AN EXPLORATION OF INNOVATION ADOPTION AND FAMILY FARMING DYNAMICS THROUGHOUT INTERGENERATIONAL TRANSITION

by

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As members of the Master's Committee, we certify that we have read the thesis prepared by Sean Lally, titled An Exploration of Innovation in Family Farm Transition and recommend that it be accepted as fulfilling the dissertation requirement for the Master's Degree.

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Abstract

Family farming operations in the United States are the backbone of the American agricultural economy. Yet, these farms are continually threatened by corporate encroachment and sector wide intergenerational transition of ownership and the uncertainty of succession outcomes. The current study uses a set of theoretical constructs (centralization, formalization, interconnectedness, organizational slack, size) from Rogers’s (2003) Innovation Diffusion Model of Structural Characteristics and Organizational Innovativeness to guide a qualitative exploration of the implications of intergenerational family farming dynamics in California’s San Joaquin Valley. The findings revealed three phenomena - generational leadership positioning, formalization and centralization, and interconnectedness and ingenuity – that stand to inform more proactive approaches to the integration of innovation adoption with intergenerational family farming dynamics.

Introduction

Despite growing concern over the global corporatization of agriculture, 96% of the approximately 2.2 million farms in the United States (U.S.) are family owned and together account for 88% of national production yields (Whitt, Bailey, & Harris, 2021). Indeed, family farms remain the most vital input to the U.S. agricultural economy and a critical element in the economic vibrancy and social and environmental well-being of agricultural and rural communities (Darnhofer, 2010). The long-term resiliency and viability of family farms in the U.S. is nonetheless threatened by not only corporate encroachment, but also by sector wide intergenerational transition of ownership and uncertain succession outcomes (Suess-Reyes & Fuetsch, 2016). The latter threat was evidenced in 2017, when the average age of a U.S. farmer was approaching 58 years with the average retirement age being 75 years (USDA, 2017).
Compounding the closing gap between average ages of active and retired farmers is a downward trend in the number of active farmers below the age of 40 (Leonard, et al., 2017). Innovation is viewed as an essential factor to intergenerational succession, young farmer retention, and the overall long-term economic and social sustainability of the family farming sector (Gullifer & Thompson, 2006; Suess-Reyes & Fuetsch, 2016).

The current study addressed the intersection of innovation and intergenerational succession through a qualitative exploration of the innovativeness of six family owned and operated produce farms within California’s San Joaquin Valley. According to Rogers (2003), “innovativeness is related to (1) individual (leader) characteristics, (2) internal organizational structural characteristics, and (3) external characteristics of the organization” (p. 412). Turning to intergenerational succession, innovation adoption patterns vary by age with younger generations being more open to new technology and applications as compared to their older counterparts (Bae, Jo, & Lee, 2021). Intergenerational transition presents a unique opportunity to enhance the innovativeness of family farms and in doing so bolster their overall viability during periods of leadership succession. To date, there lacks scholarly research on the conditions and dynamics that influence the co-mingling of innovativeness and intergenerational succession within the family farm sector. To address this gap, I asked the following two questions:

1. What are the organizational characteristics that influence family farms innovativeness?
2. How do intergenerational dynamics influence the innovativeness of family farms?

**Literature Review**

There is no single, concise agreed upon definition of a family business (Littunen & Hyrsky, 2000). Instead, multiple criteria are relied on to categorize such business-types to include, for example, percentage of ownership, strategic control, involvement of multiple
generations, and the intent for the business to remain inside the family (Astrachan, Klein, & Smyrnios, 2002). These criteria are useful in characterizing family businesses by different tiers. The broadest tier is that there is only some family participation, and that the family has control over the strategic direction of the company. The second tier is more focused with business owners passing company control down to other family members. The third tier is the most focused with multiple generations in the family having significant impact on the business. This third criteria best captures the intergenerational family farms that are the focus of the current study.

Leadership succession is a significant challenge that inevitably confronts intergenerational family businesses (Astrachan & Shanker, 2003; Brockhaus, 2004). While succession planning is critical to the long-term viability of intergenerational family businesses, this already complex transitional process is often compromised by conflict, inefficiencies, and counterproductive behaviors (De Massis, Chua, & Chrisman, 2008). Accordingly, intentional succession planning, and leadership development activities have been recommended, but with relatively little specificity (Bigliardi & Dormio, 2009). Accordingly, the inclusion of innovation development relative to the long-term trajectory of family businesses has been identified as an important, but oftentimes missing element of the intergenerational succession planning process (Hauck & Prügl, 2015).

Intergenerational family farm succession is a complex phenomenon that impacts both the family farm sector and surrounding agricultural communities and economies (Kurland & McCaffrey, 2020; Leonard, et al., 2017; Luhrs, 2016). Organizations and government agencies are increasingly mobilizing to build the robustness of agricultural communities and economies via strategies that range from lobbying for small to midsize farm friendly policies to
economically incentivizing young farmer retention (Abdulai & Oppong, 2021; Mars & Schau, 2019; Plana-Farran & Gallizo, 2021). Despite such efforts, low levels of innovation and the reluctance of older generational leadership to pursue riskier and change-oriented strategies continue to hamper the overall viability of the family farm sector and the vibrancy of the communities in which such farms operate (Fuetsch, 2022; Gullifer & Thompson, 2006). The ongoing challenges to the innovativeness of intergenerational family farms and the associated effects on leadership succession and firm persistence made the current study especially timely.

**Theoretical Framework**

The current study was guided by Rogers’s (2003) Innovation Diffusion Model of Structural Characteristics and Organizational Innovativeness. More specifically, five constructs composing Rogers’s model were used to guide the exploration of the conditions and factors influencing the organization innovativeness (OI) of a sample of intergenerational family farms located in Central California’s San Joaquin Valley. These constructs included centralization, formalization, interconnectedness, organizational slack, and size, and together represented the structural dynamics that influence OI. Luk, et al. (2008) succinctly defined the concept of OI as an “organization’s tendency to master, implement, and develop processes or products” (p. 590) that are new to it.

Rogers (2003) argued that centralization and formalization are negatively associated with OI. Centralization is the degree to which organization, power, and control are concentrated within an organization in the hands of one or very few individuals. According to Rogers, the more concentrated the power is within an organization, the less innovative it is likely to be. The logic underlying this negative association is that leaders with strong, concentrated control over an organization have a narrow view of the routine operational-level problems that confront
employees as part of their everyday work. Such lack of understanding can make it difficult for senior management to identify and remedy problems with relevant innovations. Leaders with concentrated power are also less inclined to introduce more informal processes and protocols that provide employees with the autonomy to experiment with, adapt, and adopt innovations (Taneja, Pryor, & Hayek, 2016).

Likewise, Rogers (2003) argued that formalized innovation decision-making and OI are negatively associated. In other words, the more rigid policies are on how innovation decisions are made, the less innovative an organization is likely to be. This generalization is consistent with the long understood negative effect of bureaucratic rigidity on the innovative capacities of individual employees within hierarchically structured organizations (Thompson, 1965).

Unlike centralization and formalization, Rogers (2003) asserted that organizational interconnectedness, slack, and size are positively associated with OI. Organizational interconnectedness refers to the degree to which members of an organization are externally linked to others through interpersonal networks (Gupta & Rogers, 1991). Interconnectedness fosters OI through the open exchange of new ideas, knowledge, and strategies between organizations within common or intersecting fields. Organizational slack is the capacity and willingness of organizational leadership to invest portions of excess resources in innovative tools and strategies (Herold, Jayaraman, & Narayanaswamy, 2006; Rogers, 2003). The logic stands that innovation requires investment and investment requires both available resources and the willingness to “take a chance” on prospective opportunities for change and disruption. Lastly, Rogers (2003) contended that size is positively associated with OI – that is, the larger the organization, the higher the OI. The premise of this generalization is that with size comes the
financial resources and intellectual capital (i.e., human talent) to identify, evaluate, and invest in opportunities for innovation and absorb any failures that result from misguided investments.

Methods

A multiple case study research design was used to qualitatively explore the two research questions (Yin, 2018). The cases were purposively selected using predetermined criteria (Patton, 2002). The case selection criteria included a) family owned and operated farms, b) intergenerational family participation in farming operations, c) anticipated intergenerational succession of leadership within five years of the point at which data was collected (spring 2022), and d) location within Central California’s San Joaquin Valley. The San Joaquin Valley was chosen as the community setting for the following two reasons: 1) California is the leader in agricultural production in the U.S. and 2) the Valley itself is home to seven of the top 10 agricultural counties in the State of California according to the California Agricultural Statistics Review (CDFA, 2018). There are nearly 4,000 farms operating in the San Joaquin Valley, approximately 95% of which are family owned and operated (CDFA, 2017; UCCE, 2022). Figure 1 is of the San Joaquin Valley which is outlined and broken up into counties.
Intergenerational family farm succession is a pressing issue that threatens the economic and sociocultural conditions of the San Joaquin Valley and its communities. Through an initial search and preliminary field work, six family farms were purposively selected as cases using the aforesaid criteria. All six farms grow a variety of nuts, citrus and/or produce with four being “large” and two being “small” in size. Size was determined based on the USDA’s parameters of

Figure 1. San Joaquin Valley
annual revenue and number of employees. Each farm was assigned a pseudonym per the human subject protection protocol approved by the researcher’s home university institutional review board. Figure 2 provides a brief description and the pseudonym for each farm.

Figure 2. Site pseudonyms and descriptions

<table>
<thead>
<tr>
<th>Farm Pseudonym Name</th>
<th>Farm Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoo Fly Fields</td>
<td>Large Scale Family Farm that grows Almonds, Olives, Pistachios, Pecans, Wine Grapes, Tree Fruit, and Citrus.</td>
</tr>
<tr>
<td>Stewart Family Farms</td>
<td>Large Scale Family Farm that grows Mandarins, Table Grapes, Almonds, and Pistachios.</td>
</tr>
<tr>
<td>Sugar Pine Ranch</td>
<td>Large Scale Family Farm that grows Oranges, Peaches, Apricots, and Wine Grapes.</td>
</tr>
<tr>
<td>Berry Rich Acres</td>
<td>Large Scale Family Farm that grows Blueberries, Blackberries, Table Grapes, and Almonds.</td>
</tr>
<tr>
<td>Brown Family Farms</td>
<td>Small Scale Family Farm that grows Tree Fruit, Table Grapes, Persimmons, Citrus, and Mushrooms.</td>
</tr>
<tr>
<td>Sleepy Hollow Farms</td>
<td>Small Scale Family Farm that grows Cherries, Boysenberries, Strawberries, Apricots, and Pomegranates.</td>
</tr>
</tbody>
</table>

A purposive, theoretically-oriented sampling strategy (Gerring, 2008; Patton, 2002) was used to select a participant sample composed of individuals with rich and intimate understanding of the dynamic between intergenerational family farm operations and OI. To this end, the minimum participation criteria (Miles & Huberman, 1994) limited the sample to family representatives who were at least 18 years old, had some form of formal education (high school diploma or higher), in a management position, and actively involved in the operations of their respective farm. Participant recruitment occurred through in-person introductory site visits to each farm, as well as through referrals made by community members and agricultural leaders located across the Valley (i.e., chain sampling) (Fusch & Ness, 2015). This sampling strategy
generated a total of 12 participants. There is no precise threshold when it comes to the participant sample size of a qualitative study (Boddy, 2016; Guest, et al., 2006). Recall that participant recruitment in the current study was, consistent with the phenomena of focus (intergenerational family farm succession and OI), limited to family members who were actively engaged in the operations and/or management of one of the six farm sites. Accordingly, the relatively small sample size was theoretically and empirically justified. In order to protect individual anonymity (and per the university approved human subject protection protocol), each participant and farm was randomly assigned a pseudonym and the individuals were defined by their generation in the company. Generation criteria was defined through birth order in the family. The “older generation” was the oldest generation with primary authority over the farm (i.e., father, mother, aunt, uncle, or grandparent of the younger generation). The “younger generation” was that following the older generation and thereby inline for intergenerational leadership succession.

Figure 3 briefly describes each participant according to their pseudonym.

<table>
<thead>
<tr>
<th>Pseudonym Farmer Name</th>
<th>Farm</th>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colin</td>
<td>Shoo Fly Fields</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Jake</td>
<td>Shoo Fly Fields</td>
<td>Younger Generation</td>
</tr>
<tr>
<td>Dolores</td>
<td>Shoo Fly Fields</td>
<td>Younger Generation</td>
</tr>
<tr>
<td>Jeffrey</td>
<td>Sugar Pine Ranch</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Matt</td>
<td>Sugar Pine Ranch</td>
<td>Younger Generation</td>
</tr>
<tr>
<td>David</td>
<td>Sugar Pine Ranch</td>
<td>Younger Generation</td>
</tr>
<tr>
<td>Greg</td>
<td>Stewart Family Farms</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Grace</td>
<td>Berry Rich Acres</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Steven</td>
<td>Brown Family Farms</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Catherine</td>
<td>Brown Family Farms</td>
<td>Older Generation</td>
</tr>
<tr>
<td>Adrian</td>
<td>Sleepy Hollow Farms</td>
<td>Older Generation</td>
</tr>
<tr>
<td>William</td>
<td>Sleepy Hollow Farms</td>
<td>Younger Generation</td>
</tr>
</tbody>
</table>
Data Collection

Data were collected from three sources over a three-month period in the spring of 2022. First, semi-structured interviews (Miles & Huberman, 1994) with family members who were actively engaged in the operations of their farm were the primary source of data. The younger generation that was interviewed had a common passion for the family farming way of life that was shared with the older generation. The interview protocol was derived from Rogers’s (2003) constructs of OI and thereby designed to probe the organizational characteristics that influence family farm innovativeness, as well as how intergenerational dynamics and pending leadership succession influence the OI of each farm. The interviews were audio recorded and later transcribed in preparation for analysis. Second, site visits were also conducted, when possible, with intent of capturing the routine expressions of the OI of the farms. Approximately 15 hours of direct observations were conducted over the course of the site visits with insights being recorded in a handwritten field note format (Maxwell, 2013). Third, documents that included marketing pieces, websites, and social media pages from each farm were collected and archived for analysis.

Data Analysis

Considering the researcher is the primary instrument in qualitative research (Pezalla, Pettigrew, & Miller-Day, 2012), a “hand coding” strategy was used to provide more direct and intimate interactions with the data throughout the analytical process (Ryan, 2009). A structured coding framework composed of Rogers’s (2003) previously described OI constructs guided the deductive analysis of the data (Miles & Huberman, 1994) (see Figure 4). This framework enhanced the researcher’s capacity to understand how intergenerational dynamics and pending
succession influenced the OI of each farm. Inductive analysis was also conducted using an open coding strategy with the intent of revealing any patterns or themes relevant to the two research questions, but not otherwise captured through the application of the deductive framework (Corbin & Strauss, 2015). The strategy was carried out over multiple rounds that included both idiographic and nomothetic analysis (Gelo, Braakman, & Benetka, 2008). Idiographic analysis involved each individual participant and individual farm being analyzed separately. Several rounds of idiographic analysis were conducted to identify and characterize early-stage patterns and themes specific to each participant, which at this point in the analysis were treated as micro-cases (Gerring, 2007), and each farm as a standalone case. Next, multiple rounds of nomothetic analysis were performed, which involved the emergent patterns and themes identified through the idiographic stage being compared across the participant sample and farm sites. By doing so, meta-themes were revealed through continual cross-samples, and site comparisons were able to be narrowed and refined into the final set of findings.

Figure 4. Internal Characteristics of Organizational Structure Codes.

<table>
<thead>
<tr>
<th>Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralization (Cen)</td>
<td>Power &amp; control in the organization are in the hands of one, or a few individuals.</td>
</tr>
<tr>
<td>Formalization (F)</td>
<td>Following the rules and procedures a company sets.</td>
</tr>
<tr>
<td>Interconnectedness (IC)</td>
<td>Enables organizations members to openly share and discuss new ideas and strategies.</td>
</tr>
<tr>
<td>Organizational Slack (OS)</td>
<td>The degree of freedom an organization has to utilize excess resources towards innovations.</td>
</tr>
<tr>
<td>Size (S)</td>
<td>How large or small a company is.</td>
</tr>
<tr>
<td>Large Scale Family Farm (LSF)</td>
<td>A family farm that grosses over $500,000 annually (USDA, n.d.).</td>
</tr>
<tr>
<td>Medium Scale Family Farm (MSF)</td>
<td>A family farm that grosses between $250,000 and $500,000 annually (USDA, n.d.).</td>
</tr>
<tr>
<td>Small Scale Family Farm (SSF)</td>
<td>A family farm that grosses under $250,000 annually (USDA, n.d.).</td>
</tr>
<tr>
<td>Innovativeness (I)</td>
<td>Organizational capacity to effectively engage in innovative activities and strategies.</td>
</tr>
<tr>
<td>Positive (+)</td>
<td>Positively associated with innovation.</td>
</tr>
</tbody>
</table>
Trustworthiness

Trustworthiness of the analysis and findings was enhanced in several ways. First, data analysis involved the researcher discussing and reaching consensus with their faculty advisor on the emergent themes and patterns at the conclusion of each round of analysis (i.e., researcher triangulation) (Creswell, 2007). Second, intersections between the three data sources were identified and noted in memo format throughout the analytical process (i.e., data triangulation), which added consistency and richness to the findings (Leech & Onwuegbuzie, 2007). Together, researcher and data triangulation increased the credibility of the analysis and thereby findings (Berg & Lane, 2014). Third, an audit trail was systematically maintained throughout the study using a memo writing technique to further establish the transferability of the findings (Malterud, 2001). More specifically, the audit trail spanned the development of the study design, application of the data collection protocol, and entire analytical process, providing transparency and increasing potential replicability (Creswell & Miller, 2000).

Findings

The findings illuminated three themes that bring nuance to the theoretical application of Rogers’s (2003) innovation adoption constructs to the dynamics associated with intergenerational family farms and OI. First, the size of a family farm appears to be mostly irrelevant with generational leadership and positioning being much more influential on OI and innovation adoption. Second, decisions on innovation adoption remain highly centralized within the confines of family leadership. Yet, said decisions are made informally in ad hoc fashion. Third, interconnectedness was shown to be consequential, but in a hyper-local context that fosters ingenuity more so than innovation. Prior to articulating each of these themes, it is
important to note that the marketing pieces, website pages, and social media sites of the farms varied in terms of robustness and aesthetic design. Yet, an overall inter-organizational theme of conventional operations was consistently conveyed across these materials – indicating a tone of status quo and organizational maintenance as opposed to OI.

**Generational Leadership and Positioning**

A pattern commonly observed across both the large and small sized farms was generational leadership and positioning. The strategic placement of daughters and sons in leadership situates them to eventually assume control of the family business. Nonetheless, such positioning does not translate to having immediate control or strong influence over how decisions involving innovation adoption are implemented. Such control and influence are firmly retained by the older generations. Matt, a younger generation family farmer, stated, “My father has the say when it comes to the decision making. He is old school and believes there is a right way and a wrong way of doing things.” Similarly, Steven, an older generation family farmer stated, “I make all the decisions. I am open to suggestions, but the workers need to follow the program.” These quotes illustrate an overall pattern of centralized power and control among older generations as observed across the data.

Generational leadership positioning offers another intriguing phenomenon as council for decision making. This strategic placement allows the younger generations’ voices to be heard due to their positional power. Acting as council for decision making creates an avenue for the younger generation to bring up ideas to the older generations and thereby have some influence over decisions. In informal settings the younger generation has a better chance of being listened to than if a lower-level, non-familial employee came in during business hours with a suggestion
for innovation experimentation and adoption. For example, Greg, a younger generation farmer, stated,

The most important thing you can do in a family business is communicate. So, we are constantly talking, sometimes in formal ways like board meetings or regularly scheduled meetings, but more importantly, informally over the course of the day during small discussions, having lunch together almost on a daily basis with the majority of our family members in the family business. That’s how decisions get made. In informal settings everyone is more relaxed and easier to talk to which helps you get to better answers and arrive at better decisions.

Greg’s perspective illustrated how powerful informal interactions are in intergenerational family farming dynamics. Decisions being made through the “breaking of bread” on equal levels allows for everyone to voice an opinion unincumbered. Many of the older generation farmers are in executive leadership roles and cautiously trust the judgment of their successors, but ultimately believe mostly strongly in their own intuition and wisdom. For example, Jeffrey stated, “Youth and ambition is great, but it needs to be tampered with age and wisdom.” Similarly, David, a younger member of a family leadership team stated,

We bring new technology to our father that we think would be cost effective to implement that would increase efficiency is a great idea to us, but might not be to our father. The planting of the idea seed in our dad’s mind is the main goal because over time that seed will grow into his own idea which he will then implement into the company.

Conversely, if an employee outside the family in a middle management position brought the potential for innovation, that “seed” might not be “sowed.” These perspectives illustrated the positioning power and dynamic between the two different generations and within the inner circle of the family.

In summary, the data showed overall that the views of the future held by the younger generation of family farmers differ from the older generation with the former being more innovative in their perspectives and aspirations. Consequently, innovation is highly sought out by
the younger generation, but is often inhibited by the older generation that has the final say in the decision-making process.

**Centralization and Formalization**

Within the preceding dynamic of generational leadership and positioning, power was found to be tightly confined and highly centralized within the family circles and hierarchies of each of the six family farms. The older generation has the ultimate authority over all decision-making processes. While decisions on innovation adoption remain highly centralized within the confines of the family leadership team, they are made in an ad hoc, informal fashion. Matt stated,

> My father has the final say in the decision-making process, but we’re basically his right hand guys. We have a lot of input, but he’s the ultimate deciding factor. All me and my brother do is give input like most other family businesses, the father runs the show, but does listen to his sons or daughters. Sometimes he doesn’t always agree with our inputs, but all you can do is put it out there and say, “it’s your decision. What do you want to do?”

This perspective showcased how tightly held power is by the owner of the company and how those outside the immediate family leadership circle have little to no opportunity for input and influence. Like the previously described power of informal communication between family leadership teams, Matt also stated,

> Whenever there is a problem the family sits down at the breakfast table like a little powwow and say, okay this problem needs to be dealt with what should we do? We then divide up the tasks and conquer them as a family unit. Dividing and conquering as a family is much more efficient than if one person was in charge and had to do all the tasks.

Matt’s description articulated a pattern of informal ad hoc decision-making process that was commonly observed across all six farms.

In some instances, the confines of the familial leadership circle can be permeated by non-family staff who are in senior leadership positions (e.g. Chief Financial Officers, Controllers,
Directors of Agronomy). Such permeation is almost always facilitated by the younger generation of the family leadership circle. For example, Jake of Shoo Fly Fields stated,

When making decisions on implementing new technology we first poll people and managers that would be using the technology and gauge their interest in the product. Next, my father and I would sit down with our CFO and our Chief Agronomist and make the decision together.

Likewise, Grace of Berry Rich Acres stated,

Decisions are made consulting with our team, the ranch foreman, our pest control advisors, and accountants. We also take into consideration historical trends of what we’ve done and what’s worked in the past. We like to balance our decisions with a combination of input and proof of practice.

This informal, ad hoc arrangement was consistently evident across the six farms. This finding complicates the general understanding that rigid formalization compromises OI (Eva, Prajogo, & Cooper, 2017; Rogers, 2003). Specifically, the informality of ad hoc decision making is limited to the family leadership circle, which stifles bottom-up innovation. Ad hoc decision making occurs within a protected space that is surrounded by a formal perimeter that is counterproductive to more routine experimentation and bottom-up innovation (see Figure 5). Inner circle employees and immediate family members to the head of the family have informal decision-making capacity within the farm and are brought in for feedback, input, and council throughout the decision making process.
Figure 5. Decision Making by Organizational Role and Influence

- **Family Head**
  - Centralized authority over both informal and formal decision making

- **Immediate Family**
  - Has direct influence on both informal and formal decision making

- **Inner Circle Employees**
  - Limited Input and Influence

- **Outer Circle Employees**
  - Trusted by the Family Head and involved in both informal and formal decision making
Interconnectedness and Ingenuity

The six farms were found to be locally and regionally interconnected in ways that span both agricultural and community contexts. This interconnectedness involves the farm leadership partnering with K-12 schools and universities, serving on local and statewide agriculture boards, participating as vendors at both farmers’ markets and local grocery stores, and collaborating and sharing business-related information with one another. Regarding educational connectedness, Steven of Brown Family Farms stated, “We deliver to local schools and institutions in the Valley and also to places outside the Valley in California and Nevada.” Such connectedness also involves partnerships with local universities. For example, Jake stated,

We participate in sponsor events for the betterment of milling. We sponsor educational seminars, and call them master milling courses. We've ran two different master milling courses at Fresno State so far. We have also put together two day courses with our head miller where we invite other millers and olive oil companies from up and down the state to come share and learn. It is a very open dialogue where we are able to share the problems we encountered and what actions we took to solve the problems. The olive oil community is a very small group in California so anything we can do to uplift the industry is very powerful.

The farmers, regardless of generation or farm size, are also tightly connected with universities located in the surrounding valley. This connectedness centers mostly on access to data-informed problem-solving in response to routinely occurring challenges and threats – signaling reactive ingenuity over proactive innovation. For instance, Adrian of Sleepy Hollow Farms stated,

University of California Davis played a major role in the first twenty years of our operation. In the last ten years not so much, but when they were here. They spent a lot of time with irrigation sprinkler modifications, looking at the type of soil, and nutrient uptake. Most of that research is now done because they got all the data they needed.

Local and regional universities are also trusted outlets for professional development among the farms managerial staff. Colin of Shoo Fly Farms stated, “we embrace education and try to utilize as many workshops and opportunities put on for those who have Pest Control Advisor Licenses
and Qualified Applicator Licenses and Certificates by both state and UC institutions in California.” Similarly, Steven stated,

I go to as many UC Extension field trials and seminars as possible. Just in the last month I have been to two and have traveled up to 200 miles to go to one of them. Information is understanding and you need that information to come up with proper solutions.

The farmers do not engage local and regional universities as partners in the development and implementation of disruptive technologies and techniques (i.e., innovation). Rather, engagement is limited to the farmers and their managerial staff being recipients of the continuing education needed to maintain their licenses and certifications and to be able to better address recurrent problems in creative and more efficient ways (i.e., ingenuity).

Hyper-local interconnectedness is also displayed through the participation with local agriculture boards such as local farm bureaus and as both suppliers and owners of local grocery stores. Dolores stated,

We have a farm-to-table store and bakery that we are trying to incorporate more of our own products. We proudly sell our own products and local Fresno State products that are produced by students in the Jordan College of Agriculture. Some newer products that we have incorporated over the last couple of years is our olive oil and biscotti. We are trying to diversify and make a cohesive platform with all of our companies so they continue to grow and develop new products for our local community.

Farm leadership viewed service on the boards of local and regional agriculture organizations (e.g., farm bureaus) as vital inputs to the success and longevity of farming across the region. Such community leadership entailed advocating for and having influence over public policies relevant to agricultural and rural development issues. Colin stated,

I am a part of two different Central Valley counties farm bureau’s Board of Directors. It is very important to stay involved in your local community because your family and your local community is who you will turn to when times are tough.

Similarly, Greg stated,
I think that is really important to be a part of industry groups where you can talk about the things that are affecting our industry and have a common voice. We are a part of many of those organizations and sit on the boards which I think are very important to participate in.

Likewise, the farmer leadership often look to other farmers and community members to gain knowledge on solutions to common problems. Adrian of Sleepy Hollow Farms stated,

We have a group of people in the cherry industry that we do quarterly and yearly meetings with. The industry is small enough that all the growers communicate and share information, for example there was a big problem with a particular worm getting into the cherries and some of the growers lost all of their crops. We hadn’t experienced that, so they came out to our small ranch and wanted to know what we were doing differently. I told them that we don’t spray and they said, okay you don’t want to share the information. When in fact that’s exactly what we were doing was nothing. Bigger companies spray knock down pesticides that kill off the natural resistance and predators of the pest. Once they saw that we actually were telling them the truth the larger companies started following our lead and converted to no spray for that particular issue.

Another account of sharing information was offered by Matt, who stated,

We are constantly talking to other farmers about what pesticides they are using to tackle specific problems and the effectiveness that it had. This knowledge prepares us more for when a PCA comes out and gives us a list of possible pesticides to combat the issue.

Hyper-local interconnectedness via collaboration and knowledge exchange is further illustrated through the participation of Sugar Pine Ranch in a viticulture co-op. Jeffrey, the older generational owner of the ranch, described the grower co-op as follows:

I am the head of a 17 grower co-op to grow for a particular winery. So, we have a reserved home for our product. This co-op pact protects all the growers so they are not at the whim of a large corporation like Gallo or larger wineries that can change the price of the open market with the snap of a finger. We work together in the co-op and share information about what our field workers are seeing with one another. In the co-op the farmers grow all of their own grapes, harvest them, and deliver them to the winery where they make it into an end product and sell them at bulk or wholesale prices. We supply one of the biggest cooking wine companies in the Western United States.

This tight knit community of growers serves as an information hub through which participating farmers exchange ideas for improving crop production and solve immediate problems. Such collaboration and sharing of best practices are viewed as being essential for the longevity of the
farms as well as that of the local and regional agricultural economy. In particular, the knowledge shared by established family farms is seen by the farmers as vital to the operational success and sustainability of emergent and smaller scale operations. Interconnectedness via knowledge sharing is driven by a commitment to stewarding the agricultural niches that sustain the agricultural economy and characterize the history and vibrancy of surrounding communities. Yet this interconnectedness does little to foster innovation and the adoption of forward-thinking techniques and technologies with attention instead remaining on shared reactions, albeit often ingenious in nature, to immediate problems and challenges. Accordingly, family farm interconnectedness involves the sharing of ingenious problem solving and troubleshooting rather than interorganizational (and thereby community-wide) innovation.

The tendency for reacting to problems in ingenious ways emphasized a focus on maintaining the status quo rather than pushing forward in innovative ways. While all six of the family farming operations had some degree of organizational slack (i.e., investment resources), they routinely choose not to invest in innovative strategies and practices. Instead, they limited the resources to immediate problem solving – i.e., “rainy day funds” - or to support increased efficiency of established practices. Matt of Sugar Pine Ranch stated,

A rainy day fund is important because you never know when something is going to break and when it does then you have the money to replace it. It also is important if you want to pivot from what you are doing. For example, we just pulled five acres of citrus and now are going back and planting new grape vines. The fund is also there so you have the resources to be able to do that because if you don’t, you’re stuck in the same old thing you are doing and you’re never upgrading; you’re never evolving and that’s the biggest thing is improving, because as the old saying goes, nothing is going to last forever in regards to the trees and vines being healthy and productive.

The reactive nature of the farmers’ problem solving is further illustrated by Adrian of Sleepy Hollow Farms, who stated,
We have very little slack resources and they seem to get smaller and smaller every year. The only reason that we have progressed forward is because I integrate a lot of the resources that I have into maintenance of equipment. We build some of our own equipment from old sprayers or equipment that was broken on other farms or ranches and buy them and bring them back to life. This is a lot cheaper than going out and buying a new or used sprayer.

Similarly, Colin of Shoo Fly Farms stated,

We have a bone yard of all our old equipment rather than selling them or taking the money from recycling them we use them for parts to fix our machinery that is being used today. My father showed me this practice and said everything can be utilized or repurposed and has some sort of value. Sometimes you just have to hold on to it to find out.

While a source of ingenuity and routine problem solving, the “bone yard strategy” symbolizes an organizational characteristic common across the farms that favors reaction over proactive innovation. Further, instances of proactive strategies are not aimed at innovation and change, but rather iterative “tweaks” to increase the performance and efficiency of established practices.

Grace of Berry Rich Acres stated,

We set aside funding for projects that make for more efficient practices that are geared towards cutting down expenses and cutting down on operating costs. Whether it be switching to crops that allow for more mechanization cutting down labor costs or hiring only laborers that have prior experience in picking specific crops.

Reducing operating costs and increasing profit margins by bringing greater efficiency and performance to established practices is a sound business logic common to most (if not all) industries. Yet, such conventional practices were not being offset by investments in more innovative strategies and technologies aimed at increasing the longer-term viability and sustainability of the individual farms and by extension the agricultural community.

Discussion

The preceding findings complicated Rogers’s (2003) generalizations of OI as observed in the context of intergenerational family farms. First, generational leadership and positioning were
observed as having more of an impact on the adoption of innovations than farm size. Second, family leadership circles centralized control over decisions regarding innovation adoption. While such control was heavily centralized, subsequent decisions were mostly made in random and informal ways – making the processes opaque and mysterious rather than clear and transparent. Third, the influence of interconnectedness was hyper-local in scope and fostered routine ingenuity and problem solving over innovation and proactive strategizing.

Decisions regarding innovation (or any proposed investment for that matter) are centrally controlled by the senior member of the family leadership circles. Unlike Rogers’s (2003) generalization that centralization is positively associated with organizational size, this observation was consistent across all six farms – i.e., size did not appear to matter. Instead of the younger generations integrating new technologies and disruptive ideas with their practices, their impact was confined to facilitating solutions to problems via decisions made by the generation above them in informal, ad hoc ways. Returning to Rogers’ generalizations, the informal nature of decision making is theorized as being an input to innovation based on the freedom it brings to experiment on the margins. However, in the case of the six intergenerational farms studied here, the centralization of control dramatically offset this otherwise favorable input to OI. If the senior farm heads were more open to suggestions and forward thinking, the pairing of older and younger generations would likely foster greater degrees of OI. Instead, routine ingenuity, real time problem solving, and maintaining the status quo continue to hamper innovation adoption and threaten the longer-term viability of the farms.

The six farms were interconnected within the confines of the surrounding local and regional agricultural community and economy. Rogers (2003) asserted that interconnectedness is positively associated with innovation adoption. Yet, the local and regional interconnectedness
that characterized the six farms included in this study counter Rogers’s assertion. Like the family leadership circles observed in each farm, the local and regional agricultural community is tightly knit and difficult to penetrate when it comes to the integration of new ideas and innovative strategies. Trust is difficult to gain and is mostly earned over time through community assimilation and membership. Throughout this assimilation process, innovative ideas are overshadowed by the collective value placed on the status quo and the value and pride placed on ingenious problem solving and everyday persistence.

Rogers’ (2003) argued that organizational slack is positively associated with OI. Observations across the six farms explored here suggested that intergenerational family farm leadership are much more inclined to reserve any excess resources (i.e., slack) with the intent of a) maintaining the status quo and b) reacting to unforeseen problems that threaten said status quo. The notion of a “rainy day fund” is much more appealing than the perceived risks and disruptions associated with investments in innovation. This appeal remained consistent across the six farms regardless of organizational size, even when it came to several larger farms that were seemingly well positioned to invest in innovation based on available slack. Here again, this finding differs from Rogers’s generalization that both organizational size and slack are positively associated with OI. Regardless of farm size and amount of excess resources, reactive approaches (i.e., ingenuity) consistently overshadowed those that are more proactive (i.e., innovation).

Recommendations and Conclusion

To recap, the OI of the six farms studied here were limited by their centralization of power, exclusive informal decision making, and a hyper-localized element of interconnectedness. As with all qualitative research, these observations are limited to the six farms that comprise the study. Future studies that explore and refine these observations within
farms and agricultural communities outside of the Central California region are encouraged, as are those that consider agricultural contexts that extend beyond produce and fruit farming (e.g., fiber productions, dairies, cattle ranches). Additionally, research that examines alternative strategies for fostering community-based systems that foster OI in parallel to everyday ingenuity (e.g., agricultural maker spaces and innovation hubs) is warranted. Deeper exploration of alternative leadership strategies that productively challenge the hierarchal and exclusionary nature of intergenerational family farm management patterns are encouraged. Such scholarship has the promise of informing succession planning that balance both innovation and change with the familiarity of everyday ingenuity and family control.

Turning to recommendations for practice, stronger and more intimate connections with local and regional colleges and universities would likely enhance the OI of intergenerational family farms. For example, formal internship programs and field trials that allow students to apply and demonstrate the efficacy of cutting-edge knowledge and techniques would be a collaborative, relatively unintrusive approach to introducing and diffusing innovation on the farms and across the broader agricultural communities. By empowering students as innovation agents, the farms stand to benefit for the longer-term impact of innovation adoption and the opportunity to recruit and retain highly trained agriculturalists who may otherwise pursue professional opportunities outside of the community.

The current study has revealed how the dynamics associated with intergenerational family farm OI vary from the generalizations Rogers (2003) asserted in his foundational work on innovation diffusion. By better understanding these variations, scholars and practitioners alike are better positioned to encourage the innovation needed to sustain the long-term viability of family farms – especially throughout intergenerational leadership succession. The long-term
viability of family farms is critical to the vibrancy and overall well-being of surrounding agricultural communities and economies. The notion of OI therefore transcends the boundaries of individual farms to include the communities and economies they help compose and shape. Thus, the insights generated here, especially those related to interconnectedness, should be considered not only at the organization level, but more inclusively to include community, education, and industry networks and collaborations.
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