach's alpha)** |
|---|---|---|
| Trust<br>*(Adopted and modified from Leana & Pil, 2006)* | 1. I can rely on people in the working group.<br>2. People in the working group are usually considerate of one another's feelings.<br>3. People in the working group have confidence in information shared or help offered.<br>4. People in the Working Group show a great deal of integrity.<br>5. There is a "team spirit" among the people in this Working Group.<br>6. Overall, people in the Working Group are trustworthy. | 0.880 |
| Structural Social Capital<br>*(Adapted and modified from* Kim et al., 2013) | *1.* In the Working Group, I have a very good relationship with other members.<br>2. People in the Working Group know what knowledge I have at my disposal.<br>3. I know what knowledge could be relevant to which colleague in the Working Group.<br>4. Within the Working Group, I know who has knowledge that is relevant to me at their disposal. | 0.761 |
| Cognitive Social Capital[+] | 1. People in the Working Group and I agree on the importance of *expanding markets for forest products.*<br>2. People in the Working Group and I always share the same ambitions and vision at work.<br>3. People in the Working Group and I are always enthusiastic about *creating more markets for forest products.* | 0.774 |

| | | |
|---|---|---|
| | 4. The culture and management style of others' organizations is very similar to yours. | |
| Relational Social Capital[+] | 1. I feel connected to people in the Working Group.<br>2. I know that others in the Working Group will always try and help me if I get into difficulties.<br>3. I can trust people in the Working Group to lend me a hand if I need it.<br>4. I can rely on people in the Working Group when I need support in my work. | 0.795 |
| Explicit Knowledge-Sharing *(Adapted and modified from Wang and Wang, 2012, and Anguly, Talukdar, and Chatterjee, 2019)* | 1. People in the Working Group frequently collect reports and official documents from others in their work.<br>2. People in the Working Group are frequently offered a variety of training and development programs.<br>3. People in the Working Group frequently collect reports and official documents from others in their work.<br>4. People in the Working Group frequently share reports and official documents that they prepare by themselves with the Group.<br>*5.* People in the Working Group frequently share existing reports and official documents with others in the Group.<br>6. People in the Working Group are frequently encouraged by knowledge-sharing mechanisms. | 0.95 |
| Tacit Knowledge-Sharing *(Adapted and modified from Wang and Wang, 2012, and Anguly, Talukdar, and Chatterjee, 2019)* | 1. People in the Working Group frequently share knowledge based on their experience.<br>2. People in the Working Group frequently share knowledge of know-where or know-whom with others.<br>3. People in the Working Group frequently share knowledge based on their expertise.<br>4. People in the Working Group will share lessons from past failures when they feel necessary.<br>5. People in the Working Group frequently collect knowledge from others based on their experience.<br>6. People in the Working Group frequently collect knowledge of know-where or know-whom with others.<br>7. People in the Working Group frequently collect knowledge from others based on their expertise. | 0.904 |

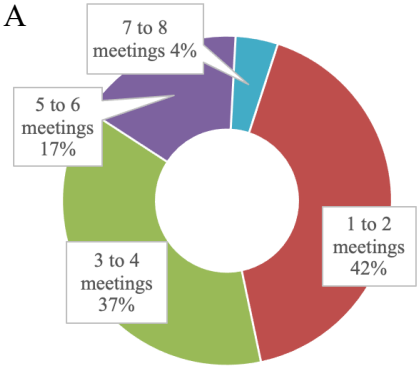
**About the Survey Respondents**

In all, 24 (out of 60) people responded to the survey for a response rate of 40%. While this response rate for a web-based survey is very good, given the actual population size, it is not sufficient for statistical purposes. Krejecie and Morgan, (1970) created a table of recommended sample size values (n) as compared to the target population (N) and recommend a sample size of 52 for a population size of 60. Respondents were asked if they had attended CoP meetings and encouraged to respond even if they had not attended a meeting. Of the eight meetings, most respondents either attended 1 or 2 meetings (42%) or 3 to 4 meetings (37%) (Figure 3.8a). The majority of respondents tended to be older, as 42% of respondents had more than 30 years of experience in working, about 30% had between 20-30 years of experience, another 25% had between 11-20 years of experience and only one person had less than ten years of experience (Figure 3.8b). Given that one of the AR team members had already retired from one career before joining our team and that two AR team members have since retired, it is not surprising that the CoP respondents trended older overall.

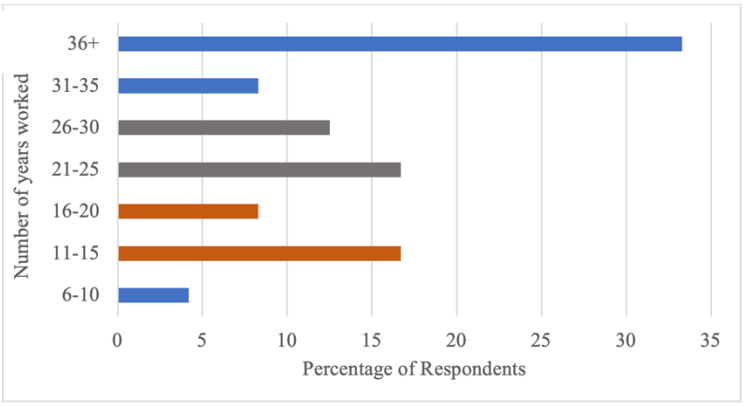
**Figures 3.8a and b.**

*Respectively, the Number of Meetings Attended by the Percentage of Respondents and the Distribution of Age Groups Among Survey Respondents (n=24***)**

A




B



**Categorizing positions**. The goal of the CoP was to connect stakeholders from three defined groups: forestry analysts, economic developers, and advocates; however, the delineations among these groups in the CoP were not clear-cut. For instance, one of the AR team members started his career in a state forestry agency, spent 20+ years only as an economic developer and has returned to working half time (in his retirement) at a state forestry agency, doing economic development, but in a focused way. I separated survey respondents by their position type and organization type and summarized them in the three defined classes listed earlier of forestry analysts (66.6%), economic developers (12.5%), and forestry advocates (25%; Table 3.11), and these are the classification that I will use in further analyses.

**Table 3.11.**

*Respondents Categorized by Position and Organization (left side), and Percentage of Respondents in Each Organization Type (right side; n=24)*

| % Respondents by Position | Position | Organization type | % Respondents by Organization |
|---|---|---|---|
| **66.6%** | **Forestry analysts** | | |
| 16.7% | Utilization & Marketing Foresters | **A. State forestry agencies** | **29.2%** |
| 8.3% | Utilization & Marketing Foresters | **B. Federal natural resource agencies** | **12.5%** |
| 29.2% | Forestry economists | **C. Universities** | **37.5%** |
| 8.3% | Extension foresters (Cooperative Extension service) | | |
| **12.5%** | **Economic developers** | | |
| 4.2% | Economic/rural Development | **D. Economic Development Agencies** | **4.2%** |
| 8.3% | Economic developer | State forestry agencies | |
| **25%** | **Forestry advocates** | | |
| 16.7% | Directors | **E. Forest Landowners' associations & other non-governmental organizations** | **16.7%** |
| 8.3% | Directors | State agencies & Universities | |

### *Position and Knowledge Boundaries Are Fuzzy in This CoP*

Edmondson (2012) described occupation and organization as two important knowledge boundaries; in this CoP, though, respondents had distinct position titles, and could be put into one category, but their experiences in other organizations and their training meant that the occupational boundaries were not as distinct. Of the three economic developers that responded to the survey, two are based at state forestry agencies and one is based at an economic development agency, but previously was a U&M Forester. To provide more insights into respondents, they were divided into their five organization types, in order to define more boundaries. While forestry analysts comprised 2/3 of the survey respondents, 25% of survey respondents are U&M foresters from state & federal forestry agencies. Forestry economists were 1/3 of all respondents and there were 2 extension foresters as well among the forestry analysts. Just as there is overlap in positions, some of the same positions can be found at different organizations.

Table 3.11 shows the categories which I placed each respondent in, for the purposes of categorization. When respondents were asked to select a position type, they were allowed to select as many choices as they felt fit, Table 3.12 summarizes the possible positions that respondents could select from, and the percentage who selected them. Six people selected the other category and noted position titles such as policy position, senior staff, assistant professor, innovations specialist, research forester, and two people also indicated that they had retired. In the end, based on my personal knowledge of the respondents, I categorized them into one position based on what I think their main type of work is or was, in relation to this CoP (Table 3.11). In order to clarify the three targeted groups, survey respondents were also asked to select all responses that reflected their expertise in forestry, economic development, and communications (Table 3.12), and nearly 90% have at least one degree in forestry and about half

have training or experience in communications and/or economic development. As such, it is easy to see that there are overlapping areas of knowledge, experience, and training among CoP members, despite position types being different.

**Table 3.12.**

*Percentage of Respondents who Selected Each Position Type and Expertise Type.*

| Which of the Following Best Represents Your Current Position? (Select all that apply) | % of Respondents (n=24) | Which of the Following Best Represents Your Expertise? (Select all that apply) | % of Respondents (n=24) |
|---|---|---|---|
| U&M forester | 33.3% | I have at least one degree in forestry. | 87.5% |
| Forestry Economist | 25% | | |
| Extension forester | 8.3% | | |
| Forestry communications professional | 8.3% | I have training or experience in communications | 45.8% |
| Director or equivalent | 16.7% | | |
| Economic Developer | 12.5% | I have training or experience in economic development | 54.2% |
| Other | 33.3% | Other (please specify) | 4.2% |

**Analyzing the CoP Survey Data**

This action research project was focused on creating a CoP among forestry stakeholders and economic developers to improve connections in order to enhance participants' abilities to do their jobs, especially as so many people retire. The focus of the action research study was to build trust and social capital among these stakeholders to increase knowledge-sharing. In this study, social capital is framed using Nahapiet and Ghoshal's (1998) three dimensions (structural, relational, and social capital). Structural social capital (SSC) is the scaffolding that creates the opportunity to interact and build social capital or as Nahapiet and Ghoshal (1998) describe it, the structure and pattern of ties and linkages between people. This scaffolding can be the way that people get together, what they do, and how frequently they interact. In an integrative review of social capital and organizational knowledge Han and others (2020) found that social capital's sub-dimensions were described as social interactions, connections, ties or links, density, degree of contact, communication, accessibility and more. In this study, the CoP is the structural scaffolding that was built to create opportunities for interaction. Cognitive social capital (CSC) can be described as the resources, common systems of meaning and interpretation of social capital. Lastly, relational social capital (RSC) can be broadly described as the types of relationships that people have with each other. Trust is a significant component of RSC but is not the only component. Cabrera and Cabrera (2005) describe RSC as the interpersonal trust and shared norms found within the network, as well as people identifying with others in the network. There is considerable overlap between trust and RSC and measuring RSC includes some components of trust. However, trust is frequently listed as a strong factor that is antecedent to knowledge-sharing (Usoro et al., 2007). Usoro; Sharratt; Tsui; & Shekhar (2007) and Han and

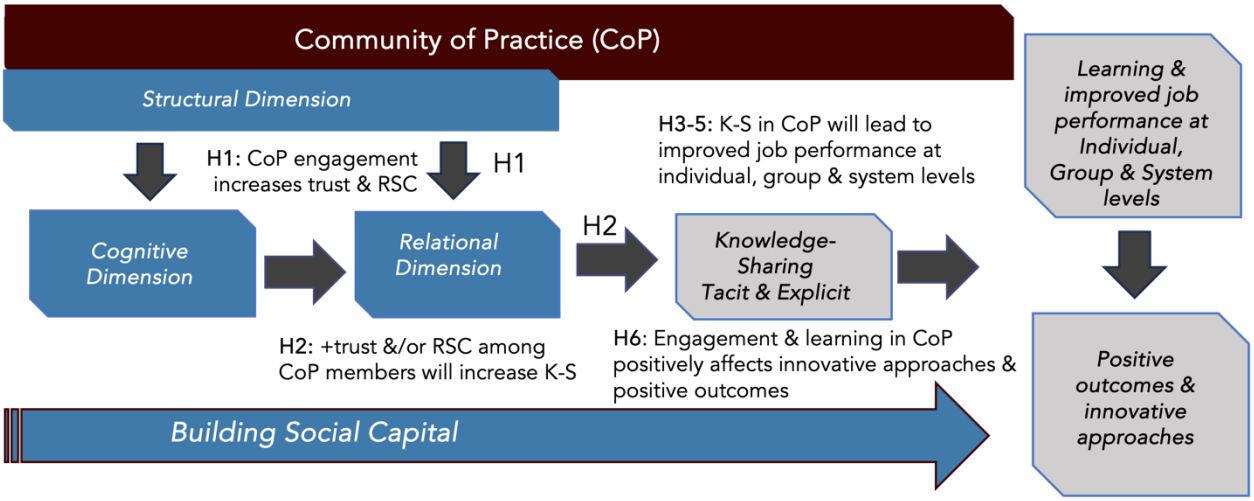
others, (2022) discussed that “trust is strongly related to attitudes and outcome expectations of knowledge sharing” (p. 3). Therefore, for this study, we included scales for both trust and RSC.

While the CoP already has a defined domain and purpose, that members are focused on, engagement in the CoP should clarify its members’ shared goals, shared language, and norms. Both the structural and cognitive dimensions of social capital can build trust among CoP members, as their repeated interactions that are focused on common goals create more interactions, and can build friendship, opportunities for reciprocity, shared norms and more (Han et al., 2020).

Our first hypothesis for this study focused on engagement in the CoP by its members. We hypothesized that engagement in CoP activities would positively increase trust and RSC among CoP members, and in turn we hypothesized that increased trust and RSC would positively affect knowledge-sharing. Beside the overarching research question of this study, we also developed three research questions and six hypotheses about this study. Results from this survey in relation to the three research questions and six hypotheses for this study are described below and the relationship between some of the variables, the CoP and our hypotheses are depicted in Figure 3.9. Survey data is analyzed in relation to five of the six hypotheses and the 6$^{th}$ hypothesis is discussed in more detail in Chapter 4.

**Figure 3.9.**

*Relationships Between the CoP; Trust; Social Capital; and Knowledge-Sharing*




**Results from Scales.** Scales for trust; structural (SSC); relational (RSC); and cognitive (CSC) social capital, as well as tacit knowledge-sharing and explicit knowledge-sharing, were included in the survey. Each item included statements and the respondent could select their level of agreement with it on a 5-part Likert scale, from strongly disagree (1) to strongly agree (5). Scores for each scale item were added together for each participant and the mean of those scores was reported for that scale for that participant. Participant's scores were not included in the summary, if every item on the scale was not responded too. Two respondents did not respond at all or entirely for the scales, therefore their responses were excluded. Scores for the 22 respondents who fully answered each scale item were averaged and the mean, standard deviation, and pairwise correlations among the variables are included in Table 3.13. Trust was significantly correlated with all three forms of social capital, SSC ($\rho$ =0.530), RSC ($\rho$ =0.699), and CSC ($\rho$ =0.604) which were all significantly correlated to each other, p-value <0.05. Only RSC was significantly correlated ($\rho$ =0.572) to tacit knowledge-sharing (TKS), and none of the

three components of SC showed any relationship to EKS. Lastly, TKS and explicit knowledge-sharing (EKS) were significantly correlated ($p$=0.477). (It should be noted that the scale for EKS was incomplete, as the sixth scale item was omitted from the survey by mistake.)

As stated above, RSC and trust are related, but RSC also includes trustworthiness, norms and sanctions, obligations and expectations as well as identify and identification. In the final focus group with the AR team, one member said, "I think in forestry we tend to trust people until that trust is proven otherwise." The statement above suggests an identity of being in the forestry industry along with trust in others in the industry. However, RSC captures more than trust alone, and results from this small survey suggest that general trust is not enough for knowledge-sharing, but that other factors and relationships are more linked to knowledge-sharing in this context. However, in results from this survey, trust is significantly related to all three dimensions of SC, which is not surprising as SC has often been reduced to trust in other studies. Lastly, Usoro et al. (2007) found trust (competence, benevolence, and integrity) to be an antecedent to knowledge-sharing for virtual CoPs, but data from this survey suggests that trust alone is not sufficient to explain TKS.

**Table 3.13.**

*Descriptive Statistics and Correlations*

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| • **Years worked** | 26.2 | 9.5 | | | | | | |
| • **Trust** | 4.61 | 0.45 | 0.096 | | | | | |
| • **S-SC** | 3.92 | 0.83 | -0.300 | 0.530* | | | | |
| • **R-SC** | 4.10 | 0.82 | 0.019 | 0.699** | 0.659** | | | |
| • **C-SC** | 4.25 | 0.63 | -0.380 | 0.604** | 0.685** | 0.486** | | |
| • **TK-S** | 4.34 | 0.56 | -0.153 | 0.208 | 0.278 | 0.572** | 0.154 | |
| • **+EK-S** | 4.03 | 0.70 | -0.082 | 0.277 | 0.348 | 0.385 | 0.363 | 0.477** |

*Note: n=22, *p<0.05, **p<0.01*
*+There should have been 6 items in this scale; one item was left out mistakenly*

In a series of regression analyses, tacit knowledge-sharing (TKS) and explicit knowledge-sharing were regressed with RSC, SSC, and CSC by themselves and then with all three independent variables together (Table 3.14). Only RSC was significantly related to TKS (p-value <0.001) and explained 32.7% of the variability in the model. When coupled with SSC and CSC, and compared to TKS, there was still a significant relationship ($p<0.05$), but the model only explained 35.1% of the variability, which was only a slight increase of 2.4% of the variability being explained by the other two variables. In addition, when the $R^2$ was adjusted (as per number of variables), the explanatory relationship between RSC and TKS was only 29.4%. Conversely, while the regression with all three variables explained 35.1% of the variation (which was an increase as compared to RSC alone), when adjusted, the value dropped to 24.4%. Either way, the explanation for variability was driven by RSC solely in either regression.

**Table 3.14.**

*Regression of Independent Variables and Tacit and Explicit Knowledge-sharing*

| Dependent Variable | Model | Independent Variables | Sum of Squares | Df, Error | F | P-value | $R^2$ | $R^2$ adj. |
|---|---|---|---|---|---|---|---|---|
| TKS | 1 | RSC | 2.16 | 1, 20 | 9.741 | 0.0054** | 0.327 | 0.294 |
| | 2 | SSC | 5.09 | 1, 20 | 1.674 | 0.211 | 0.078 | 0.031 |
| | 3 | CSC | 0.156 | 1, 20 | 0.485 | 0.494 | 0.024 | -0.025 |
| | 4 | RSC, SSC, CSC | 2.32 | 3, 18 | 3.255 | 0.046* | 0.351 | 0.244 |
| EKS | 1 | RSC | 1.509 | 1, 20 | 3.478 | 0.077 | 0.148 | 0.106 |
| | 2 | SSC | 1.232 | 1, 20 | 2.754 | 0.113 | 0.121 | 0.077 |
| | 3 | CSC | 1.340 | 1, 20 | 3.030 | 0.097 | 0.132 | 0.088 |
| | 4 | RSC, SSC, CSC | 1.923 | 3, 18 | 1.397 | 0.276 | 0.189 | 0.054 |

*Note: n=22, *p<0.05, **p<0.01*

*Hypothesis 1: Engagement in CoP activities will positively increase trust and RSC among CoP members.*

The potential sample size for the survey was 60 people and then there were only 22 complete responses, so analyses conducted on these data are limited. While a potential member of the CoP can be someone on the listserv, membership in a CoP requires engagement, and engagement can be captured by examining the number of meetings that someone attended. Due to a small sample size, we can see that all respondents attended at least one meeting. Most survey respondents attended either 1-2 (10) or 3-4 meetings (8). In this small sample size, the mean scores for trust and RSC did increase relative to the numbers of meetings attended from

4.55 and 3.75 respectively, to 5.0, which suggests that there may have been an increase in trust and RSC based on engagement in the CoP (Table 3.15). However, since only four people attended more than four meetings, broad inferences cannot be made from such small numbers. These scores were not significantly related to attendance either. Dependent variables: attendance (number of meetings attended), CSC, and SSC were regressed with RSC to better understand if those factors impacted RSC. While this combination of factors could have explained nearly 50% of the variation in RSC ($R^2 = 0.491$), none of the factors were significantly related, and only SSC was close to being significant, with a p-value of 0.069 (Table 3.16).

**Table 3.15.**

*Number of People who Attended Different Numbers of Meetings Compared to Their Mean Scores on Trust, and Member Perceptions that the CoP Affected Their Work Positively*

| Attendance (num. of meetings) | n | Mean score trust (SD) | Mean score RSC (SD) | CoP positively affected work (0-4)* |
|---|---|---|---|---|
| 1-2 | 10 | 4.55 (0.41) | 3.75 (0.90) | 1.3 (0.28) |
| 3-4 | 8 | 4.58 (0.58) | 4.13 (0.61) | 1.9 (0.31) |
| 5-6 | 3 | 4.78 (0.26) | 4.92 (0.14) | 3.3 (0.50) |
| 7-8 | 1 | 5 | 5 | 3 |

**Table 3.16.**

**Results of Regressions Between RSC and Independent Variables SSC, CSC, and Attendance, KS, and Independent Variables SSC; CSC; Attendance; and RSC**

| **Dependent variables** | **RSC** | | | | **KS** | | | |
|---|---|---|---|---|---|---|---|---|
| | **Coefficients** | | | | **Coefficients** | | | |
| **Variables** | **Unstand. B (SE)** | **Stand. Beta** | **t** | **Sig.** | **Unstand. B (SE)** | **Stand. Beta** | **t** | **Sig.** |
| Constant | 1.094 (0.953) | | 1.148 | 0.266 | 2.641 (0.760) | | 3.473 | 0.003 |
| SSC | 0.476 (0.247) | 0.482 | 1.930 | 0.069 | 0.026 (0.209) | 0.039 | 0.124 | 0.903 |
| CSC | 0.164 (0.304) | 0.127 | 0.541 | 0.595 | 0.008 (0.236) | 0.009 | 0.033 | 0.974 |
| Attendance | 0.245 (0.175) | 0.256 | 1.400 | 0.178 | -0.167 (0.142) | -0.263 | -1.174 | 0.256 |
| RSC | | | | | 0.417 (0.182) | 0.628 | 2.295 | *0.035** |
| *R* | | 0.701 | | | | 0.593 | | |
| $R^2$ | | 0.491 | | | | 0.352 | | |
| *Adj.* $R^2$ | | 0.407 | | | | 0.199 | | |
| *S.E. of the estimate* | | 0.628 | | | | 0.483 | | |

*Hypothesis 2: Increased trust and RSC among CoP members will positively affect knowledge-sharing*

In our second hypothesis, the two scales for trust and then RSC were compared to TKS and EKS to ascertain if there was trust among CoP members and evidence of RSC within the CoP and if that trust and/or RSC has influenced the CoP members' willingness to share knowledge. Results from a pairwise correlation show a significant correlation between RSC and TKS, (but not EKS) but there is no significant relationship between trust and TKS or EKS (Table 3.14). In addition, when all forms of SC and attendance were regressed with KS, only RSC showed a significant relationship between the two with a p-value of 0.035 (Table 3.16). RSC explained about a third of the variation in KS ($R^2 = 0.491$). These results suggest that RSC is the only positive predictor of knowledge-sharing.

Tacit knowledge is the knowledge that can be more difficult to convey, as it is "know-how" knowledge developed through experience (Brown & Duguid, 2001). Explicit knowledge is the "hard" or "know-what" knowledge (Brown & Duguid, 2000) and usually is considered easier to share, as it is the knowledge that people know they know. Therefore, it is interesting that in this case, the significant correlation is between RSC and TKS, not EKS. Knowledge-sharing is more likely for an individual who feels a sense of belonging in an organization (Han, 2018). But this CoP's members were from multiple organizations and that could have affected members' willingness to share knowledge. In addition, for members of this CoP, it may seem like too much work to share reports with others or collect reports from others in a general sense (as is suggested in the EKS scale). Whereas, in this CoP, where there are discussions, it may be perceived as being easier to answer questions, or share stories in the moment, rather than working to retrieve a document that you think may possibly be of interest.

*Hypotheses 3-5: Knowledge-sharing across boundaries, within the CoP will lead to improved job performance at the individual, group, and systems level.*

We hypothesized that knowledge-sharing within the CoP would help members do their jobs individually, as a group, and system-wide. There is substantial evidence to support this hypothesis from qualitative data and outcomes. However, in the survey sent to CoP members, we asked them if they felt that their engagement in the CoP had positively impacted their job performance. In a one-way Anova, there was a significant relationship ($p<0.05$) between the number of meetings attended (4 categories) to perception that participation had positively impacted their work (0-4 scale) and a little less than half of the variation was explained by this relationship ($r^2=0.45$; Table 3.15). Again, with a small sample size, this suggests a relationship between their engagement in the CoP and job performance and offers modest support for some improved job performance at the individual and group levels.

## Evaluating and Reflecting on the CoP and the Whole Action Research Project

### The Final Focus Group with the AR Team

In August 2023, I conducted a focus group with seven AR team members, including Allen; Peter; Will; and Charlie (U&M foresters); Greta (forestry association); Fred (economic developer); and Owen (forestry economist). I asked questions about trust, knowledge-sharing, outcomes, their perspectives on our work together, what they have learned, how or if we should continue, etc. The focus group was conducted via Zoom remote meeting software and planned for up to 90 minutes. Overall, everyone was engaged, and each person contributed, though Owen had to leave early. Transcriptions of the meeting were available from Zoom software to start

with, then I went through the transcripts while listening to the recording to ensure the accuracy of the transcripts. When the transcriptions were verified as accurate, then they were uploaded into Atlas.TI software, for coding. Codes can be described as overarching labels that describe information or assign meaning to the data (Miles et al., 2020) I used an inductive and deductive approach to code, as I searched for patterns, categories, and themes (Cresswell & Cresswell, 2017), though I also began with the themes of the focus group questions. Focus group participants were sent their transcripts to verify the accuracy of the transcription, and the ideas conveyed.

### *Coding Scheme*

In my first cycle of coding, I coded the data using a combination of descriptive, NVivo, and provisional approaches which yielded approximately fifty codes. The concept codes are a mixture of these NVivo and provisional codes. These codes also relate to concepts covered in the survey of all CoP members, as well as my hypotheses. In subsequent cycles, these codes were reduced to codes that encompassed more concepts, with each having more than one related quotation. I grouped those thirty-two codes into nine larger concept codes: benefits, challenges and issues, common purpose and motivation, competition, differences in projects, evolution of the project, knowledge-sharing, learning and trust (Table 3.17). I counted the number of times each code was used and tracked which focus group participants (AR team members) had selections or quotations related to each code. For example, all participants had selections coded for evolution of the project, knowledge-sharing, learning and trust, and at least four participants had selections for all other concept codes. Thus, the concepts or codes were not limited to one or two participants. Of the concept codes generated, evolution of project, competition, knowledge-

sharing, and benefits were coded between 23-31 times. Trust, which is a key concept in this study was not coded frequently, but there was early agreement and confirmation in the focus group that there was strong trust among the AR team, and then everyone moved on to different topics.

**Table 3.17.**

*Lists of Overarching Concept Codes; Their Count; the Initial Codes; and AR Team Members who Had a Passage for That Code*

| Concept | Count | Provisional code | AR team members |
|---|---|---|---|
| Benefits | 23 | • Appreciation of group members<br>• Beneficial outcomes<br>• Benefits from knowledge-sharing<br>• Bringing everyone together successfully<br>• Innovation<br>• Outcome from group<br>• Social capital | Allen; Charlie; Fred; Greta; Peter; Will |
| Challenges and Issues | 21 | • Changes to industry<br>• Common issues<br>• Ground-truthing<br>• Retirements & new professionals<br>• Workforce challenges<br>• Working alone | Allen; Fred; Greta; Peter; Will |
| Common Purpose and Motivation | 15 | • Common purpose<br>• Motivation in forestry<br>• Targeted intervention | Allen; Fred; Greta; Owen; Will |
| Competition | 26 | • Competition (economic developers)<br>• Competition (forestry) | Allen; Fred; Greta; Owen; Will |
| Differences in Approach | 9 | • Differences in approach | Allen; Charlie; Fred; Greta |
| Evolution of Project | 31 | • Evolution of project<br>• Next steps | All |

| | | | |
|---|---|---|---|
| | | • Where we started | |
| Knowledge-Sharing | 26 | • Help with troubleshooting<br>• Relationships<br>• Value of knowledge-sharing<br>• Benefits from knowledge-sharing<br>• Knowledge-sharing | All |
| Learning | 23 | • Learning<br>• Question your thinking | All |
| Trust | 13 | • Trust forestry<br>• Trust in AR team | All |

**High Praise and Kumbaya in the AR Team**

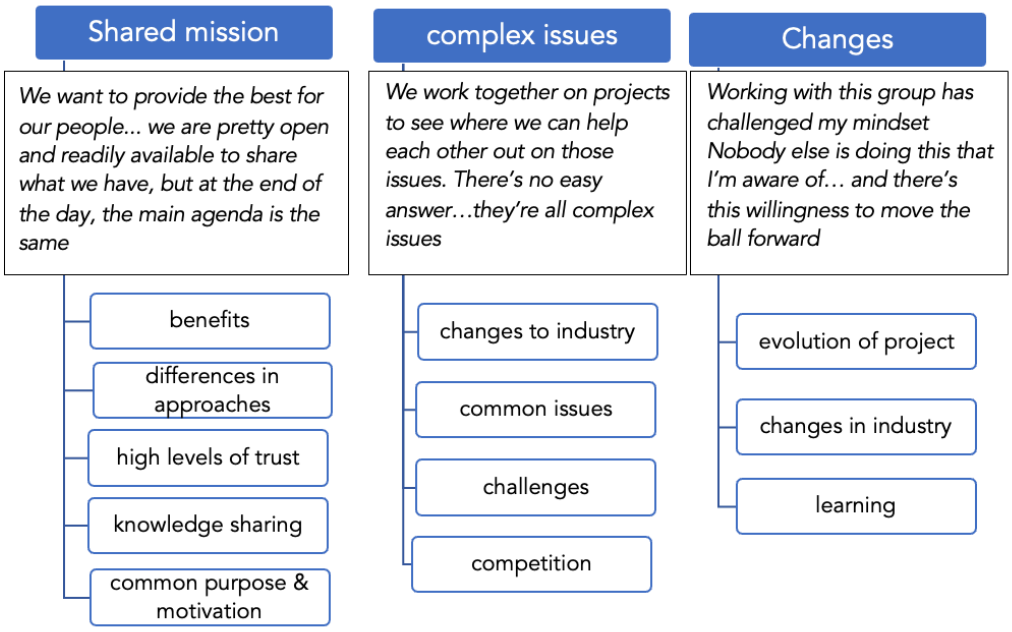
In this focus group interview, one AR team member who retired a little over a year ago, joined us, as well as a newly retired member, but overall, everyone enjoyed sharing positive reflections on our work together. While the AR team members have changed over the past five years, some of us have been working together this whole time, and what resonated across the group was the high level of trust, friendship, and appreciation for team members. This final focus group was conducted to reflect on the action research process and to provide more insights into survey data, but there was a sharp distinction between each. In this group interview, while the questions were general, everyone's focus was mostly on our work within the group rather than the larger CoP.

Overall, there were three major themes which emerged from this data: shared mission, complex issues, and changes (Figure 3.10). There were repeated mentions of a common purpose and motivation among AR team members and among those in the forestry industry overall. Although differences in approaches were mentioned, those were perceived as benefits for understanding how others do their jobs and finding opportunities to share knowledge about these

approaches. Everyone agreed that the group faced common issues that were complex such as changes to the industry from external forces and from workforce challenges. In addition, competition was mentioned as an issue, but it was complex, as competition varies. The third theme involved change, including change within the group from working together, along with learning from each other and reevaluating thought processes. The group also discussed the evolution or change in the project and how we worked together. These themes are discussed further below and in chapter four.

**Figure 3.10.**

*Themes from the Final Focus Group of the AR Team*




Fred summarized the levels of trust in this group when he said, "It's just that camaraderie that you have over time that is truly trustful, and you can take it to the bank." In the interview, trust, knowledge sharing, and beneficial outcomes came up again and again, as well as examples of those outcomes. Peter summarized it as:

> I want to reiterate what a lot of people have said, it's been a really good learning experience. And I feel this is a really trustworthy group. We do share a lot of ideas and so there's definitely been a lot of positives to come out of it.

This action research project and study started with a funded proposal, in 2017, and an idea of a summit that we were starting to plan for, and a problem we were trying to solve, but it grew into much more. Some of us have been meeting for 6+ years. Will, Peter, Allen, and I were the original people who were part of the proposal, and we had some innovative ideas to start with, but this project grew in its scope and goal. In the focus group, Will stated:

> It's been real satisfying to hear the comments here. Because I can reflect back to 2018, and prior to when we were putting a proposal together, and some preliminary discussions were met with a lot of skepticism about what we were trying to accomplish. and, as Leslie pointed out, it evolved over time. And I think it's been really satisfying in the long run to see it's been beneficial to all of us to some degree.

What also emerged from this interview was everyone's sense that this group is special, and that it has been an important part of their jobs. There is a strong desire to continue the work in the AR team (staying small) though there was interest in adding a few select people. Greta summed it by saying:

> We all trust each other, but I feel like this group. Maybe it's based on the size, or because we've met often enough for the way you conduct the facilitation. I do feel like it's just very open. And there's this willingness to really move the ball forward and share with the economics and what various viewpoints are in each state. I think you really, or this group has really achieved that [trust] very, very well.

In the beginning of the AR project, the main goal was to plan the 2020 Forest Economic Summit, and since many of us were on the proposal, there was an impetus to meet regularly. As other AR team members, without a stake in the proposal, joined in, these members committed to joining these meetings and established norms for group interactions. Most of our meetings were focused on a specific area such as summit planning, post-summit review, CoP planning and a few other small projects along the way. However, throughout our many, *many* meetings over the years, there was time for informal discussion and problem-solving, sharing about new developments or just asking Fred more about economic development. Lastly, our group is proud of our accomplishments, and feels that we have had a positive impact in each other's work and on the system. Charlie summed it up by saying, "I know I've been impressed by a lot of what this group has been able to do."

## Action Research Story Findings Summary

In the meandering path of this action research story, we began in one place with a straight-ish road, and took a few turns, some side roads and have ended up in an entirely new place. The study began with a focus on cross-boundary teaming and moved to an exploration of social capital, trust, knowledge-sharing, boundary-spanning, and CoP theories. In the end, there are multiple stories and different steps to tell. We started with an idea, and then a new group member (a boundary-spanner) enthusiastically joined us and changed the conversation. Our first intervention into the system, an in-person meeting led to many new ideas and innovations, was interrupted by a pandemic, but its impacts have continued to resonate. We formed an inter-organizational CoP to continue the work started in the summit, but it is still very much a work in progress. In the end, the most successful VCoP is the AR team, as the level of engagement, trust

and commitment are high among everyone, and even without a specific project to focus on, the group strongly desires to continue.

Findings from this study relate to the theories studied and the results from a practitioner perspective. We found that there are huge challenges to developing cross-organizational CoP, as there is no way to require anyone to join, and time is a huge factor, even when people are willing and interested. Other discoveries relate to the importance of having a boundary-spanner in your team, and how boundary-spanners have huge impacts on direction and discoveries in crossing boundaries of all types and innovating. Discovering and focusing on a common purpose that is relevant to members of a CoP or team is a key component of successful engagement. Trust is an interesting concept in an organizational context, and some of the data suggest a link between trust and the meaningfulness of work. Constraints in organization from retirements or shrinking staff also lead to motivation to engage in cross-boundary learning opportunities as some people are "the only one," that is doing what they do in their organization. Lastly, virtual interactions cannot substitute for face-to-face interactions though task interdependence is a strong motivator for virtual engagement. These findings will be explored more in chapter four.

## CHAPTER FOUR: INSIGHTS AND ACTIONABLE KNOWLEDGE

This action research project and study began as a way to align forest economic contribution analyses and reporting as one means to contribute towards increasing markets for forest products. Addressing why forest markets have declined is another complex web, but the action research team that I worked with has a role to play in the expansion of these markets. Our starting problem was the need to align forest economic contribution analyses and learn better ways to communicate the impacts of forestry on the economy of the South. We discovered that our main problem is that public agencies, especially, are experiencing massive turnover as the baby boomer generation retires, and there is a loss of institutional knowledge and cross-agency connections. Positions are not being replaced at the same rate, nor with the same experience level. In addition, we discovered that even before significant retirements, there was still a gap in knowledge-sharing and mission which impeded economic developers and forestry stakeholders from working together as effectively as they can. In this action research project and study, we explored ways to increase social capital, trust, and knowledge-sharing across multiple organizations within multiple states through two significant interventions, a cross-sector summit and a Community of Practice. In this chapter, we synthesized what was learned in the course of this project and study as well as insights and actionable knowledge that can be used in other projects and inform theory.

The purpose of this action research study was to explore social capital and knowledge-sharing in a multi-state, multi-organization Community of Practice, consisting of diverse forestry and economic development stakeholders of the southern United States. The purpose of the action

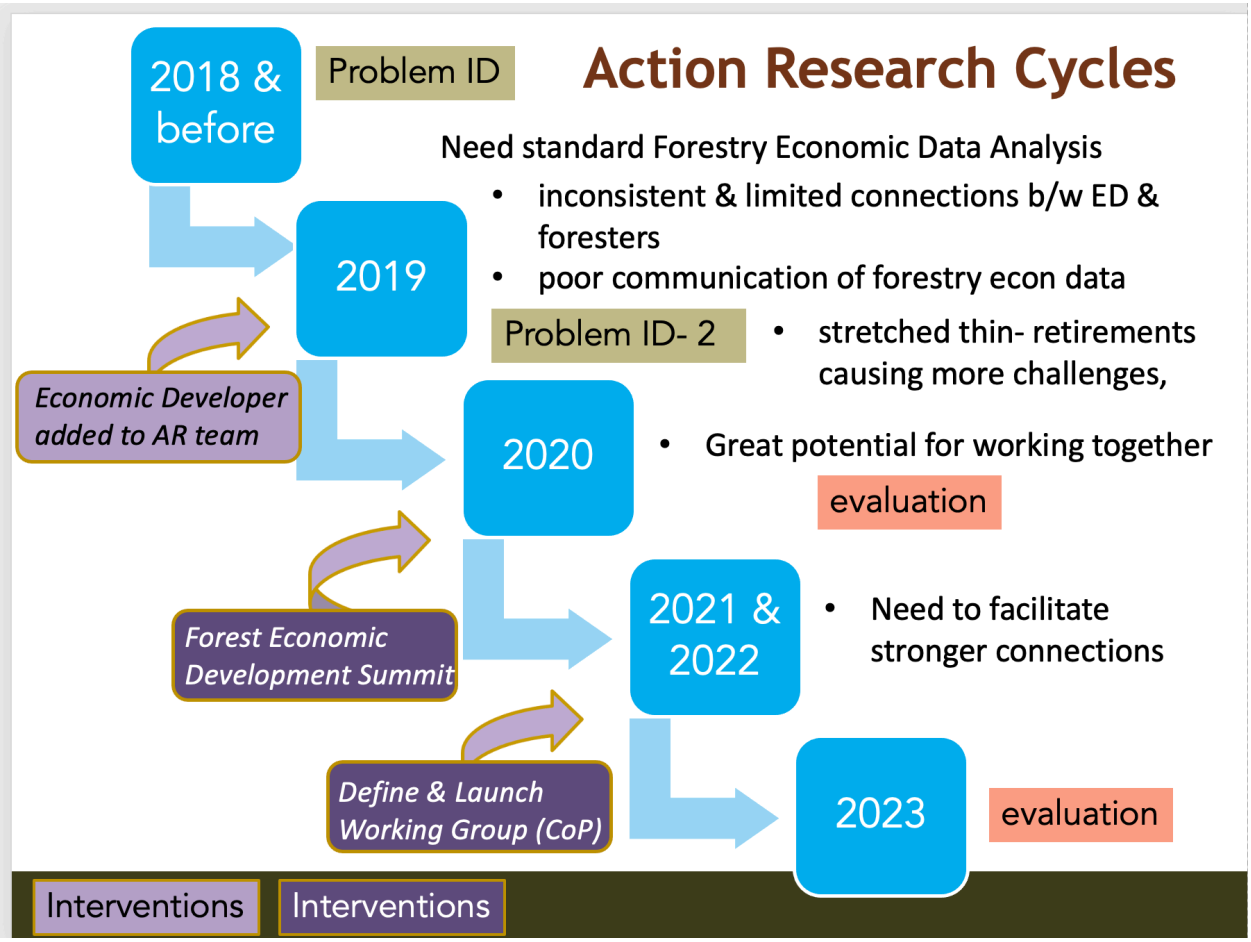
research project was to assess challenges for forest economic development in the South, design, implement and evaluate interventions that enhance knowledge-sharing among diverse stakeholders. *This study's overall research question is to explore what is learned at the individual and group levels that advances theory and practice in an intervention among diverse forestry and economic development stakeholders of the southern United States*.

## Study Summary

While this action research study started with a grant-funded project that included hosting a meeting related to forestry economics and markets, it grew like a tree and branched into a project that encompassed many more types of stakeholders, a better diagnosis of the challenges, a significant intervention (summit) that was held one day before the COVID-19 pandemic canceled all travel, and an on-going Community of Practice (Figure 4.1). It has been more than four years since my AR team first started planning a connection event and, in that time, a global pandemic hit, and we have tried to create a Community of Practice to address the issues that were fully detailed during the 2020 Summit. Along the way, the action research team added new members, said goodbye to a few others due to time commitments and retirements, but it has persisted. This study has come to an end, but the AR team plans to continue meeting and knowledge-sharing as well as overhauling the CoP based on feedback.

**Figure 4.1**

*Action Research Study Cycles of Interventions and Discoveries, larger interventions are color-coded in a darker purple color, while smaller interventions are lavender in color.*




Increasing markets for forest products across the Southern United States, is the predominant problem that our group and the forestry industry faces. While this is the major problem, we were able to clarify the challenge that fits within our influence and ability to make changes. Along the process, we created greater awareness of the different players involved in forest economic development which is how new mills and manufacturers either expand or create a new location. These mills and manufacturers increase forest markets through the increased demand for raw timber. At the summit, we identified the lack of connections between forestry stakeholders and economic developers as a major challenge to developing more forest markets.

Economic developers are one of the key groups that "make things happen." Then we clarified that these different stakeholders were more connected in the past but increasing retirements of baby boomer generation staff have created more turnover, and loss of connections across these groups. This lack of connections can be attributed to several reasons, including significant retirements among many of the personnel from all the state agencies involved and contact points between the agencies that are often 1:1 relationship, which means that when one person retires, the connection between the agencies may be lost. In the five years that this study took place, two of the AR members have retired and one had already retired from his full-time career and begun working half-time for a state forestry agency right before we started this project.

In addition, we realized that each group of stakeholders has limited knowledge about how the other group works and their knowledge, skills, and tools. So, rather than working together to achieve their goals, and to make their jobs easier, many economic developers may not know that they have colleagues in these state forestry agencies that are ready and willing to help and have the tools and knowledge to increase the chances of success. Lastly, one of the main problems identified was that overall, forestry has an image problem and many people in economic development and the public do not realize how important forestry is to their state economies already and that increasing forestry and forestry related industries across their state would not only benefit the state economically but would be especially helpful in creating rural jobs.

## Study Findings and Insights

During this study, multiple types of data were collected and analyzed, and triangulated to confirm the validity of results. Throughout this study, data were collected via interviews, surveys, focus groups, meeting notes, observations, and miscellaneous documents and reports. The

significant findings from this study relate to trust, knowledge-sharing (both tacit and explicit), the three components of social capital, boundary-crossing, inter-organizational CoPs, action research methodology, and the forestry industry. Findings from this study are summarized in table 4.1 and described in the following section in relation to the level of the system (individual, group, and system) that is most related.

**Table 4.1.**

*Research Findings*

| **Research Question:** *What is learned at the individual, group and system levels that advances theory and practice related to trust, social capital, and knowledge-sharing in a multi-organizational CoP?* | | |
|---|---|---|
| **System Level** | **Findings** | **Supporting Quotes and/or description of evidence** |
| Individual | Adding boundary spanners with other disciplinary ties leads to new directions and learning.<br><br>Collaborating as part of an AR team leads to new ways of thinking and novel outcomes.<br><br>Leading Successful Action Research Projects and Studies Requires Persistence, Flexibility, and An Ability to Navigate Complex Systems | *"I was able to find a way to integrate my experiences in economic development and to provide another perspective for looking at the marketing aspects of forest wood products." (Fred)*<br><br>*"I have a specific example that I can give. I've always heard Fred talking about workforce development and the different software they've used. And as a result of this group, I have access to that software now, and we are starting on a workforce development report and a baseline study for our state. So that was directly a result of this committee."*<br><br>*I'll give you credit Leslie, for effectiveness. You'll remember the meeting in New Orleans, it was a challenging time, I remember. You may have had to fold the tents or give up on it. But you stayed flexible and presented a meeting to those who were there and kept the follow-up going. (Charlie, in final focus group AR team)* |
| Group | Structure is important to VCoPs, but time is a limiting factor for participation and engagement – as will primarily job or organizational responsibilities and the existing network or work ecosystem. | "*the timing has not been favorable"*<br><br>"*To be involved in something that might be a little bit different I don't want to say radical, but something a little different out of the norm for going forward, there may be some challenges. We have a lot of circles that don't integrate themselves well- they stay in economic development groups or, like a professional forester stays in their groups. I think we're going to find that overlap but its not the easiest path and there could there be some roadblocks and problems."* |

| | | |
|---|---|---|
| | Stakeholders from other disciplines / organizations may not engage in a VCoP without strong ties to its purpose.<br><br>Task interdependence influences knowledge-sharing and engagement.<br><br>Sharing a strong common purpose increases trust among CoP members. | AR team's high level of trust and knowledge-sharing and task interdependence is similar to findings from Han et al. (2020).<br><br>Cognitive social capital (CSC) and trust were significantly related in CoP survey results. CSC is connected to shared purpose.<br><br>*"Plus, the issues that we share are those that we can confide in each other because they're unified in a common denominator as Peter said, across the Southeast, and if one issue affects all of us, and if we don't attempt to look at, recognize, tackle that issue, it's going to hurt us all." (Fred)* |
| System | Industry type affects general trust and willingness to share knowledge.<br><br>Competition among organizations can negatively impact trust and willingness to share knowledge.<br><br>Cross-boundary knowledge-sharing leads to positive outcomes and innovations.<br><br>Multi-tiered organizational connections are critical to sustain connections and knowledge-sharing. | *"Just my general thought is that I think in forestry we tend to trust people until that trust is proven otherwise." (Allen)*<br><br>In response to being asked about the competitiveness of economic development agencies, and their willingness to share knowledge: "*My gut answer would be no, because they are so competitive. It is predicated on incentives and how, I'm trying to choose my term, my words here: because it is so competitive for capital investment, and for a lot of other reasons." (Fred)*<br><br>*See table 4.2*<br><br>*"In order to be successful, we might have to have a relationship at a higher-level, at state foresters to economic development leads relationship in addition to the peer-peer level or the staff member to staff member level."* |

**Changing the People Changes the Conversation: Adding a Boundary-Spanner Leads to New Directions and Learning**

One of the first tasks in our project was to assemble a working group/advisory group according to our proposal notes and the agreement between my organization which was a sub-grantee in the proposal (Memorandum of Agreement, 4-25-18). One of the first meetings regarding this project was held December 2018, and included four of the original AR team members, and listed subsequent AR member Fred (retired economic developer) as a person to contact to join the advisory board for the project (L. Boby, Meeting Notes, 12-14-18). In addition, in our original timeline of activities for the grant (figure 4.2), we had proposed the economic contributions analysis template as a key component of the proposed summit. I attended a meeting with some of my colleagues who were part of the group expected to attend the summit and told him about our proposed idea, which was the first negative feedback that I received about our idea for the summit (focusing on teaching the economic contribution analysis methodology) (L. Boby, personal communication, January 31, 2019).

**Figure 4.2**

*Timeline of Activities from Original Grant Proposal for the First Year of the Project.*

| MONTHS | ACTIVITY |
|---|---|
| **1-6** | Assemble working group/advisory group |
| | Develop "standard template" based on the summit and the survey |
| | Send out template to possible attendees for feedback (including prev. summit attendees)-<br>• Wider audience of ag folks too<br>• Assemble feedback and concerns (Ex. How do you do add'l industries- oak barrels) |
| | Plan summit<br>• Meeting location, Advertise, Create attendee/invitation list |
| **7-12** | Conduct SUMMIT Goals/sessions<br>• Feedback from "template" will help build the agenda for the summit |
| **Summit** | Address Template in working session<br>• Address questions/concerns/ from template, Figure out examples to tackle<br>• Come to consensus |
| **Summit** | County level concerns/sub-regional concerns<br>• How to answer these questions/Challenges, Suggested "tweaks" to template<br>• Transitional issues |
| **Summit** | Reconciling other data sources with IMPLAN |
| **Summit** | Basic IMPLAN analysis activities<br>• Run through some exercises, How do you get this output, numbers, etc. |
| **Summit** | Using economic data to answer questions about the risks of Inaction on forest management/health issues along with risks to economy from forestry issues<br>• Example EAB and , or subsidy of woody biomass subsidizes thinning, which improves forest health-protects forestry industry & protects state economy |
| **Summit** | Establish working group based on summit attendees<br>• Plan parameters and meetings for the group |
| **13-18** | Develop Output from Summit notes |

Weerts and Sandmann (2010) describe a boundary-spanner's ability to shared ideas and communicate well as being even more important than high expertise levels, and Woo and Myers (220) discuss how boundary spanners are individuals with experience in multiple organizations and knowledge that spans disciplines. As I started out this program, my first idea for my action research project was to build on a funded project that involved finalizing and promoting a standard method for analyzing forest economic contribution data. A group of us were working on that project together and we had planned a summit to sort out this issue. My official role in my position is to be a boundary spanner and to work with multiple agencies and organizations across the thirteen states of the South. This project also involved boundary spanners from other organizations- but all in the forestry sector. However, as the group of us got together and we discussed our idea for this meeting with other additional colleagues, the input that we got was

that a meeting themed around this area was irrelevant to them. At the same time, a significant boundary spanner joined our team and changed the dynamic. Fred, who had worked as a forester, then became an economic developer and then retired from economic development and began working half-time at the forestry commission brought with him a wealth of knowledge about how it is that forestry markets are created. While the entire AR team are boundary spanners, Fred's disciplinary knowledge in both economic development and forestry changed the conversations in our group, and how we were thinking.

Fred joined our first meeting with our ad-hoc advisory board in February 2019, and subsequent meeting notes in March, regarding the summit include "economic development," as one of seven categories for stakeholders as well as for a topic that may be covered in the meeting. In addition, my personal reflections on a meeting in March 2019 mention some interesting discussions in the group's meeting, which included Fred (L. Boby, Personal Communication, March 26, 2019). In addition, I had reflected how our discussions prior to Fred joining us had not included discussions about economic developers. By July of 2019, the meeting agenda firmly included three areas for speakers: forestry economics, forestry economic development and communication. The agenda of the summit was structured so that there would be presentations and discussions about each of those areas and that stakeholders would also be fit into one of those three categories.

Our practice of meeting regularly, planning the summit and informal discussions created the conditions for extensive knowledge-sharing within our group and shifts in how we collectively thought about some of these issues. Prior to our group getting together, I knew nothing about economic development and did not consider that piece of the forestry market creation puzzle. Many of my colleagues on the AR team already had relationships with economic

developers, but those relationships were mixed in terms of their engagement and understanding of each other's work, and it was not discussed as an issue before Fred joined the team. In the final focus group interview, Greta said:, "And the knowledge sharing…Fred has been a wealth of knowledge" and Peter noted, "I really appreciate Fred in particular with all of his experience in economic development." AR team discussions as well as action inquiry interviews yielded more insights about these relationships with economic developers, and in turn, these insights changed the focus of our work. At the same time, the interviewees' reflections on their work with economic developers brought to light many issues that may not have been discussed openly before.

**Collaborating as Part of an AR Team Leads to New Ways of Thinking and Novel Outcomes**

In the many years of this action research project and study, members of the AR team met on a regular schedule that ranged from weekly, (close to the time of the Summit), monthly or bi-monthly and established trusting relationships and shared knowledge. While our many meetings have included a focused agenda and a list of tasks to review or determine, there was also considerable space for dialogue. It is in this space, which Kaethler, (2019) in a study of ambiguity in CoPs, calls 'slack space or unsanctioned space,' where a group can come together in a more informal manner (Thompson, 2005). Kaethler further describes collective slack space as being an ambiguous state in which

> …The drive for efficiency is moderated by the need for creativity and innovation. Being able to move between the professional and the social and to bond and interact in a

different manner was perceived as a unifying force and at times a pinnacle moment for pooling creativity. (p. 11)

It is in this slack space, where a lot of the dialogue and individual learning occurred within the AR team. Gilbertson (2022) found that group dialogue, or discussions which are not goal-based, but rather open-ended and exploratory were critical to generating insights and new ideas in their learning communities. While the VCoP was supposed to facilitate creation of a space for casual dialogue, it has proved more difficult. For the AR team, this Slack space was where the major learning occurred. As our AR team meetings continued through the years, people would frequently stay after to ask each other for advice or to how they were doing something. Various quotes from AR team members in our final focus group focused on the personal relationships and trust built as well as learning that had occurred in the group. While Fred frequently shared his perspective from economic development with everyone, he also discussed how his thinking was challenged by other AR members, so the exchanges were not one-sided. In addition, others mentioned how they felt that they could "ground-truth," what they were hearing from other sources within the group, and appreciation for how there are many different ways to do the same type of work.

AR team member Will before the 2020 summit reflected:

We commented that many of us are really excited about, about the opportunity coming up and I think you're doing an excellent job and I think you're really well working well. I really liked your approach of getting input from the stakeholders like you did through the survey and I think it's been impressive how this is shaking out so far. I think you're doing a really good job. And I think  that adds to looking forward to the meeting much more. Because we have good discussions, whatever meeting that you hold, there's comments

> and discussion made about different angles that we could, should consider or may consider. And you know, I think that adds to our quality meeting. I think we will be fully prepared.

In addition to learning within the AR team, there were many outcomes from these discussions that led to other system interventions and/or ways of doing things. For example, Allen purchased a different kind of software to analyze economic data based off Fred's recommendations. Greta said, "I think the way this has been done, and our going back and forth with everybody's perspective has been very valuable." Greta also indicated that she invited a speaker to present about an interesting case study on forestry economic development in one of the states to a forestry association meeting, based on information from Fred. Beyond the discussions though, the group also expressed that they were challenged in their thinking; for example, Fred said,

> Let me give a compliment, shout out to Greta, to be challenged on creativity. I think she challenged me more than anybody in creativity. Well, should we do this differently? How should we? How should we look at this? Maybe we're looking at this all wrong. Let's take a clean sheet of paper out, how do we communicate differently or better? Who should we be communicating to? And I think that's the openness of this group and the focus. And that's part of your leadership, too, Leslie, and how you've let this group formulate its own communication.

There were other examples of AR team members trying new methods of doing their work based on what they learned within the group, as well as grants written together and planning for forest economic development training. In addition, the AR team wants to continue meeting at a regular period to continue learning from each other. (More outcomes are listed in Table 4.2.)

**Leading Successful Action Research Projects and Studies Requires Persistence, Flexibility, and An Ability to Navigate Complex Systems**

Action research projects and studies are embedded in systems or challenges that are complex (Watkins et al., 2023), otherwise, there would be no need for it to be an action research project. Complexity in a system can arise in many ways, regardless of the size of the system. In this study, the system encompasses a whole region of the country, as well multiple types of organizations from across that region, some of whom I already knew and others I did not know. Though I am part of the system and positioned as a boundary crosser, through the action research process, I gained a more in-depth knowledge of the system. Gilbertson (2022) in an action research study that encompassed a university and urban school system found that she needed to navigate two complex systems in order to lead a successful action research study. My study and project had a different scope than Gilbertson's (2022), although some of the system complexities are similar as were the decisions regarding how and when to collect data, share information, etc. While most research studies can only be controlled to a certain degree, action research projects are more difficult than many other types of studies, due to dual roles of scholar and practitioner. While two roles are listed, Gilbertson (2022) further details all of the tasks involved in the process of AR, from planning and leading the meetings to collecting data and maintaining stakeholder engagement, so perhaps much more than dual roles. Furthermore, studying your colleagues requires tact and flexibility, as you cannot require them to be part of the project (depending on your positionality), and you have to balance keeping your AR Team engaged and amenable, while also challenging their conclusions, and perspectives. Leading action research studies requires strong facilitation skills, and considerable first-person inquiry to ensure that you

are also questioning yourself. Watkins, Gilbertson and Nicolaides (2023) describe leaders of action research as having to "recognize three territories of experience that include a subjective awareness of self in action; a relational awareness of collaborators and the creation of an AR team culture" (p. 36) and related tools, artifacts, etc., and have to pay attention to the systems' responses to the work of the AR team. All of these actions must be done while also reflecting on the process as well.

Action research projects and studies frequently include 'unexpected left turns,' or huge shifts in what the original plan might have been, as such adaptability is important. In the course of my AR study, the first worldwide pandemic in more than 100 years occurred, which was a little more than a left turn, but required me to be flexible. All doctoral studies require persistence, but perhaps AR studies require a little more persistence, as they require navigating so many moving parts. My study was conducted over the course of more than five years, which was partly due to my challenges in completing stages in the doctoral program, and partly based on the nature of the study. In my case, I was able to take breaks from the project and study and still continue, but other studies may not have the same flexibility. In addition, my relationship with members of my AR team also allowed for this flexibility in the project, as they were willing to engage with me after a break from working together.

## Results, Lessons Learned, and Insights from Building the CoP (Working Group)

In our theoretical framework, we identified inconsistent or limited connections between organizations and across states and loss of institutional knowledge and connections due to retirements as significant issues. The CoP was created to build social capital, and by doing so, increase connections, trust, social capital, and knowledge-sharing. Data from a survey of the CoP

members shows some support for increased trust, social capital, and knowledge-sharing within the CoP, and provide some insights into those theories in this context, which are described in greater detail below. CoPs are deemed to have a life cycle, that includes five stages: potential, coalescing, maturing, stewardship, and transformation (Wenger, Trayner, & DeLaat, 2011). This CoP could be considered to be just past the coalescing stage, wherein the CoP has been launched, has had regular activities and established value among its members, and in the beginning of the maturing stage, wherein there is greater trust amongst the members and a greater body of knowledge among those members. Therefore, results below are based on a CoP at the end of its coalescing stage and entering its maturing stage.

**Convening a Multi-Organization VCoP is Challenging in Multiple Ways**

There were challenges to hosting a virtual CoP that began with an in-person intervention. About half of the CoP survey evaluation respondents had attended the 2020 Summit; however, their responses were not statistically different from respondents who had not attended the summit. The main challenges in convening this type of CoP included: lack of time, no way to require anyone to attend, virtual meetings, state responsibilities, overlap with other groups, and the structure of meetings. There were some successes in the CoP as we found that the purpose of the group "creating more markets for forest products," with a focus on forest economic development was not a niche that any other group is filling, and it unites the members. In addition, competition did not emerge as a factor that limited knowledge-sharing in the CoP, though I will discuss that further below. Furthermore, this CoP was convened eight times over the course of 18 months, so the time scope was reasonable, but the amount of engagement within

this time scope, did not allow for the CoP to mature in its practices, though trust levels amongst CoP members were 4.6/5 from survey results, indicating high levels of trust.

### *No Ideal Way to Structure a Virtual CoP*

While we spent considerable time and effort to determine the best way to structure the VCoP, topics to cover, etc., there is no best way to structure VCoPs which is what (Dubé, Bourhis, and Jacob (2006) found. There are other factors which influence engagement in VCoPs that go beyond the control of the CoP leadership such as external support, and time (McLoughlin, Patel, O'Callaghan, and Reeves, 2018). Dube, Bourhis and Jacob (2006) created a typology of VCoPs and found that "diverse structuring characteristics lead to different strengths and challenges, which are best addressed by specific and contingent management practices," (p. 88). Lee-Kelley, Turner, and Ward (2014) present a case study similar to our study that delineates best practices that led to success for their CoP, though there are still factors that differ from this study.

### *Time is Not on Our Side: Time and Timing are Always Factors*

Results from the CoP survey reveal that time, or the timing of the meetings was the main limiting factor in participation in the CoP, which is similar to results from McLoughlin and others, (2018) and Haas and others (2021). All of the members of the CoP travel, to some degree, for their positions, and a few also teach. The constraints of other commitments and travel cannot be improved, no matter how the CoP schedule is changed. One survey respondent commented that timing has not enabled him to to attend the meetings, which echoes many other members' informal comments. In addition, AR team members and other CoP members also indicated in

meetings or via email that they could not attend due to a conflict. It is challenging to set a date and time for all or even most to meet. Lee-Kelley and Turner (2017) set up a successful CoP in a large, multi-national company that includes some of the complexities of this CoP (e.g., multiple units, worldwide, different time zones); however, the travel obligations of the CoP members are not discussed. Similar to our study, their CoP members were not required to attend, but while they are geographically distributed, they are also part of the same organization, unlike our CoP. In addition, although a listserv and google drive storage mechanism were set up and members were encouraged to use it, there has been no member engagement from that end. Hernandez-Soto and others (2021) described technical factors as a factor in VCoP success, in this case, the meeting software and the listserv are the only mechanisms for technical engagement, but do not seem to be limiting factors. Therefore, for the most part, this CoP is entirely synchronous. Members can view recordings of the meetings, and can be informed on the content, but that does not allow for further engagement.

### *We Built the CoP, but Economic Developers Without Strong Forestry Ties Did Not Come*

In the system intervention, (the Summit), ten economic developers attended (17% of participants) and their responses in the meeting evaluation were positive overall, as were their assessments of meeting summit objectives. All economic developers who had responded to the invitation to the summit were then invited to the CoP, but only economic developers with strong ties to forestry joined. Three of the twenty-two survey respondents indicated they were economic developers and all three were either located in an forestry agency or had worked in one for a large part of their career. Economic developers across organizations and states vary in their scopes of work, and their focus area. For example, in some states, there may be economic

developers assigned to a specific industry (like forestry), while in other states, an economic developer is assigned to a part of the state and will work with many different industries. Economic developers who work in many different focus areas, may not have the time to engage with a regional group only focused on forestry development. In interviews with AR team-members as we were forming the CoP, Fred said: "economic development is more abstract, it's not natural-resource based, its more financial and abstract." The economic developers that focus on forestry were likelier to join our CoP, and in survey results, the three economic developers that responded to the CoP survey, either had a forestry degree or were working for a forestry agency. In addition, in surveys with AR team members to inform the development of the CoP, Will mentioned the challenges related to attempting to integrate many different groups.

**Cross-Organizational Challenges and State Commitments**

When convening a CoP with members from multiple organizations, members cannot be 'required' to attend, and while they may want to attend, for most members, this is a "like-to," not a "have-to" attend situation. Most of the members are part of a state organization, and thus, their responsibilities at the state level will supersede engagement in the meetings. This does not mean that responsibilities would prohibit them from attending, but that their time is limited. Hernandez-Soto and others (2021) discussed how organizational factors influence participation in a VCoP. Members of this CoP have other groups or task forces, or projects that they are a part of, and while travel and other meetings pose conflicts for them attending those meetings, ultimately, they would be prioritized. CoP engagement, though, may not be a priority for most of the members. Even members with regional or national scope also face the same time conflicts, and so must prioritize their primary responsibilities and/or organizational commitments.

### *Most CoP Members Have Primarily State Responsibilities*

Most CoP members' responsibilities and priorities are focused on their state rather than the region. Everyone has some interest in the region, as they can learn from other states and they can share what they have done, but it may be more challenging to engage with a regional group rather than a state group. For example, state forestry agency personnel and economic developers must prioritize their state above all others, and that may create challenges for them to engage with a regional group. Therefore, a regional CoP is low on their list of priorities, whereas if there were a statewide CoP, they may be more motivated to engage. Though again, time and other responsibilities would factor in.

In data from the survey we conducted prior to launching the CoP, one respondent commented on the proposed structure and topic's and focused on the state connections:

> State forestry agency - state economic development agency connections need to happen at the individual state level but the foundational training will help facilitate that. State economic development summits can foster those connections and reveal opportunities to collaborate more closely on industry recruitment/expansion efforts. Forestry personnel also need to better understand how company recruitment incentives work in our state.

### *The CoP as Part of the Existing Network Ecosystem*

In southern forestry, there are many different organizations, societies, collaboratives and more that focus on increasing forestry markets to varying degrees. In planning and launching this CoP, the team and I were already aware of these other groups, because many of us are also part of them. For example, the main group from which this project emerged is the Southern Group of

State Foresters' (SGSF) Services, Utilization and Marketing (SUM) Committee. The original grant-funded project was a collaboration between members of the SUM committee, me, and another forestry economist. I am also a member of the SUM committee. The SUM committee develop and work together on regional projects related to utilization of forest resources and marketing of forestry and forest products that benefit multiple states. In this committee, which meets in person two times per year, and virtually a few times a year, they also share knowledge, but it's focus is related to, but not focused on forest economic development. The SUM committee has been established for more than a decade.

Another group, Keeping Forests' Collaborative is focused on conserving the 245 million acres of forest land across the southern region, through creating more markets for forest products. Forestry stakeholders may not use the same terms of conserving 245 million acres, but essentially it is what we all want- to keep forested land forested. While Keeping Forests has been around for nearly a decade, in spring of 2019, I was invited to join their collaborative, and was part of a system mapping exercise that they conducted. Through that system mapping exercise, one of their focuses for work is to 1. promote forest products, and 2. Create emerging markets, which are related to the CoP's purpose, but is a broader strategy. One of my AR team members has also joined the committee, at the behest of his organization. Another group, the International Society of Forest Resource Economists (ISFRE), includes many members that are also part of our CoP, though their primary focus is forestry economics, it is related to markets as well. ISFRE only truly meets in person annually, but it is another group that is operating in this sphere, though their membership is predominantly researchers. Wenger states that a community is formed not only by its members recognizing who the "insiders" are (Wenger 1999) but also through a recognition of the community from the outside. In this CoP, there is a common

purpose, but there is not strong recognition of a distinct community separate from the other overlapping groups.

There are other stakeholders that are members of the CoP, that also have other groups that they are a part of, that I do not know about. In addition, I do not know the groups that economic developers are part of, so I cannot say if the CoP overlaps with some of those groups. While we have made some connections with economic developers through the summit and have kept them in the list for the CoP, the primary focus has been what forestry stakeholders have been interested in or volunteered to share.

## Trust, Social Capital, and Knowledge-Sharing

### Trust, Social Capital, and Knowledge-Sharing Within a CoP in a Coalescing-Maturing Stage

As stated earlier, this CoP can be considered to be at the end of the coalescing stage/beginning of the maturing stage. For this study, we assessed whether the three forms of social capital were created in the CoP at these stages, as well as trust and knowledge-sharing. We defined trust as On survey results, scores on these different scales were all relatively high, ranging from 3.9 to 4.6 on a 5-point scale. The mean score for trust was the highest at 4.61 (SD 0.45), while SSC was the lowest score. From our survey results, it is clear that respondents felt trusting of others in the CoP, but we cannot say that the trust was generated through the CoP alone. Hernández-Soto and others (2021) state that trust can be established at multiple levels in a VCoP, including member- to member, member to manager, member to institution and trust from the member to the mechanism or channel used for knowledge exchange. Many of the CoP

members have known each other for a long time and have been in some of the other groups mentioned above. There are some members of the CoP who are new to the other members. For example, one member recently moved to the South, and I invited him, but he had never worked in this region before and indicated that I was the only one he knew before. With respect to KS, mean scores were 4.34 (TKS) and 4.03 (EKS), and thus relatively high on a 5-point scale as well, but again, that willingness to share knowledge cannot be attributed solely to the CoP. Only CSC was significantly correlated with EKS alone, which suggests that our shared purpose and vision were related to the willingness to share knowledge. Furthermore, Ganguly, et.al (2019) found significant links between RSC, CSC, and TKS, but they found no relationship between the structural characteristics of SC and TKS, which was the opposite of findings from Wasko and Faraj, (2005).

**Task Interdependence (Structural Social Capital) Influences Engagement and Knowledge-Sharing**

While the overall CoP that we created has had some success, the most effective VCoP has been the small, but steady AR team, who work primarily in a virtual space. When comparing the strong engagement in the AR team over the course of five years, there is significant evidence of the high value for members including outcomes, and the desire to continue.. However, it should be noted that our engagement began with a funded proposal, and thus a task. In addition, with the exception of two AR team-members who retired, the AR team has been consistent since 2020, where our subsequent work together has include launching and leading the CoP Han and colleagues, (2020) in a study of social capital and learning relationships through knowledge sharing, found there was a significant predictive relationship between SSC which they described

as task interdependence, and knowledge-sharing. SSC can also be considered the scaffolding of the network or CoP, or a configuration of the ties between people in the network. Overall, they found that an individual's perceptions that their task was interdependent with another person, meant that they were two times more likely to share knowledge than when they felt that they were friends and/or trusted the other person (Han et al., 2020). Furthermore, they recommended, based on their findings, that leaders and managers may want to arrange tasks or work responsibilities for employees or others that they want to share knowledge with each other in order to increase the level of task interdependence.

Since this work began with a proposal, the AR team's initial composition was collaborators on the proposal, though it grew from there. Our engagement in the first two years was starting the proposal and then planning for the Summit. Planning for the Summit generated its own energy and having the task to work on together generated engagement and commitment from the AR team, and in turn, created space for dialogue, and informal 'coffee,' talk. Given the challenges of convening a larger group of people virtually, with time constraints and numerous priorities, having a task to work on may be one of the best ways to generate engagement, though numbers are limited for these types of tasks too. It is hard to set up a meeting with a random group of people to start discussions. The VCoP is an example of this, and though there has been some traction, adding specific tasks to work on may be beneficial for increasing meeting engagement. The AR team would like to continue meeting, though there is no specific task that encompasses all of the team members, thus it may be that task interdependence is important for starting, but not as critical for maintaining a group's connections.

**Sharing a Common Purpose Increases Trust**

In McLoughlin and other's (2018) review of VcoPs, they found that increasing trust levels between members would also lead to better participation from members. In addition, Wenger's (2002) maturing stage of a CoP is defined by increased levels of trust among its members. McLoughlin and others (2018) also added that this is easier to do in person than virtually. They further stated that trust was more likely when members shared a common purpose. A CoP is defined by its purpose, domain, and community, which can be confusing when comparing it to elements of SC, as the domain in a COP is similar to CSC, which is often described as shared purpose. Our results show a significant relationship between CSC and trust. Among CoP members, attendees at the Summit and potential CoP members, there is a common purpose that unites- increasing markets for forest products. The CoP's activities all included a presentation or discussion that related to different aspects of markets for forest products, as did the AR team's ongoing discussions. While there are other issues that limit engagement and participation in the CoP, the purpose of it has never been questioned. Furthermore, in the AR team's final focus group, Owen summed up his perspective on trust and a shared purpose:

> First of all, I don't have any trust issues, problems, or concerns… we are basically based on our positions. We want to provide the best for our people and that means if I see something that is working in another state… I would be happy to learn from that, instead of trying to rebuild the wheel again, and likewise, share any information that I have from here in my state. Yes, we are pretty open and readily available to share what we have, because we have some of the same clientele, even though the needs, of course, and distances may be variable, but at the end of the day the main agenda is the same, and that is basically development through the forest sector.

Strong commitment to the shared goal of forest economic development has been a strong driver of the AR teams' work together as well as the CoP's purpose. In addition, Peter also discussed trust and our work together in terms of shared purpose:

> We work together on projects and to see where we can, help each other out on those issues. there's no easy answer to any of that. They're all complex issues. But that's just some that I've seen as the real challenges. I mean, region-wide for forestry and the forest industry throughout the South.

There was a sentiment expressed among the AR team, and among CoP members that the challenges across the region are shared, and we have a shared purpose of increasing markets for forest products, and those common challenges and purpose contribute towards trust.

**Industry Type Affects Trust and Knowledge Sharing**

Beyond shared purpose, Ganguly, et al. (2019) stated that the type of industry affects trust and knowledge-sharing. While the shared purpose in the CoP is important for trust and engagement, this correlation may also be attributed to industry When conducting the final focus group interview with my AR team, I asked them if they trusted other members of the forestry community and were willing to share knowledge, the consensus among the group was that they trusted people in forestry. One member (Allen) said, "So, I'm looking at people in this group. I think I trust everybody here. I think I trusted them before." In addition, Fred stated, "It really has been since the beginning of working with this group [trust]." While this focus group was a small number of people, and the AR team who have built considerable trust among themselves, their responses suggest that there is an industry effect for trust. In addition, throughout the focus

group, one of the major repeating themes was the common purpose and shared goals among the AR team and forestry professionals in general.

### *Industry Effects Related to Common Purpose, Trust, and Knowledge-Sharing*

In the final focus group, trust was coded only 13 times, though the word was mentioned 26 times in the course of the interview and the AR team discussed trust as a non-issue – it was clear that there was strong trust among the group. Another coding theme was shared purpose or common motivation, which was frequently mentioned in the interview, and aligns with findings from the CoP survey data. With respect to shared purpose and engagement versus other industries, Fred said:

> Again, I've rolled out of this real competitive nature of economic development, and it's such a relief to work with professionals and forest resource professionals who really have an interest in so many different clients and stakeholders. And I think that may be part of the difference in our profession. In marketing and economic development and what you're doing, and how everyone cares about it how we take this forward or how do we add another link in the chain, and even do a better job at it and do something different or new.

In a study focused on studying engagement in VCoPs, Haas, Abonneau, Borzillo, and Guillaume (2021) found a strong correlation between job engagement and VCoP engagement. They cited numerous definitions for job engagement but focused on ones that relate to physical, emotional, and cognitive dimensions, as well as the degree to which a person is invested in the fulfillment of their role. Furthermore, they linked job engagement to motivation. In addition, Bhatti, Vorobyev, Zakariya, and Christofi (2021) found that job meaningfulness is a mediator in the link between

SC (at an organizational level) and knowledge-sharing behaviors. They further recommend that managers should improve employees' perceptions of their jobs' meaningfulness which in turn increases their organizational SC and then knowledge-sharing.

### *The Happiest, Most Meaningful and Least-Stressed Industry*

The United States Bureau of Labor Statistics produces a survey and report on "American Time Use" on a regular basis (https://www.bls.gov/tus/). In four of the most recent surveys, the Bureau expanded the survey to ask a subset of those surveyed to rank how meaningful the activities for the time use survey were, and to self-report how happy, sad, stressed, pained, or tired they felt on a six-point scale from 0 (low) to 6 (high; Van Dam, 2023). Analyses of these data and interviews with individuals in the forestry and logging industry (including me) were written up in an article in the *Washington Post* newspaper (Van Dam, 2023). Results from the survey ranked by industry showed that respondents from the agriculture, logging and forestry industries were the happiest, found the most meaning in their work and were the least stressed across all industries surveyed (Van Dam, 2023). Perceptions of meaningfulness of work and happiness at work can be connected to job engagement as well, as trust and feelings of common purpose. Therefore, it can be posited that those in the forest industry, which is ranked most meaningful and happiest of industries, may be more engaged in a common purpose and more willing to trust and share knowledge.

I was interviewed for the article about the survey results in December 2022, and am quoted in the article in the newspaper article. As I've analyzed data for my dissertation, I have reflected considerably on the summary of this article in relation to studying trust among a group of foresters and other stakeholders. This study was not about the correlation between meaningful

work and trust and knowledge-sharing; however, I think the connection offers some insights into the results from my study. Since I was interviewed for that article, and as I have analyzed my data, these ideas have been the background landscape to my reflections. People in the forestry industry are passionate about trees.

**Competition Among Organizations Can be a Factor in Trust and Knowledge-Sharing**

When discussing trust in our AR team focus group, member Owen stated that our shared purpose and common stakeholders drives our trust, though he also brought up an interesting point about what drives mistrust and impedes knowledge sharing:

> But we have to ask ourselves, what really brings this trust in? Is this group learning from each other, sharing information? But mistrust is perpetrated where people are kind of competing. So, you want to have an advantage over the other person. And I don't think that is a concern for us here.

While there is a strong shared purpose and common stakeholders across members of the AR team and CoP, they are members of different organizations and states. Ultimately, anyone with a state responsibility must adhere to what is best for the state. Owen mentioned that competing against one another can lead to mistrust, but competition in this situation can be examined at multiple levels.

In the focus group, and in previous interviews, AR team members discussed how there is competition among states for forestry economic development, but that knowledge-sharing would not necessarily affect this competition either. They have described how a mill might be expanded or built in one state, but depending on location, it can still draw wood from another adjacent state. Effectively, a particular radius around a mill, that is a reasonable distance, is the boundary

for wood procurement for the mill, and not the state boundaries! Allen discussed this idea of competition and knowledge-sharing, saying:

> I wanted to just respond to something, Owen said, you mentioned that we're all from competing states, but I haven't sensed that anybody has held back. Even though we do somewhat compete. But on that, just recently we've lost two paper mills in my state. And when looking at the data, the [Springfield] mill got wood from seven different states, and the two other mills got wood from three states. So, the wood markets are such that we really, I think, should support each other. And it's not so much whether the mill goes in one state or the other, because the wood basket covers a much bigger area. So, I think we've been very open with what we've said [knowledge-shared].

While members of the AR Team have openly shared knowledge, ideas and more, we are a small group that have built considerable trust and social capital among each other. In our AR team, we have shared goals, and perceive that the factors that drive competition against each other are limited by factors beyond the scope of us to change. At the small AR team level, though, it is easier to share knowledge and confer, but beyond our AR team, there may be more challenges, due to position or in deference to perception that sharing knowledge would let the competition in on state or organizational secrets. Essentially, a leader of a state organization, must always be perceived as advocating for that state primarily, and must be careful that they are not perceived as being neutral or sharing secrets that would help their competitors.

### *Competition in Forestry Economic Development: It's a Supply Chain Thing*

As compared to other industries, such as the automotive sector or a soap factory for

example, forestry is dependent on the distance to the natural resource, as whole trees cannot be trucked very far without reducing profits considerably. According to Fred and other AR members, ultimately, forestry economic development is

> a supply chain competition. It's a competition of capital (which is more on the private side), it's a competition for workforce. But those can be in any one of our states, and the development is ultimately predicated on and starts with a positive growth to drain.

A positive growth-to-drain ratio refers to the number of trees available overall (growth) as compared to the number of trees harvested (drain), thus the type and supply of trees available will be a significant factor in where a mill is sited or expands. Essentially, if you don't have the right wood or enough of the right wood, then a site will be taken off the list, and these are not factors that someone can change easily, as growing new or more trees take decades. Fred added more information about the supply chain in relation to site selection and then his perception of benefits from a new or expanded mill in his state versus adjacent to his state:

> I think that's true, the supply chain is the dominant factor in site selection, because, when we look at something that occurs in a state adjacent to us that is going to use more timber. We say, gosh! That would have been great if that could have been in our state. But for whatever reason they didn't choose us. But we're going to benefit from that. Our loggers are going to benefit from that. Our service tax is going to benefit from that. So, it's not just a win for them or a loss for us. There's always some goodness that comes out of that. I think that's the interesting part about our business, is there's not always just a winner and a loser, and I think that's the good part.

While this was the consensus perspective among the AR team, they indicated that they did not think that this was a perspective within the economic developer community.

### *Economic Developers are Hyper-Competitive*

In contrast, when not constrained by the availability and distance to a natural resource, then there are many other factors related to economic development that enforce the competition between and sometimes within states. During the AR team's focus group, Allen asked Fred, "Do you think that this conversation would be as open if this was a panel of people from our respective departments of commerce?" and Fred stated:

> My gut answer would be no because they are so competitive. It [economic development] is predicated on incentives and competition for capital investment. It is a win-win, pure competition like saying we've got the best Friday night football team.

In critical incident interviews held in 2019, AR team members and U&M state agency foresters Allen and Will reflected on the frustration and difficulties they faced in working with economic developers within their own states, due to confidentiality clauses, and intense competition. They stated that frequently they were asked to provide information to economic developers while only knowing part of the story, which made it more challenging for them to provide the right information. They further indicated that when they were let into the process earlier or given all of the information that they felt that they were able to be much more helpful and had increased the chances for a successful outcome. Thus, competition is not just between states, but also within states and this competition partly drives the lack of trust and knowledge sharing between economic developers and others. While confidentiality clauses or the need to be quiet about potential businesses is important, economic developers could be more open with forestry personnel. For them to be willing to trust and share knowledge with their forestry colleagues, connections and relationships must be built. The goal of the CoP was to create an opportunity for

economic developers to engage more with forestry stakeholders, and to build those connections and trust. As stated earlier, while there has only been limited involvement from economic developers in the CoP, future in-person events may change that.

**Cross-Boundary Knowledge-Sharing Leads to Positive Outcomes and Innovations**

In our final hypothesis, we posited that engagement and learning in a multi-organization CoP would positively affect the initiation of innovative approaches to working together and positive outcomes. At individual, group, and system levels, there were new developments and tangible outcomes that confirmed these findings (Table 4.2). For example, at the individual level, there was evidence for learning, knowledge-sharing, and thinking differently from multiple types of data including multiple interviews, focus groups, and in survey data. At the group level, there was also learning, new connections, and continuing additions to the CoP. One of the most striking outcomes at the system level from this project and study was a new awareness of the importance of greater connections to economic developers, the importance of communicating forestry economic data, and a need for better knowledge-transfer mechanisms, especially for intergenerational knowledge transfer. Ganguly, Talukdar, and Chatterjee (2019) found that the quality of knowledge shared and TKS were positively connected to the capability for innovation.

**Table 4.2.**

*Summary of this Project's Novel Outcomes at the Individual, Group, and Systems Levels*

| Level | Novel outcomes | Evidence | Supporting Quotes |
|---|---|---|---|
| Individual | • Learning<br>• Thinking differently<br>• Extensive knowledge-sharing<br>• New approach to work | • AR team members confirmed adapting their forest economic development techniques based on information from other states<br>• Sharing knowledge on procedures & ways of doing things across the AR team | • *"We are seeing things that work well, that are done by others, not to steal, but again to avoid reinventing wheels that are rolling just fine."* |
| Group | • Learning<br>• Connections<br>• Continuing additions to the CoP | • Continuation of this group<br>• AR team member joined another forest products collaborative<br>• Wrote funded proposal for forest economic development training in-person for some members<br>• Obtained funding to update important tool for advertising forest products, based on understanding of its importance by the group | • *"I think probably monthly meetings would be good again. Just to bounce ideas off each other and continue to learn, Learn from each other. I think that would be beneficial." (AR team)*<br>• *"That primary wood using directory. Oh, my gosh! You know the baseline of having that updated for every state. It's so important."* |
| System | • New awareness about economic developers & their impact on system<br>• New ways of communicating forest economic input data | • Report from summit with a list of recommendations to act on<br>• Training on Economic Development for U&M Foresters<br>• Forest Economic Development Website Created for one state- idea came from summit, proposal for regional website | • *"I think it'd be a good opportunity to see what their interest [SECD] would be, and see if we could at least, attend one of their meetings, present our case, forestry's case of the southeast and see what kind of interest there is."* |

| | | | |
|---|---|---|---|
| | • Awareness of need for more knowledge-sharing | • Collaboration on innovative forest economic factsheets<br>• Planned webinar series on forest economic development for a wide audience<br>• Ongoing attempts to engage with Southern Economic Development Council (regional)<br>• Greater awareness at state levels, within organizations, about connections to economic developers | |

## Conclusions and Recommendations for Multi-Organizational VCoPs

CoPs all contain the same elements, but differ in their practices, purposes, and domains, and also differ in their levels of complexity. The concept of a CoP, which was first proposed in the late 1990's, was based on situated learning and on the ancient concept of apprenticeship. In the twenty-plus years since its introduction to the literature, the application of CoPs has exploded, concurrent with rapid developments in technology that allow people from multiple locations to meet in a virtual space. Despite its widespread usage, there is still a need to better understand CoPs in multiple settings. The CoP in this study was especially complex, as it included multiple organizations across multiple states and members with different occupations; however, findings from the study confirm findings from other studies in similarly complex systems. Leadership teams or brokers are needed for the CoP's creation, coalescing, and maintenance. If no one is in charge, then it will not work. While a CoP may be held mostly in a virtual space, creating opportunities for face-to-face interactions are important to build the CoP, engage members and maintain connections. Lastly, as retirements continue in public agencies, the need for knowledge-sharing mechanisms within and across organizations will increase in importance, and there must be engagement at multiple levels of an organization to increase the chances of success.

### CoPs Need a Leadership Team or Broker to Keep them Moving Forward

While the original concept of a CoP proposed by Wenger (1998) defines them as self-managed, subsequent studies, including Wenger (2015) have not asserted that they should be self-organizing. In other studies, on CoPs, virtual or not, the need for a leadership team or a convener for the CoP are mentioned (Blackman, 2018; Lee-Kelley, Turner & Ward, 2018; Smith, Kempster, & Wenger-Trayner, 2019). Another comment from the summit evaluation summarized where the struggles are in moving forward in the CoP:

> The meeting was great, it is the next steps that are important. How do we get this to a coordinated effort of actions and not everyone going back to doing their own thing or another paper collecting dust? Everyone is very busy. Need to find a person(s) that can dedicate significant focused time on this effort.

While the AR team was the general leaders for the CoP, they did not have capacity to organize operations, which I did. However, my time is also limited, as leading this CoP is only one of my many projects. When we first started this project, the work was part of a funded proposal, which finished a long time ago, which has made it more a challenge to continue with launching and management of the CoP. In the CoP that Materia, Giare, and Klerkx (2015) studied, government funding was provided to a project team to create and manage the CoP. Having dedicated staff or at least staff time assigned to a team to create these mechanisms would be very helpful. While the CoP in this study is not the same scope as Materia, Giare and Klerkx (2015) CoP, it can make a significant difference to have either funding or specific job responsibilities dedicated to the management of the CoP. For this CoP though, there is an opportunity to change the leadership team, to bring new energy to the group. In the final survey of the CoP for this study, respondents were asked if they would be interested in helping to lead the group and there were five people interested, which is promising.

**More Face-to-Face Interactions Needed**

In a study of an intentional CoP (or series of CoPs) implemented to increase knowledge flows between agricultural researchers and producers, their VCoP was successful, but they found that virtual interaction was not sufficient for engagement (Materia et al., 2015). Materia et al. (2015) used the Moodle learning management system platform with e-learning modules for participants (divided by topics). These modules included information that was deemed useful for all participants as well as information that was targeted towards specific communities and they

included a chat and forum that participants could actively exchange information, discover research results and so on. The paper does not mention if these modules were synchronous or asynchronous, nor does it mention if there were additional virtual synchronous meetings, though it does mention in-person meetings. They found that it was an iterative process to build the CoP and that there was a mutually reinforcing relationship between face-to-face engagement and virtual engagement. In our CoP, interactions were synchronous via Zoom software, and there were technical tools for asynchronous interaction, but they were not used. Ganguly, et al. (2019), citing Abram, et al. (2003) emphasized that advanced technology supports creation of effective knowledge management systems in an organization, but it cannot replace the process of social interactions among its employees as the primary means of knowledge creation and transfer. While information and technology tools can be helpful towards maintaining engagement in CoP's, the connections and relationships need to be built first, in order to motivate engagement with the tools. In interviews with AR team members before the CoP was launched, Thomas stated:

> I think that for the for the time being we're probably going to have to do this, but just like AT was saying, I agree, and I just really prefer if we could have in person meetings, face to face meeting because you can just network a lot better with people every it's just hard to connect virtually. I mean you can just sit down and talk in-person meetings, it's different when you're doing a virtual and have all these people, all, all together, like that virtually, it's just not the same.

The 2020 summit was a face-to-face interaction, and half of respondents to the CoP survey had attended the summit. As we were planning for the CoP, in an interview, Peter commented:

> I felt that the Economic Summit was the icebreaker. And a pretty significant step in the right direction and with you putting together this committee to further that initiative I think it's definitely a step in the right direction

However, it has been three years since that "icebreaker" summit now and there are new members of the VCoP that were not present at that meeting, therefore, a similar meeting or other opportunity for face-to-face interaction on this topic may be helpful for supporting continuation of the VCoP as Materia and others found (2015). In addition, in an evaluation of the 2020 Summit, 87% of respondents said that they would attend a similar meeting again, and the remaining 13% said they may attend a similar type of meeting (n=30). Respondents were also asked about the frequency of similar meetings in an open-ended question and answers ranged from annually to bi-annually. However, overall, there was interest in repeating the summit as an in-person event, and the summit's goals were aligned with the CoP's purpose.

One of the goals of the CoP was to create a space for "thinking together, which Pyrko and others (2017) argue is the way that CoPs mature and come to life. McDermott (2000) has stated that sharing tacit knowledge is a form of thinking together and a means for making discoveries along the way. Furthermore, TKS is more than answering questions, but a process where people work to understand the problem from the experience of the person with that problem, and then share the knowledge that best suits the problem (McDermott, 2000). Gilbertson, (2022) in an action research study creating learning communities described how creating a casual space for knowledge sharing and dialogue in a learning community or otherwise, can be critical and transformative, respectively. But creating this type of space virtually is a challenge.

When the summit was held in 2020, participants were excited about the discoveries and what could be done next. Comments on the summit evaluation included: "Good meeting in general. Let us form a permanent group out of this meeting that can spearhead the agenda for what this meeting focused on." Will, an AR team-member, commented:

> We brought together a lot of diverse groups., when you bring people together, you don't know how much buy-in they have. But it seems like the overall conference or summit that

we had. It was quite successful, and I feel like we had a lot of momentum going, and I think we all can gain a lot in the future and hopefully continue on.

The VCoP has been an attempt to create this permanent group, but these comments serve as a reminder of the energy and enthusiasm generated by the in-person event, thus, hosting another meeting like the summit, or a series of state-wide meetings may be a way to complement virtual interactions. Materia, et. al (2015)'s conclusions emphasized that "complementary non-virtual settings are crucial (p. 214) to motivating interaction in the virtual arena and for knowledge-sharing, which is similar to our findings.

Because planning an in-person meeting of this type is time-consuming, more leaders are needed to work on this. There have been a few people who mentioned interest in this, but an updated CoP leadership team may be able to work on this effort. One summit attendee hosted a meeting for a society of forest resource economists a few months ago, and there were discussions and intentions to introduce elements of the 2020 summit into this economist meeting. But the meetings were too difficult to intermix, as the existing meeting is already limited for time. Therefore, planning for a stand-alone or series of stand-alone meetings would work best.

**Multi-Tiered Connections are Critical to Create Lasting Knowledge Transfer Across Organizations**

After we began this project and this study, and through the AR process of constructing, we discovered that our main problem was loss of connections between forestry stakeholders and economic developers as well as loss of institutional knowledge and connections due to retirements. Two of my AR team members have retired since we started this project, one last year and one this past month, but these retirements within our small group echo what is happening at a larger institutional level. In addition to retirements, years of budget cuts has meant that state forestry agencies which used to be much bigger have shrunk in staff size. Therefore, each

retirement has more of an impact on the organization. Will, one of the AR team members, who recently retired, shared that when he worked at his state's forestry agency:

> There was only me dedicated to the agency's effort [in this issue] along with a few working partners. But we're all at different staffing levels, and it was really valuable to me to build up the networks and have the opportunity to learn.

Therefore, before his retirement, it was only him! Lack of multi-tiered connections among these agencies was identified as a key problem, because if connections are only 1:1, then those connections are lost when someone leaves their position.

In addition to retirements, there are also shifts in generational traits and perspectives, for example, Rupčić, (2018) discusses how the current workplace includes a mixture of generations that reflect different focis, approaches and communication styles. The Baby Boomer generation (born approximately 1946 to 1964) are retiring at a fast rate, and the large size of that generation has meant that they were the most numerous generations at many organizations, thus leaving many holes. Of the other three generations in the workplace now, (Rupčić, 2018) characterizes Generation X (born between 1965-1980) as being focused on the job description, acting in a predominantly grounded manner, and focused on long-term, systems approach with an emphasis on details. They describe Generation Y-ers or Millennials (born between 1981-1996) as being more focused on the context of the job and its relations and connectivity and characterized as having a more short-term fragmented approach. While these are typologies that are not applicable to all members of a particular generation, this paper highlights that younger generations are less likely to stay within an organization long-term, and thus that systems need to be put in place to encourage knowledge-sharing while recognizing that it will be an ongoing process. Furthermore, they recommend a CoP as a desirable environment for encouraging learning agility, training, and knowledge-sharing.

Our AR team's solution to these challenges has been an in-person intervention (the Summit) and creation of a virtual Community of Practice for forestry stakeholders and economic developers so that they could learn from each other both within their discipline and across disciplines. However, while this issue is important and has merit and interest, there are many groups that involve many similar types of people that overlap with this group. Therefore, between the existing groups and networks, and members' own individual priorities and time constraints, attendance has been minimal from forestry stakeholders and minimal with respect to economic developers. Essentially, a virtual CoP, has been moderately successful. There is still potential to strengthen this VCoP and to build more connections, while there is also a need for a new focus, and new inducements to engage.

The VCoP includes members at multiple levels within organizations, but there has also been limited engagement. Creating more opportunities for face-to-face interactions could strengthen the connections among these stakeholders and could motivate greater engagement in the VCoP. Hosting face-to-face meetings at the state rather than the regional level should be considered, as there is likelier to be greater engagement (and less travel time) for stakeholders to meet within their states, and thus to create more connections across multiple organizational levels. Repeating the regional summit would be also beneficial, as it has been more than three years since the first one; however, the AR team and I do not have the capacity to plan one right now. It is my hope that continuing the CoP, even with a small membership and a new leadership team, will lead to others taking on this task.

## Implications for Future Research, Theory Development, and Practice

This study makes an important contribution to several different areas of research, including action research studies, Community of Practice, social capital, and knowledge-sharing theories. In

addition, results from this study can inform other systems that are grappling with wicked challenges, shrinking organizations and loss of institutional knowledge.

**Limitations of this Study**

Future areas for research that may build or expand on this study's findings could focus on a number of areas. The sample size for this study was small, as is common with action research studies and results from quantitative data for this study suggest trends related to this population. However, focusing on a system or a series of related systems that include a much larger sample size would provide more valid results for future research. This study encompassed an area that includes thirteen different states, and so geographically, it was a very large study area, but the population of interest within that study area was small. This study included members from multiple organizations from across the southern region. Nonetheless, studies that focus on creating a CoP or VCoP with multiple organizations from a smaller geographic area or within a state would be valuable. For example, as mentioned above, economic developers from within a state work on many different issues and work on different territories from city, county, to region of a state and state-wide. Given the issues with retirements across these agencies, a statewide CoP or VCoP may be valuable for the agencies themselves, but also insightful for a study. Other studies focused on VCoP's have been situated in industries where there is significant competition, but many of them included membership from the same organization (Lee-Kelley, et.al 2018). However, a study of a VCoP in a competitive industry where there are members of multiple competing organizations would be of great interest (though hard to do). In addition to studies focused on VCoPs, this study suggests a strong relationship between shared purpose/ meaningfulness and trust in organizations and this relationship could be explored in greater detail in the forestry industry and across other industries as well. Lastly, task interdependence emerged

as an interesting factor in participation, social capital, and knowledge-sharing in VCoPs and is worth exploring in greater detail in other settings.

**Table 4.3.**

*Recommendations for Theory, Research and Practice*

| Implications for Theory and Research | Implications for Practice |
|---|---|
| Combined face-to-face and virtual CoPs convened across geographic and organizational boundaries should be studied in additional systems and with larger sample sizes | With sustained reductions in natural resource agencies' workforces and more impending retirements, public sector organizations need to prioritize cross-organizational connections learning communities so that people in similar positions from different organizations can learn from each other |
| Further research related to job engagement; industry type; meaningfulness; social capital; and knowledge-sharing would be beneficial to understanding knowledge-sharing and trust in multi-organization CoPs | Forestry organizations should implement similar working groups at the state level, as well as connecting to economic development organizations at the regional, state, and local levels |
| More action research studies that are situated in natural resource systems are needed | Forestry and natural resource organizations and related partners addressing complex systemwide challenges would benefit from an action research approach |
| Mechanisms for creating opportunities for more boundary-spanning, as well as the conditions that enable them, across organizations and disciplines should be elucidated further in more research. | Forestry and natural resource organization leaders should develop tools and seek training that encourages individual boundary spanners in their organizations, as well as their own boundary-spanning competencies. |

## Recommendations for Theory and Research, and Study Limitations

### *Recommendation 1: Combined face-to-face and virtual CoPs convened across geographic and organizational boundaries should be studied in additional systems and with larger sample sizes*

Results from this study support some of the findings of studies of VCoPs, focused on equally complex systems, that in some cases were part of the same organization, but spread out globally (Lee-Kelley, Turner, & Ward, 2015), or across the country (Blackman, 2018), and other VCoPs focused in one industry, but different organizations (Ji et al., 2017). This study was limited, though, by a much smaller sample size and fewer resources. For example, in the studies from Lee-Kelley and others (2015), as well as Blackman (2018), those CoPs had dedicated personnel tasked with managing the VCoP, which increased their efficacy, though they also had larger populations who could be involved in the VCoP and who were studied.

This study included members from multiple organizations from across the southern region, which is a large geographic area, but relatively small population size (for this particular CoP purpose); however, studies that focus on creating a CoP or VCoP with multiple organizations from a smaller geographic area or within a state would be valuable. For example, as mentioned above, economic developers from within a state work on many different issues and work on different territories from city, county, to region of a state and state-wide. Given the issues with retirements across these agencies, a statewide CoP or VCoP may be valuable for the agencies themselves, but also insightful for a study. While the sample size for this study's particular focus area was relatively small, there are numerous task forces, or teams or potential collaborations that are also multi-organizational, multi-state and with multiple expertise areas can be found. Therefore, future areas for research that may build or expand on this study's findings could focus on a number of areas. It would be worthwhile to conduct a study of multiple VCoP's, with similar types of configurations in order to obtain a larger sample size.

In addition, since this VCoP was connected to the in-person Summit, where connections were first made, it has some properties of a combined face-to-face and virtual CoP. Materia and others (2015) study of a combined virtual and in-person CoP found that the in-person interactions were strong motivators for continued or initiated VCoP participation. They concluded that their study offered clear theoretical implications that link to earlier studies showing that development of a VCoP is "an iterative, cyclical and mutually reinforcing process in which virtual and non-virtual interaction complements each other" (Materia, et al., 2018, p. 215). Future studies that focus on the mechanisms, social capital and knowledge sharing generated in combined face-to-face and VCoP would be beneficial.

***Recommendation 2: Further research related to job engagement, industry type, meaningfulness, social capital, and knowledge-sharing would be beneficial to understanding knowledge-sharing and trust in multi-organization CoPs***

Themes of strong trust, a willingness to share knowledge, shared purpose and evidence of stronger social capital emerged from this study. The AR team, in this study, ended up as the strongest VCoP, due to length of time working together, task interdependence and many face-to-face interactions in addition to our virtual planning. Data from the final focus group with the AR team, indicated how strong trust is between the team members and their willingness to share knowledge with each other. However, in the survey results from CoP members (which also included some AR team members), there were still high levels of trust, social capital, and willingness to share knowledge. These results should be taken with a note of caution: there were only 24 survey respondents out of a population size of 60; and, among those respondents, the majority attended four or fewer meetings. Therefore, these positive results cannot necessarily be due to the VCoP alone. In addition, only half of survey respondents had attended the Summit. Evidence from the focus group suggests that forestry is a trusting industry overall, and so, industry

may have had more of an effect on these results than the CoP itself. Zhang et al., (2020) links work meaningfulness as having a positive effect on knowledge sharing behavior. Work meaningfulness is summarized as the degree to which an employee feels that their job is significant and positive, and that their work is valued and considered as important (Bhatti; Vorobyev; Zakariya; & Christofi, 2020). Bhatti et al. (2020) found a significant link between job meaningfulness, organizational social capital, and knowledge sharing. Forestry is ranked as the most meaningful profession according to a U.S. Bureau of Labor Statistics survey (Van Dam, 2023), and that may have impacted trust and knowledge-sharing behavior in this study. Conversely, if more economic developers had been part of this VCoP and study, there may not have been as much trust and willingness to share knowledge because their industry is much more competitive. Therefore, future studies that explore multi-organization CoPs (virtual and face-to-face) should consider also studying job meaningfulness, engagement, and industry type in relation to social capital and knowledge-sharing.

Other studies focused on VCoP's have been situated in industries where there is significant competition, but many of them included membership from the same organization (Lee-Kelley, et.al 2018); however, a study of a VCoP in a competitive industry where there are members of multiple competing organizations would be of great interest (though hard to do). In addition to studies focused on VCoPs, this study suggests a strong relationship between shared purpose/ meaningfulness and trust in organizations and this relationship could be explored in greater detail in the forestry industry and across other industries as well. Task interdependence emerged as an interesting factor in participation, social capital, and knowledge-sharing in VCoPs and is worth exploring in greater detail in other settings. Lastly, Nicolini; Pyrko; Omidvar; and Spanellis (2022) proposed that more research is needed on CoPs and identity, specifically personal and work identities, and how those might interact in CoP membership. They further discuss that work identity is not set but evolves as the person experiments in their new roles. Work identity, job

engagement, industry and meaningfulness are all different concepts, but they are connected, and each may affect how or if a member engages in a CoP or VCoP.

### *Recommendation 3: More action research studies that are situated in natural resource systems are needed*

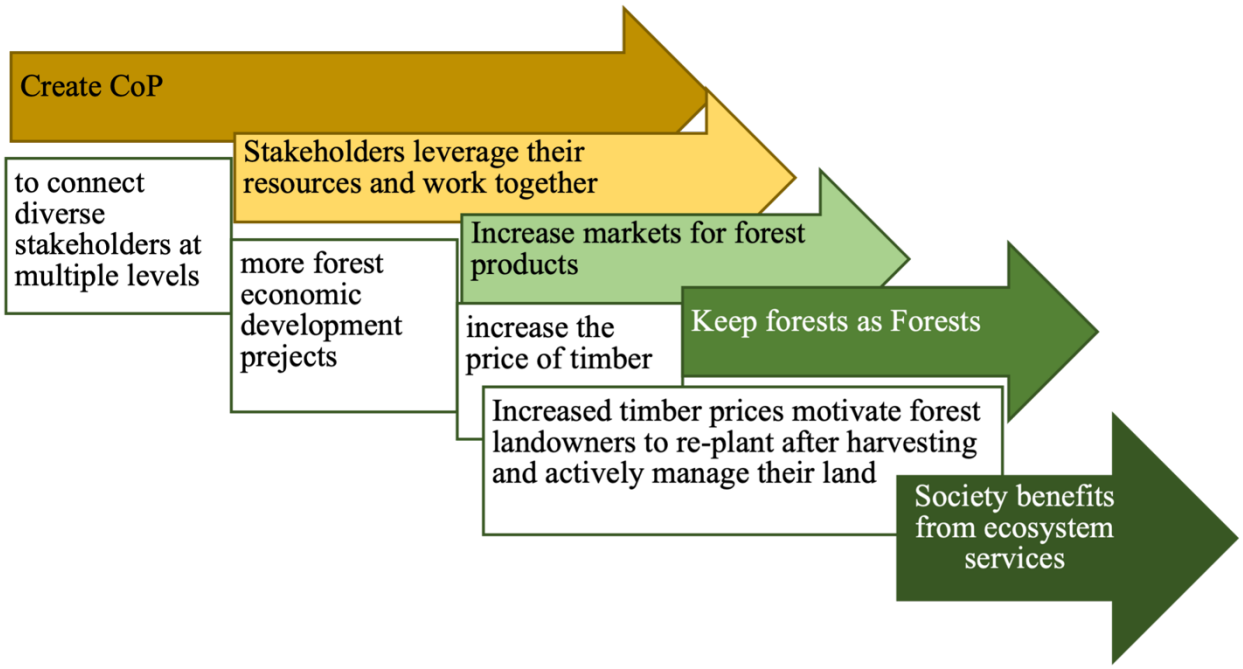
Forestry and natural resource systems are facing volatile; unpredictable; complex; and ambiguous (VUCA) challenges that would benefit from the timeliness of action research (Watkins, et al., 2023). There are few to no action research studies that focus on forestry and/or natural resource issues. I include the term natural resources, because while forestry is the focus of this study, it is part of a larger body of natural resources. Natural resources are finite, yet their management has not been valued as appropriately as they should be. Essentially, natural resources are taken for granted by the general populations, and seen as items to be extracted, for the most part. Our planet's natural resources are complex systems by themselves, studied by numerous scientists and affected by multiple factors outside of human involvement. But as it is impossible to separate management of natural resources from human systems, a common adage among natural resource professionals is that natural resource management is human management.

Action research, which has a great degree of complementary to complexity theory, is "emergent, adaptive, highly interdependent and interactive," and a great tool for tackling these wicked problems. Natural resource challenges and their complexity cannot be reduced and there is a need for transformative responses that account for impacts to the whole system (Watkins, et al., 2023). This AR study focused on developing organizational solutions to a specific challenge that relates to development of markets for forestry products, by creating connections and knowledge-sharing among different stakeholders. The interventions to the system were focused on multiple levels within and between organizations. But the ultimate goal of the project is to create more markets for forest products in order to increase the value of trees being grown on private

lands, in order to create greater motivation for landowners to keep their forested lands as forest (Figure 4.3). Keeping lands forested benefits non-forest landowners and other citizens as the forests continue to provide ecosystem services, such as clean water, wildlife habitat, and more. Therefore, this study is an example of how an action research approach could be applied to solve other VUCA challenges in natural resource systems.

**Figure 4.3.**

*Connecting an Organizational Challenge to the Natural Resource Challenge and Societal Benefits*




**Recommendation 4: Mechanisms for creating opportunities for more boundary-spanning, as well as the conditions that enable them, across organizations and disciplines should be elucidated further in more research**

When a boundary spanner with different disciplinary knowledge and experience joined the AR team, the project's focus, diagnosis of the problem and proposed solutions improved drastically. However, there was a degree of serendipity to this addition. While there were existing boundary-spanning mechanisms in place, such as the Southern Group of State Foresters, and my own organization, they consist of members of the same discipline. Other studies on boundary spanning have discussed the importance of boundary spanners within an organization, that can

bridge the gap between disciplines, but more research is needed on how to connect to boundary spanners from other organizations and disciplines in a more systematic way. Woo and Myers (2020) identify the critical boundary spanning skills that in-house communication specialists in public sector organizations develop and practice in order to be successful at their jobs. Since their role is communication, they must learn enough about each area within an organization in order to sufficiently communicate information from that unit. Information from this study and how these communication professionals were able to be successful could be studied in other organizations, but perhaps with a focus on boundary spanners that are not in communications.

In this study, an individual boundary spanner with expertise in two different areas, changed the course of the project and the research. Van Meerkek and Edelenbos (2018) delineated four areas of boundary spanning activities: relational (connecting with stakeholders); mediation and facilitation (building consensus and engaging with partners); information exchange and knowledge-sharing (knowing where to collect the information; how to get it; who to tell; and how to distill it); and coordination and negotiation (coordinating cross-boundary activities and processes). In a study of boundary spanning by public project managers with private consultants or organizations, Satheesh and others, (2023) used this framework to assess boundary spanning activities among public-private sector partnerships and the impacts they had on the collaboration and how well the project ended up. They found that in order to achieve high project performance, there must be collaboration among the public-private partners, and this can only be achieved through successful boundary spanning. While this AR study did not include measures of boundary spanning among group members, by virtue of the project including people from across different organizations and knowledge areas, boundary spanners were critical to its success.

Satheesh and others (2023) suggest that further investigations into boundary spanners should focus on the antecedents including interpersonal skills, project characteristics, trust-building mechanisms, or cultural differences that facilitate boundary spanning. Furthermore,

Buick and others (2019), in a chapter about future public service sector employees and boundary crossing, stated that cultural integration was not critical for successful boundary-crossing activities. Instead, they proposed that "the twenty first century public service should focus on establishing the supportive architecture required for enabling boundary spanning," which includes three key elements: "human resource practices, leadership, and middle management support" (Buick, et al., 2019, p. 34). Essentially, they argue that boundary spanners need to perceive that they have organizational support, and also have actual practical assistance so that they can do their jobs and work across boundaries. Thus, future studies might examine these three elements within an organization in addition to studying social capital and knowledge sharing in a multi-organization CoP.

## Recommendations for Practice

### *Recommendation 1: With sustained reductions in natural resource agencies' workforces and more impending retirements, public sector organizations need to prioritize cross-organizational learning communities so that people in similar positions from different organizations can learn from each other*

In the course of this study, two of my AR team members retired and one team member had already retired from an earlier career. Combined with decreases in staffing levels at forestry and natural resource organizations, and more impending retirements, it is critical that these organizations create mechanisms for learning from within and outside of the organization. AR team member noted in his 2019 critical incident interview, that he was the only one, doing his type of work, within his organization. He has since retired, and another person has taken over, but has to learn on his own. Not all positions in these agencies are as specialized, but for these specialized positions where only one or two people work in that role or have that experience, it is critical to connect them to peers from whom they can learn. In my own position, working with forestry Extension partners from across the South (in addition to forestry agencies), I already

serve in connecting new forestry Extension specialists to their counterparts in other states, as forestry Extension faces the same declining staff. Even for organizations that have greater capacity and have larger teams that serve the same purposes, connections within the AR team have demonstrated how much additional learning that can occur by connecting similar positions. Lastly, while the VCoP was a small population, results from it suggest that these public sector employees are very interested in connecting and learning from each other.

***Recommendation 2: Forestry organizations should implement similar working groups at the state level, as well as connecting to economic development organizations at the regional, state-wide, and local levels***

While the 2020 Regional Summit was a great success, it was a challenge to recruit stakeholders from other expertise areas to travel to a forestry meeting (at least from their perception) that was held at the regional level. There may be greater support and willingness to travel for a statewide meeting that focuses on the same kind of discoveries and learning. To my knowledge, no states have held such meetings or working groups. Since economic developers work at city, county, state regions and statewide positions, and on diverse types of projects, it is harder to recruit them to attend a VCoP on a regular basis or perhaps to even attend a regional meeting. Nonetheless, there may be more interest in and institutional support at the highest levels of an organization for a statewide meeting. As mentioned earlier, there is competition between states, and so a state-wide meeting may pose fewer conflicts of interest for members of the organizations at the highest levels. In addition to statewide meetings, however, attendees at the 2020 summit and the Working Group (CoP) have expressed interest in another regional meeting of the same type. Lastly, one of the outcomes of the summit was a recommendation to connect regional forestry groups with regional economic development groups. Despite an attempt at doing so, the pandemic limited contact. A regional economic development group exists, and forestry

stakeholders as a regional group, should have a presence at their meetings in order to promote the economic importance of forestry.

***Recommendation 3: Forestry and natural resource organizations and related partners addressing complex systemwide challenges would benefit from an action research approach***

Not every problem in forestry and natural resource organizations relates to climate change, but management of these natural systems is complex without human influence and becomes a more complex system when accounting for people. While this study focused on a narrow part of a larger issue, there are numerous other issues and challenges in forestry and natural resource organizations that are highly complex with diverse partners, stakeholders and more. As such, action research is a good fit for navigating these challenges and creating the conditions for new possibilities, (Watkins, et al., 2023) new ways of thinking about the problem, and new ideas about who should be involved and more.

***Recommendation 4: Forestry and natural resource organization leaders should develop organizational practices and seek training that encourages individual boundary spanners in their organizations, as well as their own boundary-spanning competencies.***

Boundary-spanning has been described as a bridge between discipline areas, organizations, units and more, with a focus on processing and exchanging information (Weerts & Sandmann, 2010). Van Meerkerk and Edelenbos (2018, p. 58) describe boundary spanners as people who proactively scan the organizational environment, employ activities to cross organizational or institutional boundaries, generate and mediate the information flow and coordinate between their "home" organization or organizational unit and its environment, and connect processes and actors across these boundaries. Forestry and natural resource organizations rarely work alone, and frequently partner with a network of public and private organizations at city, county, state,

and regional scales. While as has been found in this study, these partners may be within the same general expertise area, but there is also a need to partner with organizations that may impact programs or projects but have different expertise. As such, these organizations would benefit from developing practices that encourages individual boundary spanners as well as boundary spanning competencies among their employees.

Boundary-spanning activities include: connecting and engaging with stakeholders and partners, facilitation skills (to build consensus), information exchange and sharing of knowledge (by In a study of communication professionals within public agencies, Woo and Myers (2020) identified a number of traits and skills that were used by these in-house professionals to accomplish their jobs. Boundary-spanning competencies could include developing "interactional expertise," which is the ability to talk about a subject in an expert fashion, while not being an actual expert in the domain (Woo & Myers, 2020). In addition to training for employees, Buick, and others (2019) highlighted human resource and leadership practices that would support boundary spanning that could be implemented. They highlight that organizational support for boundary spanning is an important way to encourage these practices. Table 4.4 summarizes boundary-spanning activities, competencies, and organizational support concepts.

**Table 4.4**

Summary of Boundary-Spanning Activities, Competencies and Organizational Supports

| Boundary-spanning | Practices or Components | Source |
|---|---|---|
| Activities | • Relational (connecting and engaging with stakeholders and partners)<br>• Mediation & facilitation (building consensus<br>• information exchange | Satheesh et al. (2023)<br>Van Meerkek and Edelenbos (2018) |

| | | |
|---|---|---|
| | • knowledge sharing<br>• cross-boundary activities & processes | |
| competencies | • Interactional expertise<br>• Mediation & facilitation skills (to build consensus & engage with partners),<br>• Ability to communicate and listen<br>• Ability to find information, understand it,<br>• Ability to share ideas and know who to tell<br>• Ability to make connections<br>• Coordination & negotiation<br>• Ability to communicate and listen, understand | Woo & Myers (2020)<br>Van Meerkek and Edelenbos (2018)<br>Williams (2002) |
| Organizational support | • Human resources practices<br>• Leadership<br>• Middle management support for boundary-spanning<br>• Training for employees | Buick & Others (2019) |

The leader of a forestry and natural resource organization could cultivate their own boundary-spanning competencies, but also facilitate training for the organization's leaders on boundary-spanning competencies. In addition, a leader can work with human resources and other staff to add boundary-spanning activities to position descriptions in some way, in order to encourage the practice among all employees. In addition, the leader should implement practices and approaches that encourages middle managers to support boundary-spanning in their employees. Lastly, a leader of an organization may consider boundary-spanning competencies

when hiring employees and considering employees with experience in multiple organizations and some experience across disciplines a well.

## Personal Reflections

In an action research study, the researcher is both a participant and a scientist, but as such, the project and study are also related to my journey. It has been an intense and incredibly stressful five and a half years, since I started my doctoral journey, and for reasons beyond the challenges of balancing a full-time job with full-time studies. When I started the program, and the study, I had been in my work position for nearly seven years and thought that I would continue in the same role. Two months later, my old boss announced he was leaving, and the future of my organization was precarious. That fall, I balanced my job, two classes in the LLOD program, and a secondary project of working with a team to save our organization. In the start of the year, I became the new leader of our small organization, and we went from 8.5 full-time people down to 5, but I had to keep up the commitments we had made that went along with our grant funding, as well as learn to juggle nearly ten different grants. While the LLOD program was designed for 'just-in-time' learning, it didn't quite match my doctoral journey, but many of the concepts I was learning, were just in time to help me grow as a leader in a challenging situation.

In January 2020, I defended my CMS1, and completed my final preparations for the Forest Economic Summit. As I said earlier, I faced the challenge of hosting a meeting as a pandemic was closing in, and then the subsequent challenges as schools closed, and my kids were at home while I worked. My AR team and I continued with fits and starts as we navigated a COVID-19 and/or post-Covid world, and all the vagaries that went with it.

With great stress and challenging conditions, it has been a period of immense growth for me. While my knowledge and understanding of adult learning, leadership and organizational development have grown in leaps and bounds, my confidence in what I know, and my leadership

has also grown. Working with my AR team has been really meaningful and fun. In my current position, I am the leader of a small organization, and I work with many different people, organizations, and states across the country, but I do not necessarily engage with other colleagues on such a regular basis. Thinking together is one of my favorite things about my work, and continuing with my AR team through many years, and many iterations has been one of the favorite parts of my job.

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# APPENDICES

## Appendix A: Critical Incident Interview Questions

**Intent of this CIT process** – to gain insights into how the planning/action research team for my Forest Economic Contributions Summit (FECS) thinks about the purpose of our meeting and what that means to them. The planned summit was initially proposed as a small scope educational opportunity within a particular forestry stakeholder group, but it evolved through numerous discussions with the planning team and our colleagues across states, some of whom serve in the same committee, and some of whom do not. The summit evolved from a simple educational meeting to a meeting whose purpose is to connect various stakeholders.

While I perceive the evolution of this meeting in a particular way, I hope that these interviews will provide insights into this process from others' perspectives. Furthermore, my job is different than these individuals' jobs and therefore, their primary responsibilities are more likely to be impacted through this change process than mine. The questions asked for these interviews will generally focus on the interviewees' reflections on the purpose of the FECS summit and what that means about how they think about or approach their work in the past and currently.

Gathering data from these interview questions will help determine how a particular group of stakeholders may find meaning in this change process and enact changes in their work.

**Selection of interviewees** – The three interviewees are all members of the planning/action research team. Two are the same type of position at state forestry agencies (utilization and marketing) and a third is a former economic developer.

**The Interview**

- *Hello _____. Thank you for allowing me to interview you. I appreciate your time and willingness to help me with this.*
- *The purpose of this interview is to gain your perspective on your current and past experience with forestry economic data, economic development and your job. We have been working together to plan the FECS. I want to hear more about your perspectives on this summit in relation to particular events or projects from your work that you think about in relation to this meeting. I will ask you to recall a few incidents during this interview and ask some follow up questions for each.*
- *I will be recording the entire interview so I can review your answers. Afterward, I will reconstruct the narrative you shared, identifying and illustrating any themes that are revealed, and looking for meaningful patterns.*
- *All interview materials and recordings will be kept confidential, and I will not be publishing names or identities with the analysis I write up.*
- *Do you agree to being recorded?*
- *Will you complete this consent form?*
- *Thank you! I am starting the recorder and beginning the interview.*

**Framing:** "We have been meeting regularly since January of this year to fulfill the required work of our proposal. The project work has changed considerably from what was originally proposed based on our collective discussions and feedback from others."

**Question 1:** "Tell me about a time when you faced challenges in doing a particular project for your job, in some relation to forestry economic data or economic development where you felt like you did not have the right connections or right information. Please describe this event in narrative (or story) form.

- What happened?
- Who was involved (positions and roles, not names)?
- What did you do or say?
- What was the result of your actions?
- How did it turn out?
- What was it about this event that made it seem significant?
- What conclusions did you draw from this incident?

**Question 2:** "Tell me about another time when you faced challenges completing your job, in some relation to forestry economic data or economic development where you felt like you did not have the right connections or right information. Please describe this event in narrative (or story) form.

- What happened?
- Who was involved (positions and roles, not names)?
- What did you do or say?
- What was the result of your actions?
- How did it turn out?
- What was it about this event that made it seem significant?
- What conclusions did you draw from this incident?

**Question 3:** "Tell me about how or if you think the previous two incidents might relate to our planning for the Forest Economic Contributions Summit?

- Why do you think they are related?
- Why do you think they are unrelated?
- What kind of significance would you attach to the incidents and how you think about our project?
- What conclusions do you draw from thinking about these past incidents in relation to the planned summit now?

**Closing:** Is there anything else you would like to tell me (or you think that I should know) about these incidents or their impact on your work and our work together?

Do you have any questions for me?

*"Thank you again for agreeing to participate in this interview. Please contact me if you have any questions in the future.*
*This ends the interview!"* [Stop recorder]

**Appendix B: Forest Economic Contributions Summit Evaluation**

Forest Economic Contributions Summit Evaluation

Meeting Evaluation

1. Did you attend the Forest Economic Summit in New Orleans, LA March 10-11, 2020?
   Yes or No

* 2. Please select your overall satisfaction with this meeting
   1 (not very satisfied) to 5 (very satisfied)

* 3. How close did the summit come to meeting objectives? Scale is (1) not close at all, somewhat close, very close, right on target (4)

   • Connect forestry economists, economic development specialists, and advocates
   • Create opportunities to learn from each other
   • Improve understanding of forest economics
   • Improve understanding of forest economic development
   • Improve understanding of communications

* 4. How useful was the information from these presentations to you? Did you learn something new or useful to your work? (1-not useful to 4-very useful)
   • Rural and forest economic development
   • Using economic data to advocate for forestry
   • Building the IMPLAN database
   • A new template for analyzing forestry economic data
   • Forestry Works Program and Workforce development
   • Sustainability: Unlocking the Hidden Value in Forest Supply Chains
   • Any thoughts or comments?
   •

* 5. Overall, how did you find the lightning presentation format and content?
   * Very good, somewhat good, good, acceptable, poor

* 6. Overall how would you rate the three small group discussion sessions? Comments?
   * Very good, somewhat good, good, acceptable, poor

* 7. How would you rate the productivity of the small group discussions?
   * Very productive, productive, somewhat productive, not productive

Comments?

8. Do you intend to take action based on what you learned from this meeting?
   * Yes, maybe, no

9. If you intend to take action based on what you learned at this summit, what actions will you do? (please select all that are relevant)
   a. I will contact a person from the meeting
   b. I will form a statewide team
   c. I will join a statewide team
   d. I will follow up with one or two ideas
   e. I will share information from this meeting with another colleague
   f. Other

* 10. Would you attend a similar meeting again?
   Yes, No, Maybe

10. If another similar meeting would happen? How often should it be held? What about future locations?

11. What state(s) do you work or live in? Please select all that apply or write in additional ones.

12. Please select the role that most closely aligns with your work
   a. Extension Forester
   b. State forestry agency forester
   c. Economic Developer
   d. Forestry Economist
   e. Forestry Advocate or communicator
   f. Other, please define

13. Any final comments, thoughts or input regarding the meeting?

**Thank you for time and your responses!**

**Appendix C: Southern Forestry Economic Development Working Group Introduction Survey**

Southern Forestry Economic Development Working Group- follow-up

In preparation for forestry economic development working group follow-up meeting, please answer the questions below to help us prioritize our focus.

***About the Southern Forest Economic Development Working Group***

Markets for forest products are critical for sustaining the South's Forest land, most of which is privately owned. Forestry and natural resource professionals work to manage these lands and promote forestry, however economic developers (public and private) are responsible for expanding existing forest industry and recruiting new forest industry operations. In addition, forestry economists analyze data that is used to communicate the value of forestry. While all of these individuals are working towards goals in common, connections between them may be limited. Economic development personnel, utilization and marketing foresters, forestry economists and communications staff work across different agencies, organizations, and states, but they each have their own unique information and tools, that if shared could help everyone.

***The purpose of the Southern Forest Economic Development Working Group is to facilitate connections amongst these diverse stakeholders, and to develop a network for information sharing, problem-solving and innovation.***

The concept for this group was developed at the March 2020 forest economic summit where attendees worked together to generate ideas and recommendations for the future. While this group is just getting started, it will include regular web-based meetings with discussions, presentations, and opportunities to access the collective wisdom of participants.

Group discussion topics and/or strategies could include:

- new ways to share/promote data
- Strategies for ways to improve forestry
- markets Finding information gaps and solutions
- Creating better awareness amongst state economic development departments and state commerce of opportunities to recruit forest industry
- Gaining a better understanding of how to communicate forestry economics to politicians, state legislatures, the public and more

This survey was prepared by Leslie Boby of Southern Regional Extension Forestry, please direct any questions to lboby@sref.info, or 706-612-7875

1. What is your reason for joining this group (or thinking about joining this group)? check all that apply
    a. Learn from others

b. Working together on projects or goals
c. Connect to a network
d. To make my job easier
e. Helps me to meet the needs of the constituents I serve
f. Learning about economic development
g. Improved communication skills about forestry
h. Because this group has all the cool people in it
i. Generate or test out ideas
j. Other (please specify)

2. How often would you be interested in meeting with the group?
    a. Weekly
    b. Bi-weekly
    c. Monthly
    d. Bi-monthly
    e. Quarterly
    f. Other (please specify)
3. What type of activities should be included in group meetings (select Not so interested (1), maybe it would work (2), this could be good (3) or definitely want this in the group meetings (4) for each comment below:
    a. Presentation/Q&A sessions by members
    b. Presentation/Q&A sessions with invited speakers
    c. Problem-solving sessions for members who request help
    d. Idea/project development assistance
    e. Grant development assistance
    f. Issue-drive discussions
    g. Individual zoom rooms for different discussions
    h. Whole group discussions
    i. Mixture of whole group discussions and small-group Zoom rooms
    j. Any other ideas (please add)
4. Which of the 2020 Forest economic recommendations do you think should be prioritized? Please select what you think are the top five priorities:
    a. Improve individual connections between forestry stakeholders and economic development personnel throughout each state
    b. Promote connections (agency to agency) for forestry agencies to economic development agencies within each state
    c. Create opportunities for forestry agency employees and/or relevant other individuals to attend basic economic development training
    d. Host forest economic development summits in each state
    e. Develop and strengthen the relationship between the Southern Group of State Foresters and the Southern Economic Development Council
    f. Develop primer on forestry economic development
    g. Develop forestry economic development website
    h. Develop regional template for forestry economic factsheets
    i. Develop best management practices for communicating forest economic data

    j. Create common messages around forestry economics that are relevant
    k. Connect to state/regional economic development councils
    l. Develop articles/factsheets on various forestry economic analysis methods for laypersons
    m. Coordinate contribution analyses across southern states
    n. Connect forestry economists with other partners such as regional economic developers and workforce development
    o. Update the forest products locator website
    p. Other (please specify)
5. Please rank your top five choices from above by priority (1= highest priority to 5= lowest priority).
6. For your most highly prioritized activities above, please select those recommendations that you may have specific ideas about, and/or that you may want to work on.
7. What is your organization type
8. What state or region are you from?
9. Do you have any new resources/ideas/projects that would be of interest to the group?
    a. Yes,
    b. I will soon, but not yet
    c. Still in development, but check with me later
    d. no

## Appendix D: Action Research Team Focus Group Interview Guide

### Questions about the Southern Forest Economic Working Group and Prior Work Together

Hello. As you know, I am a doctoral student at the University of Georgia. I want to thank you for your help and participation in our action research team focused on planning the 2020 Forest Economic Development Summit and subsequent work together on other projects including the Southern Forest Economic Development Working Group creation. Please know that I greatly value our work together.

Before we begin the interview, I would like to remind you that I am recording the interview and the information you share will be kept confidential, as explained in the consent form. I will not use your name or any other identifying information about you or your organization; pseudonyms will be provided. If you would like to clarify a statement at any point in the interview, please let me know. At the end of the interview, I will ask you if there is any additional information you would like to add. Do you have any questions before we begin?

1. Tell me about your perspective on our work together (starting from 2019) and your thoughts on trust and knowledge-sharing within this smaller group?
2. Tell me about a time when you think that our team was especially effective together?
3. What have you learned about our issues facing the southern forestry community through our work together?
4. What have you learned about forestry economic development through the action research process?
5. How do you think we can or if we should sustain our team's work together (such as the Southern Forest Economic Development Working Group)?
6. Are there any relevant topics that you'd like to discuss that I've missed?

Clarification questions and transition statements I will employ could include:

• How did you know it was effective? Ineffective?
• What was the outcome?
• What parts of this are you satisfied with? Not satisfied? Why?
• You mentioned _____. Tell me a bit more about what you mean by that.
• You talked about _____. Do you have an example of that?

To close I would like to thank you for your time and providing valuable knowledge, information, and insight into your experience with action research and the partnership's work together over the past few years.