

**Fostering Innovation in the Public Sector:
An Organizational Innovation Ecosystem Maturity Model**

By

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Abstract

The ever-accelerating pace of technological change and the corresponding changes to the way we live, work and interact with one another has resulted in increasingly complex challenges for Governments worldwide. Many of government's programs, systems and processes are falling further and further behind and increasingly failing to meet the growing expectations of the public. While the private sector adopts new and innovative ways for delivering products and services, many government agencies struggle to foster innovation. Using a grounded theory methodology, this study sought to determine how the Alberta Government's ministry of Agriculture and Forestry can successfully foster innovation. A review of innovation literature and a series of semi-structured executive interviews provided the data. An iterative process of data analysis resulted in the development of an organizational innovation ecosystem model characterized by eleven core elements: motivation, ownership, optimism, systems, processes, governance, technology, training and education, clear priorities, continuous improvement, and trust. The core elements are organized under three key dimensions: People, Supports, and Environment. In order to foster organizational innovation, leaders must understand and nurture the various elements of the ecosystem. An organizational innovation ecosystem maturity model and a corresponding benchmarking tool were constructed as instruments for practical application.

Key words: innovation, government, maturity model, innovation ecosystem, public sector, benchmarking, collaboration, ambidexterity, change management, innovation competency, innovation capacity, change, transformation, grounded theory, fostering innovation, people, supports, environment, motivation, ownership, optimism, systems, processes, governance, technology, training and education, clear priorities, continuous improvement, trust.

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Chapter 1: Introduction

Individuals, businesses and governments alike are all faced with an unprecedented pace of change. Ever expanding technological innovations have resulted in the on-going and rapid adoption of new, and at times disruptive, business models, products and services that fundamentally change our everyday lives. Many of the commonplace products and service models of today were virtually unheard of even a decade ago. This ever-accelerating rate of change is matched only by the growing expectations of the public and consumers. Described as the expectation economy, this new reality is characterized by “astonishingly elevated expectations, set at the high watermark not of personal but collective experience, and applied ruthlessly to each and every business, product, service, or experience available” (Mason, et.al. 2015, p.7). This elemental shift is challenging the Government of Alberta, along with governments world-wide, to innovate through new business models and approaches to programs, service delivery and policy development to ensure continued competitiveness, prosperity and growth.

Recognizing the challenge ahead, the Government of Alberta’s Ministry of Agriculture and Forestry (AgFor) created a formal role responsible for innovation. The addition of an innovation role is not unique to the Ministry of Agriculture and Forestry. In fact, *Embracing Innovation in Government: Global Trends* (2017) identifies the establishment of innovation divisions, labs and ministries as a key trend. Archmann and Iglesias (2010) point out that “public administration has been required to take a leading role in innovation, promoting dynamic and efficient working methods and higher-quality service provision” (p.29). There is a strong desire amongst the ministry’s senior leaders to

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realize more innovation within the ministry as a means to better serve the public.

However, the specific way forward for innovation within AgFor is undetermined.

The complexity of innovation presents significant challenges for even the nimblest organizations. The ever-accelerating pace of change requires innovative organizations to be ever adaptable and resilient while understanding the drivers, motivations and expectations impacting those they serve. “Understanding change- in people’s behaviors, attitudes, and expectations – better places you to deliver what they want, not only now but in the future too” (Mason et al, 2005, p.45). In order for government to deliver improved services, there must first exist both the desire and the capacity to understand the gap between what the public wants and what is currently being offered. When considering the concept of innovation, even more challenging is the requirement to innovate in ways that solve problems the public doesn’t even recognize having. “Such change must transcend fragmented government structures designed for earlier times that employ tools and problem-solving methods that no longer work in the context of unprecedented complexity and uncertainty” (OECD, 2018, p.14). Salge and Vera (2012) confirm a positive relationship between innovative activity and public service quality. However, historically, organizations that attempt innovation are faced with an alarming rate of failure. According to Chatterjee, et al. (2015) “about 90 percent of innovations fail” (p.159).

As a government ministry cloaked in the bureaucracy and process central to most government organizations, the question becomes, how does the Ministry of Agriculture and Forestry become more innovative? On the surface, innovation seems an issue of generating great ideas and then implementing them in such a way so as to ensure

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adoption by the target audience. But why do some organizations seem capable of generating and implementing great ideas, while others struggle? According to OECD 2017 report, “Ideas for new services and business activities are sparked in the minds of civil servants, political leaders, service users and members of the broader community, and are developed and brought to scale through the dedication of many and various professionals and stakeholders at different stages of the process” (p.84). This requires what Linda Hill (2014) aptly describes as “an organization where people are willing and able to do the work of innovation” (p.217). How can AgFor foster both the willingness and the ability to innovate within government? How can AgFor improve its capacity to innovate? What must change? What must stay the same? Despite significant research on innovation, little can be found that presents a clear, practical framework for fostering the organizational qualities necessary to address the complex challenges innovation poses.

Using a grounded theory methodology, a guiding model or framework for improving innovation capacity became the intended practical outcome of this study. As a methodology, grounded theory is rooted in the intention that the researcher develops a theory grounded in the data collected through the research process. Key to the development of the theory is the iterative data analysis process whereby the data is analyzed as it is collected, allowing the researcher to adjust accordingly in order to gain greater insight into emerging categories. This methodology is well suited to complex organizational issues such as innovation, as it guides the researcher past thick description to an explanatory scheme (Birks & Mills, 2015). As Director of Innovation for the Ministry of Agriculture and Forestry, developing an explanatory scheme for innovation within the ministry will serve as a practical guidepost or lens through which the challenge

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of innovation can be both viewed and addressed. To arrive at this framework, I used the following questions to guide my research:

1. How can Alberta Agriculture and Forestry foster innovation within the ministry?
2. What factors enable or inhibit innovation?

Beginning with a review of relevant literature, the following report serves to present the findings of the iterative process of data gathering and analysis conducted. A detailed description of the grounded theory research design and methodology is presented in Chapter 3. The initial data gathered through the literature review formed the initial shell structure for 22 semi-structured face-to face interviews conducted. The findings and discussion chapter details these findings along with the analysis. Finally, an organizational innovation ecosystem maturity model and corresponding benchmarking tool is presented and described. The model forms the explanatory construct of the grounded theory developed.

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Chapter 2: Literature Review

Introduction

Innovation has been a greatly researched topic for decades. Despite an ever-growing body of knowledge on innovation, many organizations still struggle to be innovative prompting on-going research into various innovation related topics. The term innovation is defined in various ways, but for the purposes of my research, I have adapted a definition provided by Joshi, Chi, Datta & Han, (2010) and a simplified version provided by Chatterjee, Moody, Lowry, Chakraborty and Hardin (2015). Joshi et. al's (2010) definition includes the requirement for financial returns for the firm. I have removed that, as I would suggest innovation does not have to result in financial returns in all cases, especially in the case of public sector innovation. Chatterjee et al. added the requirement for value for stakeholders, which I believe is true to the purpose of innovation in both the public and private sector. As such, I am using the following definition:

Innovation is the development or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purposes of creating new value for stakeholders.

The exploration of literature served as the first phase of an iterative process of data gathering and analysis for the study. I approached my research using a grounded theory methodology, which is further described in Chapter 3. A key element of grounded theory methodology is the researcher's theoretical sensitivity which takes into consideration the

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sum of the researcher's experiences. (Birks & Mills, 2015). Theoretical sensitivity "reflects their level of insight into both themselves and the area that they are researching...and their intellectual history, the type of theory that they have read, absorbed and now use in their everyday thought" (Birks & Mills, 2015, p.24). This is an important concept since the data gathering process and analysis was iterative which leads to an increase in theoretical sensitivity as the analysis progresses. The following literature review therefore represents a snapshot in time of the early stages of gathering knowledge to inform the study.

Literature Search Methodology

To begin the daunting task of the research phase of the literature review I turned to the University of Alberta Library. I referred to Booth, Sutton & Papaioannou's (2016) stages of the search process (p.110). For the scoping stage, I began first with a broad search using simply "innovation", "government innovation", and "innovation framework" as my key words. The word innovation returns well over 2 million results. Ironically, although it is a highly researched topic, I had a difficult time finding the information relevant to my guiding questions. The vast majority of innovation research is focused on the private sector. During the scoping stage I discovered a few key articles which informed new key words for stage two of my searching. My stage two search terms included "open innovation", "e-government", "change management", and "innovation capacity". E-Government in particular became a useful term since much of the research in that area focuses on government innovation. I then moved on to stage three and used the "snowballing" process of bibliographic searching. I found this stage particularly fruitful as it allowed me to drill down into my topic. I used Booth et al.

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(2016) idea of a “conceptual map” (p233) to identify themes and the relationship between them.

As much as possible I used peer reviewed academic articles published after 2005. Since significant innovation focused research is conducted within a technology realm, I wanted articles that presented an up to date perspective in that regard. However, a few articles that were much older were included since I felt in some cases the researchers provided either a unique perspective or something that had become often cited in newer works.

Overview

A review of innovation research literature reveals that most literature focuses with varying degrees within one of three key areas of concern: 1) organizational competency required to drive innovation, 2) effective change management for adoption of innovations, and/or 3) the integration of ICT solutions for e-government. This literature review is therefore organized based on those dominant themes as a means to begin to develop the foundation and guide for my research moving forward.

First, much literature focused on factors that lead to a higher likelihood of organizational innovation. That is, the fundamental elements necessary for an organization to function in an innovative manner. In this sense, innovation is seen as a way of being, a way of existing as opposed to an event or a project. Innovation is therefore a competency that an organization possesses. When viewed through this lens, it is fitting to identify the various capacities that contribute to innovation as an organizational competency.

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Second, many researchers sought to identify how to manage the change associated with organizational innovations. In other words, if all the factors are present for building the innovation competency, what does the organization require in order to ensure successful adoption of innovations? Innovation is something “new or altered” suggesting change. The human element of change is explored.

Third, innovation literature placed in a government context most often emphasizes e-government which is the application of technology to improve delivery of government programs and services. Rochet, Peignot, & Peneranda, (2012) posit, “We may say that systems are more complex in the public sector and that they require specific skills” (p.53). Many researchers express that technology is often seen as the innovation itself, which leads to a misguided strategy for implementation. Literature suggests that technology is not the innovation itself, but rather it is the means by which an organization can innovate.

Innovation Competency

Organizational innovation occurs within a complex system of infrastructure, processes, hierarchy, and culture. This system forms the context within which innovation either does or does not successfully exist. Much research literature looks at the organizational traits that underlie this context in an effort to establish which specific traits create a context that fosters innovation competency. Researchers have varying opinions on traits that build innovation competency, but the literature reflects the most predominate organizational traits determined by researchers are collaboration, ambidexterity, and knowledge management.

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1.a. The Capacity to Collaborate.

Much research suggests the importance of collaboration for successful innovation. Collaboration within the organization, with other organizations, and with clients and customers is all shown to improve innovation competency. Berman and Korsten (2014) point out that “collaboration is the number one trait CEOs are seeking in their employees” (p.37). Findings from the research of Grigoriou & Rothaermel (nd.) indicate that “when it comes to innovation, certain individuals exhibit patterns of collaborative behavior that make them potentially valuable as sources of organizational capabilities to generate more and high quality inventions” (p.607). Grigoriou and Rothaermel (nd.) go on to explain that collaboration was the key to innovation since often the individuals themselves were not the inventors but rather part of the system that connected the various individuals necessary to make the innovation possible. Collm & Schedler (2014) reinforce the criticality of collaboration as a trait for innovation competency and focus on the need for organizations to connect various communication streams in the public sector. “Research shows that innovation processes do not develop in isolation” (Vega-Jurado, Julian-Esparragoza, Paternina-Arboleda & Velez, 2015, p.85).

Open innovation is a dominant paradigm in the innovation literature. The key to increasing connections and collaborating in order to innovate lies in removing the barriers to innovation created by the closed systems that exist within public sector organizations. Innovative ideas are triggered by creating new knowledge or a new perspective. Connecting one closed system with another through collaboration opens both systems up thus allowing external stimuli to ideas that may otherwise be missed. Collaboration for innovation can occur at the individual level, organizational level and the networked level

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(Gieske, Buuren & Bekkers, 2016). Each of these levels can be closed systems and can benefit from the opening that collaboration brings. “This points to the change in the paradigm of innovation, from the idea limited to the sole use of the enterprise’s internal potential (closed innovation) to the concept based on the exchange of knowledge and new solutions between the enterprise and its environment (open innovation)” (Szymanska, 2016, p.147). Lee, Hwang & Choi (2012) discusses three processes for open innovation: outside-in process, inside-out process, and the coupled process. Both inside-out and outside-in strategies were found in the most innovative countries (USA, Australia, Singapore). Lee, et. al. (2012) conclude, “most countries are in the early stages of open innovation in the public sector” (p.157). Rehm, Goel, and Iunglas (2016) along with Vega-Jurado, et. al., (2015) also suggest benefit in the use of innovation networks and knowledge networks, respectively, which are a series of temporary partnerships designed to leverage the capacity of a number of organizations to create an innovation.

The recognition of the importance of collaboration for improving innovation competency leads researchers to a number of suggestions for how to improve collaboration at all levels. “Teams will need processes and tools that inspire collaboration on a massive scale. Perhaps most important, organizations must help employees develop traits to excel in an open, connected environment” (Berman and Korsten, 2014, p.37). Berman and Korsten (2014) recommend organizations embrace connectivity and openness, engage customers in order to better understand them, and form partnerships that focus on integrated relationships. Underlying all three recommendations is the need for technology based and non-technology based systems to be implemented and

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supported by organizational leadership. Infrastructure, processes and procedures need to support and foster collaboration.

Innovation is typically described to follow certain stages. Researchers therefore have spent time studying elements within the various stages to contribute to a body of knowledge that includes varying degrees of information on each stage. In general, innovation stages include idea generation, implementation, and adoption. (Rasmussen & Hall, 2016). When placed on this continuum, as an innovation competency, collaboration contributes significantly throughout all stages of the innovation process and therefore is key to successful innovation.

1.b. Ambidexterity.

Organizational ambidexterity is a well-recognized innovation competency in academic literature. At both an organizational level and a leadership level, ambidexterity refers to the ability to balance exploitation with exploration (March, 1991, Tushman, & O'Reilly 1996, Schmitt, 2016, Tushman et al. 2011). Exploitation, in this sense, refers to exploiting existing knowledge to incrementally improve products or services over time. Exploration, on the other hand, refers to exploring new ideas and possibilities and considering and understanding alternatives (March, 1991). Szymanska draws the connection between ambidexterity and open innovation, suggesting open innovation “is based on the knowledge inflow and outflow: from the environment to the enterprise (inflow-exploration) and from the enterprise to the environment (outflow – the exploitation)” (p.147).

Tushman and O'Reilly (1996) posit, “to remain successful over long periods, managers and organizations must be ambidextrous – able to implement both incremental

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and revolutionary change” (p.8). Similarly, March (1991) suggests, “maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity” (p.71). Systems in place to ensure stability and focus on existing core business are at odds with revolutionary change. Therefore, a tension is created between the desire to innovate and the desire to maintain what’s working. Evolutionary change is indeed key to long term success of an organization. Evolutionary change reflects the constant maturing of the organization that comes from and creates stability. However, organizations that become complacent and hold on tightly to existing business models, ideas, processes and policy become weighed down and unable to adapt and respond at the speed of inevitable changes to the business environment. Even worse, organizations that don’t innovate find themselves constantly reacting rather than proactively determining the way forward.

“Adaptive systems that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of its benefits...Conversely, systems that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria”
(March, 1991, p.71).

Researchers point out practical challenges with developing organizational ambidexterity that suggest value in further research in this area. Durisin & Todorova (2012) point to structural and cultural change as practical challenges that inhibit

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organizational ambidexterity. “Organizational life is a struggle between the need to fully capitalize on existing strengths and competencies (exploitation) and the need to recognize and seize new opportunities (exploration)” (Schmitt, 2016, p.39). The context within which choices are made between exploration and exploitation plays a key role. In an environment of limited resources, for example, less risk and a faster realization of returns will often win. “Although most executives acknowledge the need to explore new businesses and markets, they almost always bow to the more-pressing claims of the core business, especially when times are hard” (Tushman et al., 2011). Successful evolutionary change is based on applying the lessons of the past to potentially improve the future. It creates more certain small wins. “The certainty, speed, proximity, and clarity of feedback ties exploitation to its consequences more quickly and more precisely than is the case with exploration” (March, 1991, p. 73). Thus, in a risk adverse environment which is typical of the public sector, innovation can be inhibited simply due to an imbalance between exploitation and exploration.

1.c. Knowledge Management.

Organizational learning and knowledge management are at the heart of much of the discussions of innovation. It could be argued that knowledge sharing and learning is central to the need for collaboration for innovation. Nonaka (1994) suggests, “As knowledge emerges as an ever more important feature of advanced industrial development, it is necessary to pay increased attention to the processes by which it is created and the assessment of its quality and value both to the organization and society”

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(p.34). Azam, Bilal Khilji, & Khan (2016) clarify that knowledge management enables organizational learning and present the following definition of knowledge management:

“Knowledge management is the process of capturing, developing, sharing, and effectively using organizational knowledge. It refers to a multi-disciplined approach to achieving organizational objectives by making the best use of knowledge” (p.3).

Much focus within innovation literature is therefore on how knowledge is captured, further developed and shared for the purposes of innovation.

Rasmussen and Hall (2016) suggest that knowledge management itself can be considered an innovation since the development of the knowledge management process can create either incremental or revolutionary changes within an organization.

How the organization acquires and manages knowledge directly impacts innovation competency. Nonaka (1994) posits, “innovation can be better understood as a process in which the organization creates and defines problems and then actively develops new knowledge to solve them” (p.14). The ability to innovate is based on the ability to develop and actively manage knowledge. Incremental innovations reinforce existing knowledge but work to refine it, while transformative or radical innovation redirects prevailing knowledge in a different direction (Torugsa, & O’Donohue, 2016). Nonaka (1994) aptly suggests that understanding how an organization interacts with its environment, “together with the means by which it creates and distributes information

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and knowledge” is key to understanding the organization as a whole and its ability to innovate.

Open innovation leads to increased knowledge and competitive intelligence. Vega-Jurado, et. al., (2015) stress the importance of knowledge networks for creating an environment of innovation. Specifically, they studied innovation relationships and how companies, universities and government interact to create an environment for innovation. Their research findings suggest governments are well served to support the development of these networks among universities and private industry. This aligns with Chesbrough’s (2003) concept of open innovation. “This concept suggests that companies could and should use not only internal ideas but also the existing knowledge from its environment to develop their innovation processes” (Vega-Jurado, et.al., 2015, p.85). In a discussion of the advancement of organizational learning, Rochet et. al. (2012) point out that historically, the requirement for public administration departments to work together in order to grant patents to inventors set the modernization of public administration in motion. This is what we “call today “competitive intelligence” at the government level: breaking the silos in public administration, sharing information and building expertise in order to enhance decision making and produce strategic knowledge” (Rochet et. al., 2012, p.51).

The literature suggests collaboration, ambidexterity and knowledge management are key elements to an organization’s innovation competency. Collectively, they form the foundation for how an organization gains, exploits, and shares information to build the capacity for learning, growth and change. In addition to these elements that form organizational innovation competency, the literature suggests change management to be

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an important factor for successful innovation. The next section explains the significance of change management as part of successful innovation and describes the connection between effective organizational change and employee happiness. As well, the relationship between change management, innovation and e-government is explained.

Change Management

Much of the driving force for innovation research lies in the complexity associated with implementing innovation. Denning and Dew (2015) argue that too much attention in innovation research is given to the idea phase and not enough attention is given to the skills required to foster adoption. “90% of innovation is in fostering adoption” (Denning and Dew, 2015, p.24). They go on to argue, “most innovations emerge in the practices of communities and are not caused by someone’s good idea” (p.25). Therefore, the focus on innovation should be balanced between creating an environment that fosters new ideas and effectively managing change for adoption of innovations. Effective change management demands leaders’ purposeful attention to building the skillsets as well as the mindsets required for successful change.

A positive psychology paradigm is becoming dominant in change management literature as organizations look to determine what creates a mindset for successful change. The root of positive psychology is what makes people happy, as opposed to what makes people unhappy. Anchor (2010) argues that increasing happiness in the workplace fuels performance and potential. After a decade of research in positive psychology, Anchor is able to demonstrate that “happiness is a precursor to success” (p.3) and that “happiness and optimism fuel performance and achievement” (p.4). Allen & McCarthy (2016) provide practical recommendations for positive psychology interventions to

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promote happiness in the work place as a means to improve performance and manage change. Specifically, cognitive reappraisal, hypothetical thinking, positive visualization, physical activity, and writing-based interventions are identified and described as practices to increase happiness and implement workplace change.

Slater, Evans & Turner (2016) emphasize the social identity approach which focuses on group processes and people connections (p.19). Slater, et. al., (2016) argue, “understanding social identity principles and developing psychological belonging between individuals is crucial during times of change” (p.18). Lawrence (2015) connects change to sense making using a social constructivist approach and also suggests social interaction as the heart of the change process. Similarly, Slater et al. (2016) posit that “understanding and working with leaders’ and employees’ social identities to create a shared sense of ‘us’ is pertinent to facilitate change” (p.21). Slater et al. (2016) go on to describe the 3 Rs approach (reflection, representation, and realization) to building a resilient team and successfully managing the change brought on by innovation. Dixon, Lee, and Ghave (2016) demonstrate the application of strength-based reflective practices as a tool for change management. “Many of the practices in the general field of reflection are about individuals examining their own work so that they are more able to change what they do in a particular context” (p.144).

Similar to the positive psychology paradigm, much literature suggests a connection between successful change management, innovative practices and employee motivation. Seeman and Seeman (2015) discuss the concepts of flow and energy as they pertain to employee motivation and performance. They suggest four factors affecting performance create a motivational framework: “Skill, capacity to work, challenge and

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workload” (Seeman & Seeman, 2015, p.6). Pitt-Catsouphes et al. (2015) suggest a connection between flexible work options (FWO) and innovation. “It is important that scholars and practitioners gain a better understanding of factors that affect supervisors and managers who may become the first people to adopt new talent management policies and practices, such as FWOs” (p.168). Individuals who are effectively challenged in their roles and given the flexibility to balance their personal and work lives are more likely to be motivated and are more likely to optimistically accept change.

The advent of e-government has furthered the complexity associated with change management and introduced the requirement for new skills and research for managing the change resulting from large scale Information Communication Technology (ICT) projects. Nograšek (2011) asserts, "e-government is more an organizational change issue than a technological issue" (p. 22) and acknowledges poor change management strategy as why the success rate of e-government projects is dismal. Foster, Hawking, & Stein (2004) concur and indicate that the major barriers to success when implementing enterprise technology projects was not the technology, but rather people related.

Ali, Miller & Leromonachou (2016) and Foster, Hawking & Stein (2004) stress the importance of understanding user resistance since it is seen as a major contributing factor to the failure of ICT projects. Factors that contribute to user resistance are “uncertainty, loss of power, lack of involvement in the change process, and reluctance to change” (Ali et. al., 2016, p.41). Strategies for managing through the resistance are suggested as, “training, increasing user involvement, incorporating their feedback in decision making, communication and job reassignment” (Ali et. al., 2016, p.41). Foster et. al. (2004) suggest the top three critical success factors for change management when

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implementing enterprise wide systems as: rating adequate resources, shared understanding of the need for change, and open and consistent communication.

The early development of a complete change management plan is a consistent theme throughout the literature. DeWaal, Maritz, Scheepers, McLoughlin & Hempel (2014) posit that, “ICT processes touch and influence nearly every other process within an organization and have significant potential to impact productivity and business transformation for increased competitiveness” (p.6). However, DeWaal et al. (2014) also point out that most existing frameworks focus on either change management or best practices for implementing the technical aspects. De Waal et al. (2014) outline a framework for change management planning based on three phases: Investment in ICT and Initiation of Organizational Change, Implementation of new ICT Processes and Organizational Change, and ICT Payoff and Institutionalization of Organizational Change. Gaining a thorough understanding of user habits linked to both existing and new ICT is suggested early in the project planning phase. Foster et al. (2004) stress the importance of change management in the project phase as well, pointing to the need for “at least 17% of the implementation budget to be dedicated to training” (p. 5). However, Shaw (2016) stresses the need to balance the duality of project management vs. change management:

The “linear, rational approach to project management that is advocated runs counter to and does not align with the need for change management.

For example, the isolation of a project is not an effective model for

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change since change requires the project team to engage with various stakeholders (p.203).

The literature makes it clear that change management is a key element of successful innovation. Even more clear was that change is about people. For adoption of innovation to occur, leaders must focus on improving capacity for individuals to thrive in a changing environment. Research suggests that happiness, optimism and intrinsic motivation are foundational to the mindset for successful change. The early development of a change management strategy is suggested. E-government adds an additional layer of complexity and increases the stakes related to change management. Additional challenges associated with e-government go beyond change management and are further described in the next section.

E-government

A great deal of attention within innovation literature specific to government is focused on the challenges associated with the implementation of Information Communication Technology (ICT) for transforming government, otherwise referred to as e-government. Coursey and Norris (2008) point out that despite significant resources dedicated to the development of e-government, government website are still relatively unsophisticated, cost savings attributed to e-government are minimal and barriers to e-government adoption are not being adequately addressed. Archmann & Castillo Iglesias (2010) point to the need for government to redesign services specifically around the needs of citizens rather than around the needs of the bureaucracy (p.32). Mergel (2016) concurs and calls for adaptive, anticipatory and agile approaches “with a holistic focus on human-and-client-centered design” (p.516). Archman & Castillo Iglesias (2010) suggest

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governments focus more on increasing citizens' willingness to adopt new technologies since there is still lagging use of ICT by the public despite the fact that research shows the public wants ICT services implemented. Sun, Ku & Shih (2015) point to the digital divide as a significant obstacle to successful e-government. "The difference between having e-skills, particularly those related to Internet use, and not having them creates a new type of information gap, which is generally known as a digital divide" (506). Sundberg (2016) suggests that lack of collaboration in government bureaucracy creates the most significant challenges in the process of implementing e-government.

The potential benefits of successfully implementing web 2.0 technologies in government should not be underestimated. ICT has a significant transformational potential since its underlying purpose is to create connections and relationships between various branches of government and amongst citizens and government. Sun et.al. (2015) state:

"To enhance the design and delivery of public services and the processes for engaging with stakeholders, as well as to increase efficiency and transparency and to foster richer interaction with the stakeholders they serve, a growing number of governments around the world are currently deploying web 2.0 technologies in the workplace" (p.504).

Similarly, Archmann & Castillo Iglesias (2010) point to such benefits including "stimulating the knowledge economy...enhancing lifelong-learning programs... and reducing the cost of delivering public services" (p. 32).

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Along with discussion of the challenges and benefits of e-government, many researchers focus on business processes for successful implementation. Mergel (2016) describes the traditional waterfall IT approach as “tackling one piece of the development phase at a time and providing the final product to the buyer” (p.517). The waterfall approach is suggested to be outdated and quickly being replaced within the private sector with a more agile approach that involves “creating, testing and improving technology products incrementally” (p.518) and includes “radical collaboration with the client” as a key element of the process. Sundberg (2016) also stresses the importance of business process management as a component of implementing large scale IT systems. The need to clearly define the challenges and goals, attract attention through incentives, build a community of practice, and encourage internal collaboration all rise as lessons learned (Mergel & Desouka, 2013). Davenport (1998) points to the importance of understanding the business needs and suggests that organizations are making dangerous mistakes when they view EIS projects solely from a technical implementation perspective and stresses the importance of a systematic approach. “If a company’s systems are fragmented, its business is fragmented” (p.2). Sun et. al. (2015) also stress the importance of integrating e-government into the organizational strategy rather than the technology strategy.

Although not necessarily identified, a socio-technical view seems dominant in e-government research literature. A socio-technical view “regards an organization as a socio-technical system built from two correlated systems – social and technical” (Nograsek, 2011, p.3). Nograsek (2011) suggests socio-technical view is consistent with Leavitt’s (1965) organizational model which includes task, structure, technology and people as factors. Nograsek (2011) suggests technology is the central element of Leavitt’s

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system and emphasizes that successful ICT depends upon other factors within the organization.

Conclusion

Through a review of innovation literature, I've identified three key areas of focus for fostering innovation in government; innovation competency, change management, and e-government. Innovation competency is the foundation of a context within which innovation can be fostered and adopted. Three overarching capacities make up this foundation: the capacity to collaborate, organizational ambidexterity, and knowledge management. However, innovation, by nature is about altering a current state. As such, change management is another key factor to be considered as part of fostering innovation. E-government, what some might see as the innovation itself, is arguably the outcome of an organization with innovation competency and the ability to manage change. However, technology could be considered a key factor in an innovation framework and thus is the third area of focus for fostering innovation within government.

The purpose of my research is to develop a grounded theory for fostering innovation within Alberta Agriculture and Forestry. The findings from my literature review create a foundation for my semi-structured interviews moving forward. As I look to understand innovation within Alberta Agriculture and Forestry, I will place the data from interviews within the context of the three themes.

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Chapter 3: Research Design and Methodology

Introduction

This qualitative research study was designed to gain insight into the contextual elements that foster and support organizational innovation and to develop a useful organizational innovation model for Alberta's Ministry of Agriculture and Forestry. I used a grounded theory methodology underpinned by a constructionist philosophical perspective. As a methodology, grounded theory is rooted in generating new theory from data, rather than testing or viewing data through the lens of an existing theory.

"Essentially, the methodology is most commonly used to generate theory where little is already known, or to provide a fresh slant on existing knowledge." (Goulding, 2002, p.6).

Grounded theory is characterized by a systematic, iterative process of data gathering and analysis from which categories and concepts emerge and a theory is formed.

The iterative data gathering and analysis process began with a review of innovation literature. The initial data categories that emerged through this review became the preparatory window into an organizational innovation context. I conducted 22 semi-structured face to face interviews as my primary data gathering method. I used the constant comparative process for data analysis and theory development. The constant comparative process in grounded theory methodology intends for the processes of collection, coding, analysis and theory generation to "blur and intertwine continually, from the beginning of an investigation to its end...the definite separation of each operation hinders generation of theory" (Glaser & Strauss, 1967, p.43). In a grounded theory methodology, it is accepted that the researcher's knowledge plays a key role in "sensitizing the researcher to the conceptual significance of emerging concepts and

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categories...for without this grounding in existing knowledge, pattern recognition would be limited to the obvious and the superficial, depriving the analyst of the conceptual leverage from which to commence theorizing” (Goulding, 2002, p.6).

Research Design

Grounded theory is an inductive methodology designed to generate a theory through exploration and various intertwined phases of data analysis. Grounded theory is a well-established methodology in the social sciences that maintains a loose design based on an iterative process of qualitative analysis. “An iterative process is one that is cyclical but not merely repetitive...In that sense to describe a process as iterative is to suggest more the form of a spiral than that of a circle, with each cycle taking us a little further in some identifiable direction” (Palys, 2003. P.314). With each new insight gained, I was able to narrow the focus of the research in order to arrive at the crucial elements of an innovation ecosystem.

Grounded theory is a useful methodology for complex, multifaceted organizational problems. “Complex problems are characterized by a low level of agreement of what the problem is and the best way to address it” (Shiftlab, 2018, p.13). In the case of what is inhibiting or enabling innovation within AgFor, there was no clear identification of the source of the innovation challenges, or even total agreement that a challenge exists. Yancey Martin & Turner (1986) emphasize the usefulness of Grounded theory as a research methodology due to its “ability to facilitate understanding and to identify desirable improvements in work contexts” (Yancey Martin & Turner, 1986, p.141). They go on to posit “Grounded theory research in organizations can provide

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important components for the researcher's 'kit of tools' for making sense of – and improving- organizational reality” (Yancey Martin & Turner, 1986, p.155).

The research was initiated with an exploratory approach to first isolate what variables are important with regards to an organization's innovation context. The initial data was gathered through a review of innovation literature and served to begin the iterative process for identifying the elements of organizational innovation to investigate further. This was a key step in the research process. The variables initially identified served as the point of departure for the trajectory of the research spiral. “By acknowledging formulative inquiry as an integral part of the empirical process, inductivists argue that they more adequately and honestly represent the process of science” (Palys, 2003. p.55). The initial elements are listed in the next section and are more fully described in the literature review.

Data Gathering

The primary data gathering technique was semi-structured face-to-face interviews. “Face-to-face interviews tend to be longer and more detailed, tend to seek greater depth of response, and tend to be open-ended in their construction to allow for phenomenological input from respondents” (Palys, 2003, p.160). The semi-structured, face-to-face interview format allowed me, as the researcher, to adjust the questions and the direction of the interview depending on the interviewee's responses. This was a crucial factor as I looked to explore deeper meanings behind many responses. “Most of the interview is guided by a list of questions or issues to be explored, and neither the exact wording nor the order of the questions is determined ahead of time. This format

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allows the researcher to respond to the situation at hand, to the emerging worldview of the respondent, and to the new ideas on the topic” (Merriam & Tisdell, 2015, p.11).

The study used a purposive sample to participate in the semi-structured interviews. As Palys (2003) suggests, exploratory researchers “favor a more strategic sampling of insightful informants or revealing situations” (p.74). In order to develop a deep understanding of the innovation context within AGFORas well as to determine the elements that form a framework for an innovation ecosystem, I chose to include all of AgFor’s executive leadership in the research sample. Executive Directors, Assistant Deputy Ministers, and the Deputy Minister represent a wide range of executive level experience. Some have been with the agriculture ministry for over 30 years, while others have worked in various ministries across the Government of Alberta or in private industry. Innovation, and the culture that supports it, is led by organizational leaders. “Leaders of innovation create organizations where people are willing and able to do the work of innovation, where everyone has the opportunity to contribute his or her slice of genius to the collective genius of the whole” (Hill et al, 2014, p.58). It is therefore fitting to turn to the organization’s leaders to gain insight into their perspectives on what is impacting innovation within AgFor. I included all of the organizational leaders as I wanted to tap into insight from a broad scope covering the entire organization.

Prior to inviting the potential participants, approval was obtained from AgFor’s Executive Team to move forward with the interviews. To obtain this support, I presented an overview of my literature review findings as well as an outline of the plan for the remainder of the research. Upon receiving approval, an email invitation was sent to all Executive Directors, Assistant Deputy Ministers and the Deputy Minister, inviting them

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each to participate in a one-hour interview. The email invitation made it clear that participation was voluntary and that, should they agree to participate, everything shared in the interviews would be kept strictly confidential. Twenty-two of the twenty-three individuals invited to be interviewed responded with agreement to participate in an interview.

An environment of trust is a critical factor in gaining accurate, meaningful data from interviews. To ensure respondents felt comfortable sharing honest, forthright opinions with me, I began with an overview of the research project and an explanation of the confidentiality agreement. The confidentiality agreement promised the interviewee that responses would be anonymized and additional permission would be sought if a quote included in the report could be used to identify him or her. All respondents had the choice of whether or not I recorded the interview. The recordings are stored on a secure server and are password protected. The emphasis on confidentiality was a key component as I wanted respondents to feel comfortable expressing their honest views about the organization without fear of offending their colleagues.

An outline for the initial interview discussion guide was based on the aspects of importance to organizational innovation that were determined through the literature review. These aspects became guiding categories for the interviews. The categories were: collaboration, change management, ambidexterity, knowledge management, and technology. The interview discussion guide was developed with a number of open-ended questions within each category. However, true to the nature of semi-structured interviews, I used the questions as a guiding framework for the interviews, but asked many probing questions to gain greater insight into the knowledge, experiences and

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perspectives of each of the respondents. “In most studies the research can combine all three types of interviewing so that some standardized information is obtained, some of the same open-ended questions are asked of all participants, and some time is spent in an unstructured mode so that fresh insights and new information can emerge” (Merriam & Tisdale, 2016, p.111). As the interviews progressed and themes began to become apparent, the interview questions were adjusted slightly to test the emerging themes and concepts.

Data Analysis

Grounded theory methodology suggests that a constant comparative method using inductive and abductive logic for data analysis be employed (Birks & Mills, 2015, p.21, Merriam & Tisdale, 2016, p.32). “To achieve this, the researcher generates or collects some data with an initially purposive sample. The data from these initial encounters is coded before more data is collected or generated and the process of analysis repeated” (Birks & Mills, 2015, p.22). In this sense, the data collection and analysis happen somewhat concurrently. Also key to a grounded theory methodology is the use of memos throughout the process to capture thoughts and ideas. “Memos are written records of a researcher’s thinking during the process of undertaking a grounded theory study” (Birks & Mills, 2015, p.23). After the initial interview and each subsequent interview, I wrote memos to capture my thoughts and reflections about the interviews.

To begin coding the data, key statements and quotes from each interview were transferred from interview transcripts to a google sheets document. The quotes representing similar thoughts and ideas were clustered and themes began to emerge. The emerging themes were then tested in subsequent interviews. In some cases, this lead to

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refining of the themes, in other cases, themes were dissolved entirely. Since the interviews had been organized based on aspects of importance determined through the literature review (collaboration, change management, ambidexterity, knowledge management, and e-government), the themes formed within each category of that framework. An additional category, 'happiness', was added as a result of the interview data.

The initial themes that emerged from the interviews, although clear, lacked the explanation component needed to form the basis of a model or theory for an innovation ecosystem. "Exploration and description are not, after all, simply ends in themselves; they're the processes through which one identifies those elements that are important to investigate further, and the description one engages in should be of those elements that are most integral to developing explanations about the phenomenon of interest" (Palys, 2003, p.315). The themes provided clarity on what inhibits or enables innovation within AgFor, but in order to identify specific elements for a model for an innovation ecosystem within AgFor, I needed to further explore the essence or crux of the enabling or inhibiting factors. "Induction of theory is achieved through successive comparative analyses" (Birks & Mills, 2015, p.24).

Continued analysis involved "axial coding" (Bohm, 2004, p. 271) - close examination of the relations among the various concepts and variables present in the initial themes. Palys (2003) suggests with "preliminary conceptual variables of interest isolated, one then can examine relations among those concepts in the context of varying events" (p.316). To analyze the essence of the initial themes, I contemplated the crux of the theme and looked for the deeper meanings. I went back to the transcripts, recordings

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and reflective memos as well as the google sheets document. Birks and Mills (2015)

suggest:

“abductive reasoning occurs at all stages of analysis, but particularly during the constant comparative analysis of categories to categories that leads to theoretical integration....Abduction is therefore a cerebral process, an intellectual act, a mental leap, that brings together things which one had never associated with one another” (p.24).

To illustrate, in the initial theme “resistance to change” I looked for other variables potentially related to resistance to change. I found ‘fear of failure’ and ‘lack of trust in leadership’ along with ‘ownership’ as related concepts that provide deeper meaning for the theme and generate further theoretical concepts. This process continued until full theoretical saturation of themes was reached.

My vantage point as a researcher had a significant impact on every aspect of the research including the methodology, data gathering, analysis and the resulting theory and explanatory construct. My theoretical sensitivity, which is “the ability to recognize and extract from the data elements that have relevance for your emerging theory” (Birks & Mills, 2015, p. 207) was also highly influenced by my personal knowledge, experiences and perspective. “The researcher does not approach reality as a tablu rasa. He must have a perspective that will help him see relevant data and abstract significant categories from his scrutiny of the data” (Glasser & Strauss, 1967, p.3). As a long-term employee of the ministry, and the Director of Innovation, I openly positioned myself as an active participant in generating the data and co-constructing the meaning along with the study participants. “Researchers take either a position of distance or acknowledged inclusion

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both in the field and in the final product of the study” (Birks & Mills, 2015, p. 14). This served to aid my understanding and ability to analyze the data as I often had intimate knowledge of the topics discussed and background information that a less attached researcher would not have been privy to. “With grounded theory the researcher must work in the actual environments in which the actions take place, in natural situations, in order to analytically relate informants’ perspectives to the environments through which they emerge (Baszanger, 1998, p.354). However, I was careful to be aware of, make note of and include points of interest that contradicted my own opinions. I found being intentionally open to unexpected paths during the research process often lead to the greatest insights and concept development.

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Chapter 4: Findings and Discussion

Introduction

This study sought to determine how to foster innovation within an organization. Aspects that contribute to organizational innovation were first identified through an extensive review of innovation literature. These are described in the literature review (see Chapter 2). These aspects were used as initial topic areas to form an outline for the semi-structured interviews. The interviews were conducted with 22 of AgFor's Executive Directors and Assistant Deputy Ministers, as well as with the Deputy Minister. The semi-structured interviews were designed to assess how AgFor is currently enabling and inhibiting innovation, and to benchmark the ministry's current capacity to innovate.

Using a constant comparative data analysis methodology, interview data was clustered into emerging themes. Each of the themes that emerged was then re-examined to determine the crux of the issues presented. This second level of analysis created a second, more explanatory, foundational set of elements to form the basis of an innovation ecosystem maturity model. The initial themes essentially describe the issues impacting innovation, while the next level of analysis focused on the deeper question of "why?".

The following chapter first describes the themes that emerged within each interview topic area. It is important to present the initial themes as it aids in maintaining the context and integrity of the findings that form the premise for the innovation ecosystem maturity model. The initial themes are organized as follows:

1. Collaboration
 - 1.1. Collaboration Systems
 - 1.2. Silos

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- 1.3. Clear Priorities
- 1.4. External Focus
2. Knowledge Management
 - 2.1. Succession
 - 2.2. Cross Training
 - 2.3. Knowledge Transfer
 - 2.4. Information Sharing
3. Ambidexterity
 - 3.1. Continuous Improvement
 - 3.2. Status Quo
 - 3.3. Intentionality
 - 3.4. Recruiting for the Right Skills
4. Change Management
 - 4.1. Resistance to Change
 - 4.2. Leading Change and Building Trust
 - 4.3. Building Buy-in
 - 4.4. Supporting Processes
5. Happiness/Engagement
 - 5.1. Flexibility

Following the interview findings, I explain the elements of the innovation ecosystem that were identified through the second level of analysis. Both the organizational innovation ecosystem maturity model and a corresponding benchmarking tool are presented.

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Findings

1. Collaboration

The first topic discussed was Collaboration. Overall, respondents reported that AGFOR does an average job of collaborating. The majority of respondents felt that ministry staff are pro-collaboration in theory, but that collaboration is not a strong part of the AGFOR culture. “We believe in collaboration, but we aren’t deliberate about it”. Explanations for the current state centered on: lack of systems in place to support collaboration, organizational silos that create an ongoing lack of awareness and understanding about what each area of the ministry does, and a lack of strategic planning and clear priorities. Many respondents also noted that AGFOR collaborates externally more than internally.

1.1 Collaboration Systems

Many respondents expressed that AGFOR lacked formal and effective systems for supporting collaboration. One respondent pointed out, “We have less formalized mechanisms for collaboration than some of the other departments. By that I mean standing bodies, committees, working groups, etc. that deliberately get representation from various areas.” This was used as an explanation for why collaboration is not happening. It was understood to be a leadership issue. “We need to build systems to support collaboration. Sometimes leaders talk about the systems, but they don’t build them. Leaders need to power through. When there’s no system, that is a barrier.” Others suggested that the standing bodies AGFOR does have in place lack a strategic focus on collaboration. One respondent used the Executive Director Action Committee (EDAC) as an example of this, “EDAC is an opportunity for collaboration that is under-utilized.

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There isn't a meaty enough agenda. It could be used to help build collaboration. EDAC is designed for meaningful strategic conversations, but it is just too much general information sharing. Many of us don't attend regularly."

Similarly, many respondents pointed out that AgFor's collaboration wasn't deliberate or strategic, but rather, relationship-based. "Our collaboration is relationship based. It's ad hoc. It's dependent on a person's ability to create networks." Interestingly, some saw this as a positive thing, while others pointed to it as a primary barrier for innovation. One respondent said, "Other ministries start with a business case focus. [In AgFor] There is a lack of deliberate focus and strategy around our collaboration. It is based on who they know rather than what makes sense from business perspective. We end up missing opportunities." However, there was a strong awareness that relationship building is key to effective collaboration.

Many respondents felt that the Human Resource and Finance systems in place were unsupportive of innovation in general, and spoke of this specifically in regards to collaboration. "Finance systems - the rigor that is put into process slows down our operation. There is a huge opportunity to allow your managers to be managers. We should let them manage to their expenditure limits. There is a lot of oversight. I don't know if it has the intended consequences." It was felt that many of the processes were overly cumbersome and indicated a lack of trust in employees and management. "So many of these processes don't need to be there. Spending limits are too low... There is no allowance for understanding or the knowledge or the risk that the manager can manage. The managers aren't trusted to manage risk." Human Resources systems referred to in

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relation to barriers to collaboration were primarily around the difficulty in easily moving staff to new projects or programs.

Another type of formal system referred to by respondents was Information sharing systems. In addition to discussion regarding standing bodies designed to share information, much discussion centered around technology based systems. Enterprise Information Management (EIM) was the most common example used. The majority of respondents felt EIM was a positive move toward supporting collaboration. As well, the Grant Management System was referred to as valuable. These systems are valued as a means of working together. "What's great about UCM is that if someone is working on a document, I can see they have it checked out so we don't end up with multiple documents floating around. We can see who made what revisions. This is a big thing."

1.2 Silos

A major category that surfaced in the discussion of collaboration was AgFor's information silos. Respondents clearly understood the link between sharing information across silos and innovation. "If we did a better job of sharing information we would likely stimulate innovation because other people might come up with new ideas after seeing the information." Respondents expressed that there is an overall lack of understanding across the ministry about what the various areas do. Overwhelmingly, respondents spoke of the need to create greater connections within the department as well as across government. When asked about creating those connections, one respondent said, "we don't create the linkages because we aren't even aware of what the linkages can be." Another said, "We definitely trend towards being a closed system. I don't know what would help that. I think it would be helpful for some of my staff to gain experience in

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other areas of the department to gain a different perspective. That is an example of something we could do to create those connections. We should be more intentional about our collaboration.”

Many respondents felt that resources impacted the ability to collaborate and contributed to silos. One respondent pointed out, “In times of fiscal restraint, we are less strategic”. Respondents pointed to restrictions on travel as a barrier for sharing information and collaboration. There was a feeling that important networks that once were a focus have been eroded because staff can’t attend meetings like was once the case. “I have staff spread all across the province. They haven’t seen the whites of each other’s eyes for a very long time. We can’t have division meetings. We balk at people travelling to meetings. So that has a very big impact on collaboration.” This sentiment was repeated a number of times and concerned AGFOR employees ability to collaborate with one another, their ability to collaborate with industry and other ministries. “We can’t build a network without going and meeting people.” Similarly, hosting requests were mentioned a number of times as a barrier. “Little things...It’s really hard to get hostings for staff meetings...What does that do to staff?” Respondents spoke of staff planning meetings but having to use their own money to pay for coffee or lunch. “You feel embarrassed. It builds resentment - why am I subsidizing this government with my hard earned cash? It comes down to tools to do your job. That is a tool to do your job. It is a tool that has been taken away. It goes back to eroding of trust.”

Additional collaboration challenges contributing to silos surrounded the growing disconnect between the regional staff and the Edmonton staff. This was attributed to a lack of leadership representation in the regional offices (only two Executive positions are

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located outside of Edmonton), travel being discouraged, and corporate services not making an effort to understand the regional differences. 51% of AGFOR staff are located in multiple locations outside of Edmonton, yet few leadership opportunities are regionally based so there is a growing disconnect between decisions being made, and the regional staff.

1.3 Clear Priorities.

Clear priorities were mentioned many times by respondents as a means to improve collaboration. They argued that clarity enables collaboration because everyone understands what they are working towards. It gets everyone moving in the same direction. A number of respondents felt this was not currently an area of strength within AGFOR and that it is hindering collaboration within the ministry. “Our planning could be stepped up a notch. We need more direction and clarity around what the government’s priorities are. That would enhance collaboration significantly.” This was referred to in various contexts including everything from Ministry level planning, project planning, and extension work. “We have folks out doing a whole pile of extension, but it’s scattered.” Documents were suggested as key enablers in this area because documents help ensure everyone has the same message and it can be referred back to. “If there is no clear purpose, then the team is going to spin. There needs to be the right documents created - terms of reference, or some sort of a charter etc. that creates the clarity.”

A number of respondents pointed to the fact that during times of crisis, AGFOR excels at collaboration. This was attributed to the fact that during crisis everyone understands the problem so the purpose of the work is clear. “When you are in crisis, it is really important to collaborate and we do that really well.” Examples of crisis included

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drought problems, fires and BSE programs. Also mentioned was that crisis demands strong leadership and respondents felt that our executive commitment was strong during crisis situations so staff feel supported and enabled to do their best work.

1.4 External Focus.

Many respondents suggested that AGFOR has a greater focus on collaborating with industry stakeholders than it does on collaborating across divisions or across the GOA.

“We have less of a history of collaborating with other ministries. Economic diversification, for example – we can’t do that on our own. Trade issues - Other departments seem to do a lot more cross-ministry collaboration. I think the reason for this may be that there is a perception that our mandate is to work with the industry, so they don’t see the need outside of that to collaborate. The mandate is to support the industry and create the right conditions for the industry to succeed.”

There was a common recognition that the culture within the Forestry area of the department was different than the Agriculture area of the department in this regard.

“Forestry, however is a bit different. Forestry is very cross-collaborative. They need Environment and Parks and Indigenous Relations, for example. Historically the culture of agriculture is built around extension so this has built a very externally focused perspective.” There was a feeling that this needs to shift, not only to enable innovation, but because a greater focus on building policy capacity within the department demands it. “The nature of policy is such that we can’t do policy without understanding economic implications, we can’t do policy without understanding the environmental implications...”

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2. Knowledge Management.

Knowledge Management was described to interviewees as “the process of capturing, developing, sharing and effectively using organizational knowledge”.

Discussion centered around various types of knowledge sharing within the organization and the challenges and barriers associated with it. Succession Planning, information sharing, knowledge transfer and cross training were the key themes that emerged.

Respondents agreed that knowledge management was important, but felt it wasn't happening in a deliberate way. One respondent said, “As a ministry, our knowledge management happens through people, there being a "go-to" person. It might not be a healthy way to manage in the future.” In most cases, lack of resources was identified as the underlying reason for the challenges in the areas of knowledge management.

2.1 Succession.

For many respondents, the topic of knowledge management brought up concerns about succession planning within the department. Respondents felt that not having a succession strategy was a major barrier to knowledge management. “We have a lot of examples where we have *the* expert. We do not have deliberate strategies for transferring knowledge. ... Sometimes we have brought back pensioners. What is our succession strategy overall?” Many spoke of attempts at creating an overlap in positions as a means of passing knowledge on as people move on or retire. HR policy was cited as a barrier to this. “We've tried to backfill for that 40 year person to mentor someone, and share the knowledge. With HR, it's hard to be proactive and we're going to lose a pile of corporate memory. We aren't deliberately capturing that knowledge.” Another respondent stated, “Corporate knowledge is lost when people leave. We've tried to bring in consultants to

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map people's careers and knowledge base, and then nothing happens with the document and then we repeat the same mistakes. Losing the old timer's information is a risk but we don't do anything about it. HR doesn't allow for crossover between people in a position.” Still another stated, “At the working level, we do not capture that knowledge, look at how we handle vacancies. Would be nice to have 6-8 weeks of crossover so the new person doesn't have to reinvent the wheel after someone retires.”

2.2 Cross Training.

In addition to the cross-over of positions for succession planning, a number of respondents spoke of the need to focus on cross-training to continuously improve capacity. In this sense, the cross-training builds shared understanding that helps teams work more cohesively. Respondents overwhelmingly agreed that this was important, however, cross training seems to be happening on an informal and ad hoc basis and is dependent on the leader. Some respondents suggested they did work with their direct reports to build knowledge. “I do try and work with my Managers so that they know what I am doing, and I do try and give them opportunities to act and do those sorts of things.” Another respondent stated, “I take people to meetings and share the knowledge, it's part of not being an insecure leader. Also, as a leader, at some point you don't need to know all of the details at the working level. You have to empower and trust your staff.” Based on comments, capacity is being built in some cases with Directors but there is no formal initiative for cross-training staff as means to ongoing capacity building.

2.3 Knowledge Transfer.

Many respondents felt an opportunity exists to glean more value from the information AGFOR collects and creates. “We have these databases, we create the

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knowledge, but we don't do a good job of sharing it. We don't get the best value out of the information." Another respondent said, "We have a history of producing PHD quality research that isn't digestible." When asked why the department faces such a challenge with knowledge transfer, most respondents pointed to the skill sets required to make complex information easily understandable. Many suggested that those who collect or create the information are not necessarily focused on translating it into a format suitable for various stakeholders or even to be shared internally. "We've wanted to hire a Communications Specialist but those types of positions have gone away. But the Communications Department isn't there to help us write reports and share them, to work with subject matter experts, etc." Another respondent said, "Extension is all about sharing information and adopting new technologies, it's not about controlling the message. It's about finding any way you can to be innovative. It's not about protecting information, it's about sharing it. Those two things are very different cultures." Many respondents felt that the skillsets associated with knowledge transfer should be embedded in the business areas in order to close this gap. There was a very distinct understanding that the Communications department in government serves a different purpose.

2.4 Information Sharing.

Respondents saw a clear correlation between innovation and access to information. Many felt the systems within the department do not make information easy to share and this creates a barrier to innovation. One said, "If there's new knowledge that people don't know about, there's going to be an impact. All advancement comes from doing something new and from new information." There is a disconnect between creating the information in the form of reports, databases, etc. and being able to put it

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someplace where others can find it. “Sometimes finding a piece of information can be tough. We find ourselves wishing we had a piece of information, and not even knowing it’s the person down the hall who has it.”

Respondents also attributed challenges with information to information overload. One respondent said, “There's just so much information now, and the more you share, the more likely you are to lose version control, lose copies, you don't have one source of truth.” Another respondent stated, “We have so much knowledge in different forms but we don't share that well and we also don't know where to go to look for some of that.” There is a great deal of hope placed in the department’s new Enterprise Information Management system, although as one respondent put it, “time will tell”. Respondents felt that the sheer volume of information created and collected by the department demands a concerted effort to build the right skill sets and systems for effective and efficient information sharing.

3. Ambidexterity.

Ambidexterity refers to the organization’s ability to balance running the business with changing the business. The discussion focused on how well AGFOR typically balances exploiting the current knowledge within the organization with exploring new ideas and new knowledge outside of the organization. Respondents focused on the need for a mindset of continuous improvement, AgFor’s status quo culture, a desire for more intentional, strategic exploration. As well, many respondents expressed that the right skills sets are required in order for exploration of ideas to be effective.

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3.1 Continuous Improvement.

Multiple respondents suggested a desire to create a workplace where new ideas can be explored and failures can be celebrated as learnings. “We need to create a culture where we're asking questions around trends, whatever they are. Currently, that's a real gap.” While most expressed that the culture within AGFOR currently is not one of continuous improvement, few identified barriers to creating this mindset within the AGFOR environment. Some also pointed to the current transformation efforts and suggested they were seeing a cultural shift more recently. “Leadership does encourage us to explore new ideas, they're not standing in the way.” Another respondent said, “The mindset of our leaders has to be continuous improvement. If you're not focused on improvement, you're not going to be doing anything except the status quo. I'm not sure if that's where Bev's head is at with the Transformational Change, but I hope that it is.” Respondents recognized the responsibility organizational leaders have for creating a culture of continuous improvement.

3.2 Status Quo

Respondents felt strongly that AGFOR has a culture best described as status quo. “Change tends to happen to us, versus being done purposely. We've tended to be slow and steady, and there's been support for that.” The main factor identified as contributing to this culture is an aversion to risk. Respondents suggested that AGFOR has a “why fix it if it's not broken” attitude. They point out that risk aversion along with the current prevailing attitudes towards new ideas is a barrier to innovation. One respondent said, “We don't balance exploring with exploiting. We're not receptive to new, outside ideas. I think that's tied to a fear of risk, fear of failing. This inhibits innovation.” Another said, “I

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don't think we are innovative. We're too risk averse. Innovation means you have to accept a risk of failure. They'll tolerate a lack of success and endless processes that don't produce much but they don't like to acknowledge failure.” Some also felt that centralized control contributes to status quo, risk aversion and a resistance to new ideas because creativity means you often have to find a way to work around the processes in place. “We've become more risk averse, with more centralized control over decision making.”

Another factor contributing to the status quo culture that was identified by a number of respondents was protectionism. Respondents shared examples of situations when they observed colleagues who seemed threatened by change and hold information as power. They described how this inhibits new ideas and productive discussions around improvement and transformations. Respondents noted, “People are protectionist” and “People try to defend what we have now”. One asked the question, “How can we have conversations on things where we do have different perspectives?” For some this was an area of the greatest frustration as they felt that the lack of capacity around innovation was primarily driven by the protectionist attitude towards change and sharing.

However, respondents also suggested they see a shift recently and there is a current appetite for change. “I think we're starting to tend less towards status quo and I give Bev a lot of the credit for that. She doesn't have those ties to industry. She has a different vision and is driving us in a different direction.” Another said, “I think that we're starting to move towards change. I honestly feel like there's change in the air. We've been very oriented to the status quo. This department has a reputation for being resistant to change. It's more like there hasn't been an opportunity to change, or a

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reason to change. People are coming around to the idea of different options and possibilities.”

3.3 Intentionality.

The discussion around AgFor’s capacity to explore new ideas lead to many comments around the need for AGFORto be more intentional and strategic about the areas explored and the direction of the organization. “We still want to be the experts in everything, in reality it's not possible and not very smart...We need to look at where we can truly have an impact.” Similarly, a respondent said, “We've just done everything that industry wants us to. We need to say hold on a second, what do *we* need to do?” Respondents suggested there was room for improvement in the area of foresighting or exploring trends as a means to planning the future direction. “It would be nice to peek around the corner, see what's coming, and set our priorities based on what's ahead instead of what's just in front of us right now. That should make us more successful and relevant once we get there. We need to think ahead.” Respondents pointed out that we are reactionary rather than strategic. “Unfortunately, instead of exploring or following trends, we end up just reacting to things.”

3.4 Recruiting for the Right Skill-Sets.

Respondents recognized the importance of having people with the right skill sets in the right positions in order to realize AgFor’s potential. Many discussed the significant changes that have taken place in industry and society in the past few decades and suggested AGFORhas been challenged to keep up with the changes. One respondent said:

“If you look at our extension model, that's changed. Our producers have changed. What they need in terms of information has changed. Our challenge is

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how can we be effective and relevant in extending that information? It used to be more one-on-one, then it became more centralized to more generalists and then they'd deliver. The audience has changed and what they want has changed and the ability to keep up has been a challenge.”

Respondents suggested that In order to realize a culture that fosters innovation, there needs to be a greater emphasis on training and recruitment. “You need to value training... You have to have the people who want to learn, who value learning, and hopefully you've got those kind of people in place.” Another said, “Don't worry about the ones that you develop and then leave, worry about the ones who don't develop and stay.” Many also suggested that new hires can speed up a cultural shift because they bring in new ideas to help the organization move forward in a different way.

4. Change Management.

Respondents pointed to a number of factors that impact successful change management in AgFor. Most agreed that AGFOR has a change resistant culture, and they also suggested that it is the role of the organization's leaders to act as change champions and support change management initiatives. The need to focus on building buy-in through sharing information, listening to concerns and feedback and building relationships with staff was emphasized. As well, respondents stressed the importance of focusing change management on the 'why' - the reason behind the need for the change.

4.1 Resistance to Change.

Respondents overwhelmingly agreed that resistance to change is common within AgFor. A few respondents said that the department even has a reputation amongst other ministries for being resistant to changes. When the reason behind the resistance was

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explored, many pointed to staff feeling threatened by changes and developing a protectionist approach as a result. Respondents explained that many staff are very passionate about their roles and about their beliefs. In agriculture, in particular, many have grown up in the industry and have been with the department their entire career. Many felt that while this can be a positive, it also creates challenges managing through a change. Comments included: “New things may be suffocated by those who have worked in the area for a long time”, “We hire people who see this work as their life. It’s not just a job, it reflects their beliefs” and “Change is tough when people are so passionate about their work.” Other respondents spoke of the importance of perspective and the impact that has on resistance and successful change. “The lens through which you see something matters... some people feel no threat in someone coming along with a new idea. I’m attributing it to a character and personality thing.”

4.2 Leading Change and Building Trust.

There was recognition of the significant role leaders play in change management and organizational trust. Respondents emphasised the importance of leaders being active change champions and the impact leaders have on staff trust. Some felt the ability to lead change had not been well developed within AgFor. One respondents said, “I don’t think we train managers to do change management and I don’t think we train staff to accept change management.” Another suggested, “We accept change at the management level, but we don’t empower it.” Other respondents provided examples of changes in the past that were not well led. Respondents were clear in their views that poor change management has had a lasting negative impact on trust within AgFor. “Things like that take away trust. The justification, communication, opportunity to provide solutions to

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make a better department were lacking or never happened at all... We live with that years later.” Another said, “Without an environment of trust, it’s hard to be comfortable with change. Trust is huge.”

4.3 Building Buy-in.

Building buy-in was identified as the most significant component of change management. Focusing on the “why”, sharing timely information about the change, listening to input and building relationships were the key factors identified that impact buy-in. One respondent said, “We need real clarity around why we need to change, we need strong leadership and a clear vision.” Another respondent said, “The goal has to be clear.” Still another said, “I try to be clear on why we're making the change. I rely on managers to carry that message forward and make it happen.” In addition to why a change is being made, respondents noted that other information about the change needs to be shared as well. What is happening, how it is happening, the process used to reach decisions, timelines, etc. were all mentioned as pieces of information to be shared as a means to effectively building buy-in for the change. Respondents also acknowledged the importance of giving staff an opportunity to provide input into how a change occurs as well as the importance of listening to their concerns or frustrations. “If you can build things from the bottom up where people see themselves in the final product, that they've been listened to... That takes time. ...you get a better product in the end.” Another respondent said, “It's also having those conversations with people around issues and frustrations, real or perceived, and around whether or not anything can be done about them. Pulling in the right people and being open and honesty about barriers and

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opportunities.” Respondents suggested that the people side of change requires additional focus in AgFor.

4.4 Supporting Processes.

Respondents made it resoundingly clear that processes to support change are crucial for successful innovation. It was also clear that some of AgFor’s current processes are impeding the organization’s ability to be effective and innovative. Respondents stated that processes are unclear, don’t facilitate collaboration and are often misaligned with stated organizational values and priorities. “We need clear processes....and we need guiding documents to accompany changes.” Another respondent stated that “[AgFor] tolerates a lack of success and endless processes that don’t produce much.”

Respondents also felt it was important to involve staff in process creation. “We as a group want to help on the process side.” One respondent identified that there’s an inherent risk when the right people aren’t involved with process creation. “Centralized control of processes crushes our ability to be ambidextrous... we’re making it more difficult.” There were positive examples provided of instances where AGFOR outcomes had been improved by process that involved the right people in the right way, including the Research Review and the most recent reorganization.

5. Happiness/Engagement.

As the innovation interviews progressed, the element of happiness in the workplace became a clear area requiring additional discussion. A link between innovation and engagement was established and subsequently, a connection to employee happiness emerged. Respondents felt happiness and engagement at work were key to an innovative workplace culture. One respondent said, “Happy people are more motivated and more

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creative. You need that for innovation”. However, some felt that this was a key barrier to innovation in a government environment and suggested that the private sector was more innovative because people in the private sector are happier in their jobs. “Happiness equals private sector equals innovation.” This led to further discussions pondering the most significant factor for employee engagement and overall happiness at work. Respondents pointed to a flexible work environment as a key factor contributing to employee happiness and engagement.

5.1 Flexibility.

The vast majority of respondents agreed that flexible work arrangements were desired by staff and increased employee engagement. “As a leader, I can’t support bum in the seat at 8:15 and expect happiness and satisfaction. We need to ask ourselves how we can support and enable people to live their lives flexibly.” Respondents suggested that in a perfect world, managers trust their staff and therefore focus on outcomes. “In my Branch, we kind of wander in. As long as the work gets done.” However, there was a significant disparity amongst the AGFOR executives in terms of the way flexibility is supported. Some adhere closely to and monitor established alternative work arrangement agreements while others feel that doing so is just another version of inflexibility. In the case of the latter, the respondents supported the principles of flexibility, but felt enforcing the to-the-minute hours of alternative work arrangements was not the most effective way to support employees maintaining work life balance. However, they also suggested there are currently no approved systems in place for true flexibility. “We need to balance getting stuff done with keeping good people, and sometimes the tools just aren’t available to us to do that.” Respondents suggested that true flexibility was dependent on the leader and because no formal

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systems are in place to support that level of flexibility, many leaders have turned to undocumented “side deals”.

Discussion - An Organizational Innovation Ecosystem

The research findings as presented explain the main themes that emerged from the initial analysis of data obtained from 22 interviews with AgFor executives. 17 themes emerged within the five topic areas that framed the interviews. Together, these seventeen themes paint a picture of the key challenges, concerns and perspectives expressed through the interviews. The themes represent the interview data in a refined, organized form.

In order to develop a theory grounded within the data, I further analyzed the data within the context of the initial themes. This next level of analysis focused on determining the underlying elements contributing to the factors that enable or inhibit innovation. I focused on analyzing the crux or core of the issues being expressed in each of the 17 initial themes. In many cases, the crux of the issues were repeated. Through this iterative process of analysis and comparison, I was able to hone a second set of eleven themes. I posit that these themes represent the core elements impacting an organization’s capacity for innovation.

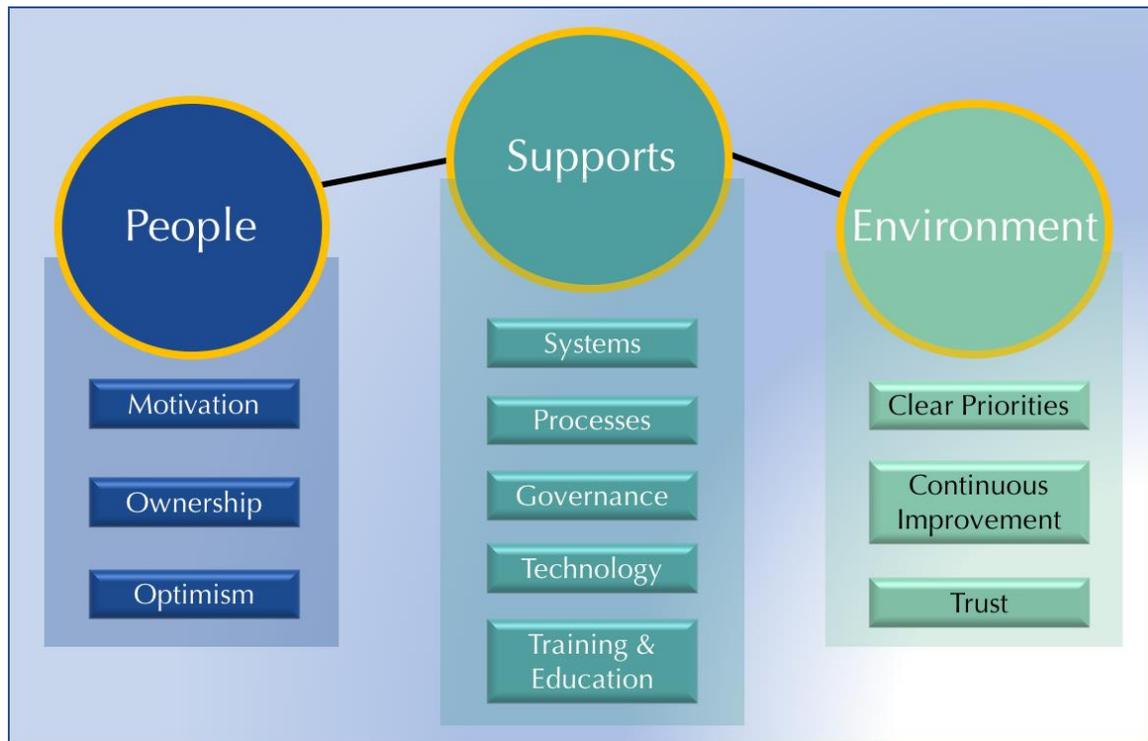
Together, the following eleven core elements comprise an organization’s internal innovation ecosystem: motivation, ownership, optimism, systems, processes, governance, technology, training and education, clear priorities, continuous improvement, and trust. The core elements were further analyzed for connections and conceptualized into three dimensions: People, Supports and Environment. An ecosystem is formed through the interaction of the living and nonliving components within the environment. Similarly, the core elements of organizational innovation capacity, comprised of both living and non-

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living, exist within an organizational environment and interact to form an innovation ecosystem. In nature, more mature ecosystems are healthier as they have matured through a balanced relationship among the various components. Likewise, a mature, healthy innovation ecosystem is indicated when the organization's time and resources are strategically focused towards achieving continuous and effective balance and alignment among the core elements. Each element of the innovation ecosystem is described below.

(See [Figure 1.](#))

Figure 1. Organizational Innovation Ecosystem



People.

The first dimension of the innovation ecosystem is People. At the heart of innovation is a new response, idea, or a new solution for a challenge. Linda Hill posits, “The role of a leader of innovation is not to set a vision and motivate others to follow it.

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It is to create a community that is willing and able to innovate” (Hill, p.97). The People dimension is comprised of those ecosystem elements that directly impact the willingness of employees to contribute within the community. To build a healthy innovation ecosystem, Motivation, Ownership, and Optimism are the critical elements to be assessed within the People dimension.

Motivation.

In an innovative culture, individuals are intrinsically motivated to give their best to the organization. Intrinsic motivation means “doing an activity for its inherent satisfaction rather than for some separable consequences” (Ryan & Deci, 2000). Significant research has been done to determine the key factors that foster intrinsic motivation. Research shows that autonomy, competence and a connection to the organization’s purpose are critical for intrinsic motivation to thrive (Ryan & Deci, 2000, Pink, (year)). Therefore in order to cultivate intrinsic motivation, it is the work of leaders to create an environment where employees are trusted and encouraged to self direct, feel competence in their roles and feel connected to a higher purpose. In turn, this contributes to a culture of continuous improvement where employees understand what they are working towards, seek out learning opportunities, and feel safe taking risks.

It is important to clarify that the autonomy that comes with self direction should not be confused with independence. Autonomy means “acting with choice - which means we can be both autonomous and happily interdependent with others” (Pink, year, p.9). This is a critical distinction because intrinsic motivation can be destroyed if the connection to other employees and to the organization’s purpose is not fostered. “Control leads to compliance; autonomy leads to engagement” (Pink, 2011, p.4 of 33). The bottom

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line is that fostering intrinsic motivation is the key to realizing the entrepreneurial spirit characteristic within an innovative organization.

Ownership.

Very closely connected to motivation is the element of ownership. Ownership is achieved when staff possess emotional involvement, responsibility, and feel empowered. In a highly innovative ecosystem, both leaders and employees alike identify problems and areas for improvement and have a level of ownership for the problem and want to improve outcomes. They hold a clear sense of personal responsibility for their role and contribution to the successes and failures within the organization and their behaviour reflects that. “Most innovations result from a conscious, purposeful search for opportunities” (Drucker, p.145, 2013). When ownership is mature, staff look within for how to improve. When ownership is missing, staff look to others, especially leadership, and blame and criticism is rampant.

Optimism.

In a mature innovation ecosystem optimism is cultivated. Optimism is at the heart of an organizational culture that risks failure of new ideas. First, optimism is what drives the belief that the new idea can work. In order for new ideas to come to fruition, individuals within the organization must be willing to take a risk. In fact, a risk averse culture is identified as one of the top four enemies of innovation along with lengthy development, lack of coordination and limited customer insight (Gutsche, 2015, p. 70). Second, optimism is what keeps everyone going when implementation doesn't go as smoothly as planned. “What you think when things go wrong, what you say to yourself when you come to the wall, will determine what happens next: whether you give up or

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whether you start to make things go right” (Seligman,2006, p. 259). When failure is managed in an optimistic way that focuses on the learning, employees see that failure is an option and thus risk aversion is avoided. Seligman (2006) posits, “in order to choose people for success in a challenging job you need to select for three characteristics: aptitude, motivation, optimism. (p. 101).

Supports.

The second dimension of the innovation ecosystem is Supports. These are the elements put in place to support organizational activities. If these support elements are designed to intentionally improve collaboration, information sharing and continuous improvement, there is a high likelihood that they will align with and support innovation. Systems, Processes, Governance, Technology and Training and Education exist in some form in all organizations, but how they are defined and adapted will determine if they enable a mature innovation ecosystem or serve to inhibit one.

Systems.

Systems in a mature innovation ecosystem are built primarily around the need for sharing and collaboration. Collaboration is well recognized as a key factor for successful innovation. Therefore in order to create an ecosystem that fosters innovation, systems must be designed with collaboration as the primary goal. Effective systems build connections that are otherwise nonexistent or weak within the organization and with other organizations. As well, the systems that support innovation help to remove barriers to progress that many bureaucratic, traditional systems seem to create. When systems are designed to support collaboration, silos break down, priorities are shared and understood,

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and processes are better aligned with organizational goals. In a mature innovation ecosystem systems are easily evolved as organizational needs change.

Processes.

Processes within a mature innovation ecosystem are designed by and with the participation and input of those who are most impacted by the process and they are continuously adapted for improvements. By involving various stakeholders in process design, the organization builds understanding of the process and the reasons behind it. Processes are designed with collaboration and knowledge sharing in mind. By ensuring that processes are clearly documented and that they reflect organizational values around innovation, such as collaboration and autonomy, leaders contribute to a culture that fosters innovation.

Governance.

In a healthy innovation ecosystem, project and program teams operate autonomously within a governance structure guided by clear organizational goals and priorities. Working groups and teams organize themselves around projects and stakeholders. Team members represent skill sets needed and are not included based on seniority or hierarchy. A governance structure that allows for cross functional teams and various levels of seniority to work together helps to break down organizational silos and ensures greater connection and collaboration.

Technology.

Technology is a key enabling factor of innovation. Technology acts as a support within an innovation ecosystem. At the highest level of maturity, technology is continuously assessed and incremental improvements are made regularly. As a support

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for achieving organizational goals, a clear technology strategy is defined and implemented with training and change management considered early on. In a healthy innovation ecosystem, the organization is aware of any existing digital divide and mitigating strategies are in place to ensure technology is supporting success.

Training and Education.

Closely interconnected with Motivation and Ownership within the People dimension is the Training and Education element of the Support dimension of an innovation ecosystem. In an innovation ecosystem, skills are continually assessed and developed to meet fluctuating organizational needs. The intention for the focus on skill development is so the employee feels competent in solving on-going and increasingly complex challenges. In this sense, it is not so much the skills needed to be innovative that are important. Rather, in a mature innovation ecosystem the critical factor is that life-long learning is valued and staff are motivated to grow and share their knowledge through both formal and informal opportunities. This leads to greater motivation and a sense of power and control. “By creating conditions for people to make progress, shining a light on that progress, recognizing and celebrating progress, organizations can help their own cause and enrich people’s lives” (Pink, year, p. 31 of 33). This requires a supportive mindset among leaders as they seek to support employees in skill development and knowledge transfer. When people have the skills to succeed they are much more likely to be motivated to give their best to the organization.

Environment.

The third dimension of the innovation ecosystem is Environment. The elements within the Environment dimension are those elements that both directly impact the

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organizational culture and reflect the values demonstrated by leadership. Through the process of data analysis, the core elements of Clear priorities, Continuous Improvement, and Trust were found to be factors at the heart of issues such as resistance to change, building buy-in and information sharing. A healthy innovation ecosystem is indicated by an environment where priorities are clear and easily evolve, continuous improvement is the norm, and employees and leaders demonstrate a mutual trust in one another. “There is an important lesson here about the challenges of shifting from a culture of hierarchy and efficiency to one of risk taking and exploration. Those who navigate this transition successfully are likely to become more deeply engaged, more highly motivated, and more wildly productive than they have ever been before” (Brown, 2009, p.36). A focus on Clear Priorities, Continuous Improvement and Trust is key for balance and alignment in a healthy organizational innovation ecosystem.

Clear Priorities.

One of the key elements of an innovation ecosystem is clear priorities. This enabling factor for innovation was woven throughout many themes in the research findings as well as the literature. In a mature innovation ecosystem organizational priorities as well as the drivers for those priorities are clearly articulated and understood by all. This enables both leaders and employees at all levels to align their own work to organizational priorities resulting in a clear sense of purpose. “Purpose imbues their collaborative work with higher meaning and leads them to endure the stresses and turmoil that inevitably come with innovation” (Hill, p. 7 of 66, chapter 5 - Kobo). When priorities and strategic direction are unclear, the individual connections to the organization are quickly lost as staff struggle to see how they can best contribute.

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Continuous Improvement.

Closely connected to the need for clear priorities is the continuous improvement element of the Environment dimension of an innovation ecosystem. Processes for continuous improvement can drive the development of clear priorities. For example, when continuous improvement is pervasive in organizational culture, trend data and foresighting information is used to inform decisions to clarify organizational drivers. To reach this level of maturity the organization must clearly define and implement evaluation processes and systems. The results of evaluations drive the continuous improvement efforts. Are systems meeting their intended purpose? Are processes clear and effective? If new drivers have been identified have new priorities been clarified? When a continuous improvement mindset is pervasive in organizational culture, change creates a sense of progress to be celebrated.

Trust.

An environment of trust in an organization is most clearly indicated by the openness of individuals to share both successes and failures with others. In a highly innovative environment, processes and systems are in place that enable staff to share ideas and learnings and celebrate success as well as celebrate risk and experimentation. When trust is not reflected in the actions of leaders as well as the systems and processes put in place, ideation suffers, information silos are protected, organizational knowledge deteriorates, and progress lags. Trust is key to organizational innovation.

An Organizational Innovation Ecosystem Maturity Model

To leverage the data and provide practical guidance, I created a maturity model that describes five levels of maturity for each element of the organization innovation

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ecosystem. ([See Figure 2.](#)). The levels of maturity are: 1) Unaddressed 2) Explored 3)

Defined 4) Repeatable 5) Pervasive. I define these levels as follows:

- 1) Unaddressed: The unaddressed level reflects a lack of organizational consciousness and intention. At this level, the element is not being considered or intentionally aligned with organizational goals, values or desired outcomes. At the unaddressed level of maturity the element is significantly hindering innovation.
- 2) Explored: At the explored level of maturity, organizational leaders show an inkling of interest, concern, or effort to identify issues related to the element. There is a level of awareness of the importance of the element as part of the innovation ecosystem. Initial work is being done to understand how to improve this element to better contribute to innovation capacity.
- 3) Defined: The third level of maturity is where issues, strategies, goals, etc. related to the element are not only identified, explored and understood, but they are defined and/or documented therefore reflecting organizational commitment and focus.
- 4) Repeatable: At the fourth level of maturity, there is a level of organizational knowledge created that moves the maturity beyond defined or documented ideas to a level that enables systems, processes, and strategies to be implemented or accepted effectively at various levels of the organization.
- 5) Pervasive: When maturity has reached the pervasive level, the element, in its most effective and impactful form, is pervasive throughout the organization. At this level, the element is well understood and contributes positively to moving innovation forward.

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The maturity model serves to bring together an otherwise complex and abstract set of ideas and simplifies it into one clear picture. Doing so allows organizational leaders at all levels to quickly and easily assess the level of maturity for each element of an innovation ecosystem.

To further support assessment, I created a benchmarking tool ([See Figure 3.](#)). The benchmarking tool provides a visual representation of where each element of the organizational innovation ecosystem is assessed, and thus provides a snapshot of time allowing the organization to identify priority areas for improvement. The ultimate goal for organizations focused on creating an internal innovation ecosystem is to have all elements of the ecosystem assessed at a level five maturity. Therefore, a highly mature organization would be indicated by all dots being placed in the center of the assessment target. The spider chart format has the added benefit of allowing for comparison over time if future assessments are plotted in different colors. Figure 3 provides a visual representation of AgFor's current organizational innovation capacity using the benchmarking tool.

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Figure 2. Organizational Innovation Ecosystem Maturity Model

People	1	2	3	4	5
	Unaddressed	Explored	Defined	Repeatable	Pervasive
Motivation	Leaders attempt to motivate employees based on rewarding success & punishing failure. Leaders set direction for what to do & how to do it. Micromanagement is common.	Leaders assess motivation levels within the organization & tie motivation to engagement.	Strategies & work plans are outcomes focused. Employee accountabilities are clear. Heuristic work is recognized & defined.	Leadership focuses on meaningful feedback to build competence, employees are encouraged to take on new challenges & employees have the autonomy to choose how to achieve outcomes.	Employees are in positions they feel both challenged & competent in. Leaders play a guiding and coaching role & trust is demonstrated by allowing employees the autonomy to reach defined outcomes.
Ownership	Any existing ownership is rooted in protectionism rather than initiative or accountability.	Organization considers how to frame both individual & collective ownership.	Leaders have clearly defined & communicated organizational drivers. Employees understand drivers & are involved in developing related goals & proposed outcomes.	Staff understand their role in contributing to innovation & goals & take initiative. Staff understand how areas of the organization are connected.	Employees identify problems & areas for improvement & feel ownership of outcomes. Clear sense of collective responsibility & action. Small wins are celebrated throughout the organization daily.
Optimism	Optimism is not recognized as an essential element for success.	Optimism levels are explored & considered an essential element for success.	Positions & roles are assessed for optimism levels required with the intent of being filled accordingly.	Leadership is educated in optimism & champions tools to increase optimism.	Optimism practices are continually referred to as part of leadership practices, recruitment & planning.

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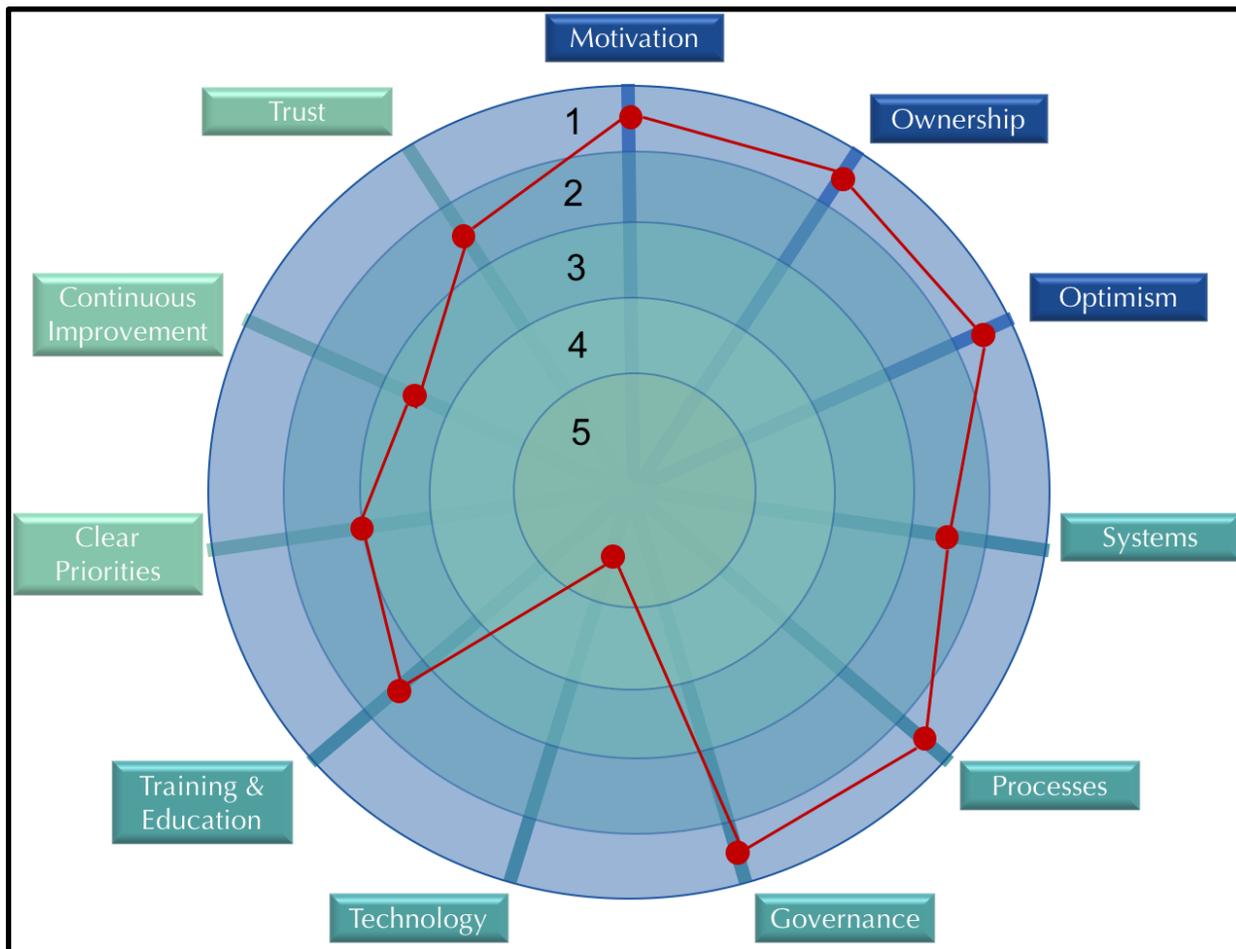
Supports	1	2	3	4	5
	Unaddressed	Explored	Defined	Repeatable	Pervasive
Systems	Systems lack a deliberate focus on collaboration, knowledge transfer, information sharing & connections.	The need for systems to foster collaboration & knowledge transfer is identified & explored.	Systems are designed to foster collaboration & connection within the organization.	Best practices for system design are communicated & implemented.	Collaboration is the primary consideration when designing systems. Systems evolve as needed.
Processes	Organizational processes are disconnected & dependent on individuals.	Various actors in the process are connected & participate in process design.	Processes are clearly documented & align with specific outcomes & organizational priorities.	Processes are easy to find, easily understood & repeatable.	Processes are adapting as priorities evolve. Those impacted understand why the process exists.
Governance	Hierarchical structures dictate governance. Teams are formed based on similar areas of expertise.	Barriers created by hierarchy & silos are recognized & solutions are explored.	Governance structures are defined to foster collaboration & effective cross functional teams.	Teams organize around projects & stakeholders. Team members represent skills sets needed & are not added based on hierarchy.	Teams operate autonomously within governance structure, guided by clear organizational goals and priorities.
Technology	Technology is inconsistently applied across business areas based on manager preference. Supportive technology systems are outdated, ad hoc or absent.	Leadership recognizes the inherent value of technology as a component of business solutions.	Technology strategy is defined to align with organizational priorities.	Technology is developed/deployed in partnership with stakeholders. Training is considered early to minimize any digital divide. Change management plays a key role in implementation.	Technology is continuously reassessed & incremental improvements are made to ensure it is supporting organizational needs.
Training & Education	Training & education are seen as perks for employees. Skills don't align with business needs. Positions are backfilled without a review of skills.	The links between skill development & organizational success are appreciated. Organizational strategies have training & education plans attached.	Leaders & staff have documented training & development plans that align with organizational goals & objectives.	Leaders appreciate, expect & plan for regular implementation dips. Informal learning opportunities are sought & encouraged.	Life-long learning is pervasive. Leaders & staff are motivated to grow & share knowledge through both formal & informal learning opportunities.

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Environment	1	2	3	4	5
	Unaddressed	Explored	Defined	Repeatable	Pervasive
Clear Priorities	Priorities & leadership direction is unclear or non-existent. Business areas operate independently & without a common focus.	Organizational leaders involve staff & stakeholders in exploring internal & external drivers to determine priorities.	Organizational priorities & drivers are clearly articulated & available.	Measures & performance indicators align with priorities. Work plans are clearly connected to priorities.	As drivers evolve, priorities are adjusted accordingly. Leaders & staff understand contributing factors & adjust work plans & decisions accordingly.
Continuous Improvement	Leaders & staff protect the status quo. Change only happens when required.	Processes to focus on continuous improvement are considered. Foresighting & trend analysis practices are explored.	Processes & systems to support change are in place. Benchmarks are identified. Ongoing evaluations & assessments are documented & shared.	Focused resources are dedicated to continuous improvement. Leaders are trained to manage change & encourage improvements. Foresighting processes are implemented.	Trend data informs decisions around organization drivers. New ideas are openly shared & continuously explored. Incremental changes are celebrated. Failure is seen as a learning opportunity.
Trust	Leaders focus recognition on success. Failures are hidden rather than cultivated for lessons.	Roles evolve based on a combination of organizational priorities & staff strengths.	Work plans include an area for involvement in organizational improvements. Project plans include a formal evaluation as well as formal sharing of learnings.	Leaders formally & informally recognize those who share new ideas, take risks & share their learnings. Leaders model experimentation & reward & recognize it along with success.	Active internal networks & processes are in place to share learnings & celebrate failures & risks.

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Figure 3. Organizational Innovation Maturity Benchmarking Tool.



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Chapter 5: Conclusion

This study sought to determine how Alberta Agriculture and Forestry can foster innovation within the ministry. Today's public servants must function in a global environment that would have been almost unrecognizable even two decades ago. While many of government's roles remain consistent, such as policy and program development, health care, education, etc., the way in which citizens expect programs and services to be delivered has changed fundamentally. AgFor leadership recognizes this shift and the associated challenges it creates specifically within a government context. In order to build a vibrant and resilient Alberta for the future, government must move beyond transforming for the sake of administrative efficiencies and towards fostering innovative solutions to tackle complex problems. As Bason (2010) suggests, "It seems that public sector organizations are pretty good at improving how to do things right (creating a smooth running bureaucracy), but not necessarily at how to do the right thing (addressing the actual needs of the citizens they serve)" (p.18). Using a grounded theory methodology, I set out to develop a model to serve as a guide for fostering innovation within Agfor. The following chapter provides a summary of the key research findings, the model developed and recommendations for practical application.

A review of innovation literature set the initial direction for the study by providing the key areas of importance for fostering innovation. Collaboration, ambidexterity, knowledge management, change management and e-government became the guiding topics for 22 semi-structured interviews with AgFor executives. An additional area, happiness, was added as a result of the iterative process of data gathering and analysis. With the literature suggesting the key factors for fostering innovation, I then

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set out to determine specifically what enables or inhibits AgFor in those areas. 17 themes emerged from the interviews ([see Chapter 4](#)). These themes paint a clear picture of the current state of challenges for fostering innovation within AgFor. However, with the ultimate goal of the study being to not only identify the current state, but to create a model to guide improvements, a second level of analysis was required. The second level of analysis focused on diagnosing the underlying issues leading to the challenges expressed through the interviews. It was through this second level of analysis that the essential elements of an organization's innovation ecosystem emerged ([see Figure 1.](#)).

In order to foster innovation within the organization, the innovation ecosystem must be nurtured. The organizational innovation ecosystem maturity model is designed as a tool for practical application. The first step towards nurturing the ecosystem is an awareness of the core elements. Once organizational leaders are aware of the elements of an organizational innovation ecosystem, the next step is developing an understanding of what maturity looks like for each element. This is a critical point because to merely understand that systems, for example, are part of the organizational innovation ecosystem, does not necessarily suggest an understanding that to foster innovation, a mature system is designed to support collaboration. "To embed innovation in the public sector organization it is necessary to build, share and maintain a common language and create awareness of key innovative practices." As such, the organizational innovation maturity model ([see Figure 2.](#)) is designed to provide guideposts for leaders seeking to intentionally improve their organization's capacity to innovate. To use the model effectively, each process, program or initiative should be viewed through an innovation lens. Barriers to innovation need to be systematically identified and removed as part of an

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on-going strategy of continuous improvement. The organizational innovation ecosystem maturity model can serve as this lens. The corresponding Benchmarking Tool ([see Figure 3.](#)) while simple by nature, provides a powerful tool for leaders to visualize the current health of the organization's innovation ecosystem.

It could be argued that this study, and the resulting model I developed is limited to AgFor's internal innovation ecosystem. The Ministry of Alberta Agriculture and Forestry exists within the larger Government of Alberta organization, within the province of Alberta's innovation ecosystem, within Canada and as part of a global community. The larger innovation ecosystem was not specifically considered as part of this study, although I believe a number of correlations could likely be made. The pure intention of the model is to help AgFor improve its innovation ecosystem in order to foster innovation both within the organization and for the industries served.

I believe other government ministries as well as both large and small enterprises in the private sector could benefit from the model. However, the organizational innovation maturity model is grounded in data specific to AgFor, so as is the case with all models and theories, other organizations would be wise to question its general applicability. With that said, my hope is that it provides a rich addition to the innovation literature and if nothing else, sparks debate and conversation leading to great insights and improvements that foster successful innovation.

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