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The Role of Digital Entrepreneurial Platforms and Bricolage Entrepreneurial Processes in Rural Transformation

Cranmer RUTIHINDA
Bishop's University
crutihin@ubishops.ca

Abstract
Building on current developments of digital platform technologies and the emerging entrepreneurship theory of bricolage entrepreneurial processes, this paper develops a framework for economic and social transformation of rural communities using digital platform technologies. It argues that digital platform technologies when combined with bricolage entrepreneurial processes can empower rural entrepreneurs to overcome the liabilities and constraints commonly found in rural communities. In resource poor rural communities social entrepreneurial process are found to be necessary to mobilize the social capital and fill in the gaps caused by government and market failure. The findings of this study provide an insight into how new digital platforms can help isolated rural communities to overcome the barriers common to most rural communities including limited access to key resources, talent, investors and market access. The significance of this study is made by its three main contributions. First, it contributes to the social entrepreneurship literature by providing a conceptual framework that combines social entrepreneurial process and digital platform strategies as drivers of social innovation and social change. Secondly, by amplifying the role of social entrepreneurial processes in regional transformation this study contributes to the literature on regional revitalization which has often taken a top down approach by emphasizing large multinational corporations as the main driver for revitalizing regional economies. By having social entrepreneurial processes at the center of regional transformation, especially in rural communities where market conditions do not provide a return on investment that is large enough to attract large investors, this study provides a bottom-up approach that is more inclusive, practical and sustainable. Thirdly, this study brings to light the game changing role that digital platform technologies can play to advance economic and social change in isolated rural communities.

Keywords: bricolage entrepreneurial processes, digital entrepreneurial platforms, rural transformation, social entrepreneurship.

JEL classification: O3, L3, R1, F6.

1. Introduction

The acceleration of globalization and demographic changes in industrial economies has caused adverse effects on rural communities especially in the advanced economies. As global competition intensified, to stay competitive, multinational enterprises automated and offshored their manufacturing operations to less developed countries to reduce production costs. This trend of increased offshoring and automation led to massive unemployment in regional communities where manufacturing clusters were located, causing regional residents to migrate to urban centers where service sector jobs were increasingly being made available as the service sector was expanding in advanced economies. Migration from rural to urban centers is also driven by economic structures and education systems that concentrated economic activities and education facilities in large city centers.

Although there has been an increase of academic research on this subject of regional revitalization, most of this research has been dominated by the new economic geography paradigm that seeks to explain the concentration of economic activities in particular geographic locations (Fujita, Krugman and Venables, 2001). Regional locational advantages such as natural resources, concentration of talent, government policies, and historical developments have been found to be major magnets for clustering economic activities. Similar arguments are made by the strategic management of place paradigm (Porter, 1990; Katz and Wagner, 2014).

Building on the same economic assumptions is the place marketing literature that puts emphasis on the branding and promotion of a location's unique specific advantages to attract investments and tourism to create jobs and economic growth (Barca et al, 2012). This framework of marketing locations often involves a targeted investment promotion strategy where initial efforts are made by regional policy makers to specify a sector that will be suitable to drive economic growth for that location after considering a location's natural and human resources. Location branding strategies are then employed to attract investors to that location. To build industry clusters, government incentives are offered to leading global multinational enterprises. The goal is to have the leading investors who once located will pull their suppliers and other supporting industries to follow up with their operations into that location and build industry clusters.

All the above-mentioned approaches have contributed a great deal towards our understanding of factors leading to economic disparities between regions and what it takes to create industry clusters that will drive economic growth and employment. However, these theories have been criticized for overemphasizing the importance of the multinational enterprise (MNE) to regional development. Even when implemented they have resulted in short-term prosperity with negative long-term effects. When incentives dry out or global industry trends change and profit margins fall, the leading multinational firms leave. Once they leave the community to alternative low-cost locations, they leave behind a degraded environment, rising unemployment accompanied with related social problems that are now common in locations abandoned by MNE. This is what happened to many of the ghost towns that were abandoned as the manufacturing sector was replaced by the high technology information industry. Even in places where this approach has been successful in creating economic change, this change has often come at a high social cost with indigenous residents being crowded out as the cost of living goes up and their traditional livelihood is replaced jobs they cannot access. The older population in particular is often the first group to be laid off due to their relatively higher salaries. They are also the ones who are less likely to be offered training programs to fit into the new economic system, which leaves them with very few options but to take early retirement against their wishes.

On the other hand, a new pattern of non-manufacturing clusters is emerging in some city centers of industrialized countries. Unlike the manufacturing industry clusters, these emerging clusters, known as 'innovative districts' are geared towards creating an inclusive, sustainable and knowledge-based economies (Katz and Wagner, 2014). According to Katz and Wagner (2014, p.1) innovative districts are defined as "geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators". A key characteristic of innovative districts is their linkages with major research universities that bring in high-quality research faculty pursuing basic research who provide an opportunity for start-ups to convert basic research findings into innovations. However, innovative districts are not able to address rural communities that often lack the key drivers of innovative districts such as proximity to high-quality research institutions.

The aim of this study is to contribute towards filling in this gap by focusing on the economic and social revitalization of rural communities in industrialized countries with the specific intention of finding long-term solutions that will benefit local residents in a responsible manner without destroying the environment, and provides a path towards a more inclusive local community where no one is left behind. To achieve that objective, a framework that addresses both market failure and government failure is proposed. The proposed conceptual framework draws on the emerging theory of bricolage entrepreneurship which helps explain entrepreneurial processes in resource constrained environment such as those in rural regions. We use social entrepreneurship to address market and government failures. Digital

entrepreneurial platforms are used to overcome transactions costs that are typical for isolated rural locations with high infrastructure costs and limited market access. In the next section we first present the conceptual framework to explaining the role of digital platforms and bricolage entrepreneurial processes as key drivers of rural transformation. We later provide practical evidence of how our conceptual framework applies using a case study from one of Japan's most successful social enterprise, Irodori.

2. Conceptual Framework

Figure 1., illustrates the conceptual model for explaining how bricolage entrepreneurial processes and bricolage institutional processes interact with digital platforms to create social change in regional communities.

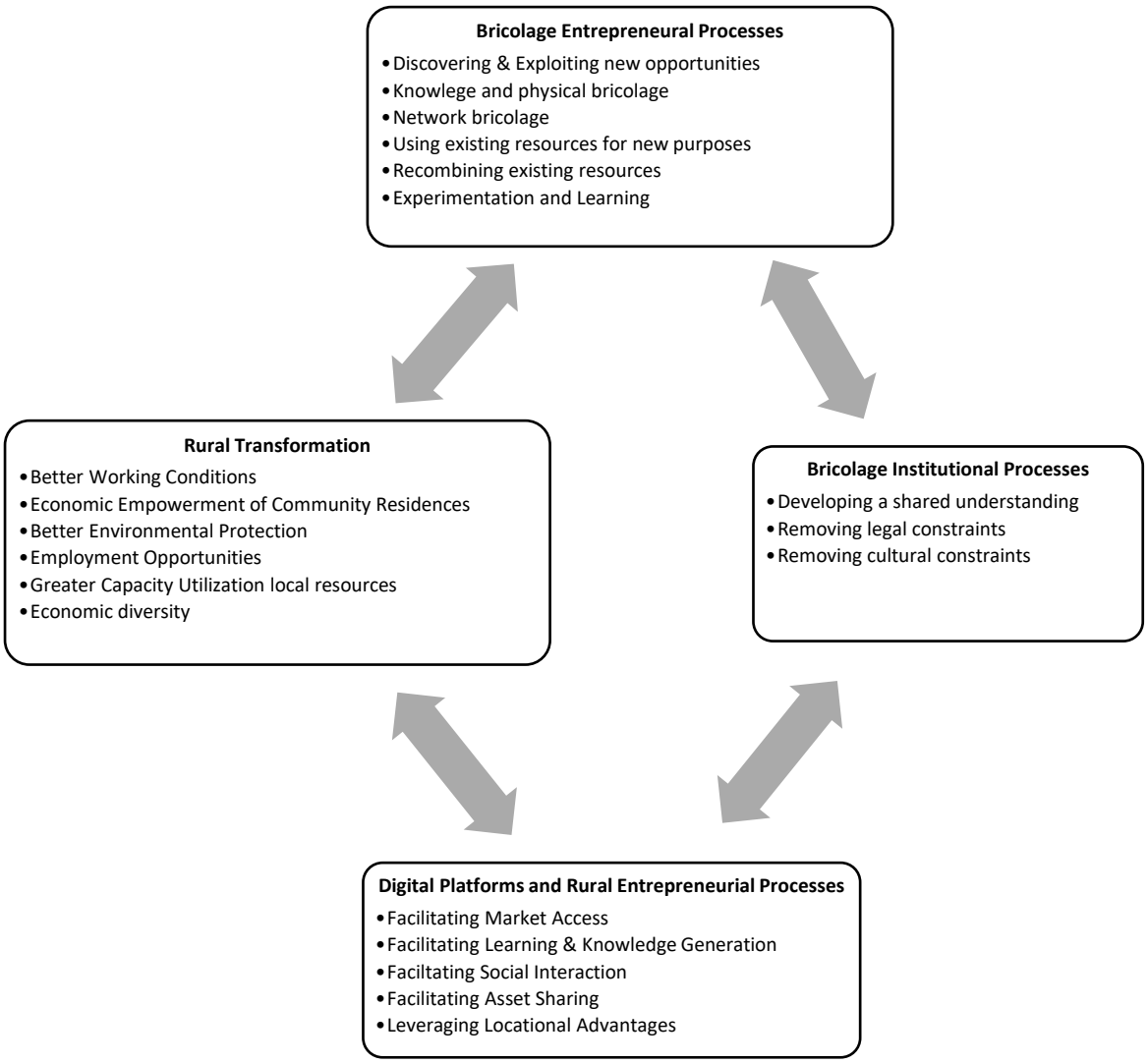

Figure 1. Digital Entrepreneurial Platforms and Bricolage Entrepreneurial Processes for Rural Transformation

Source: Author

2.2 Bricolage Entrepreneurial Processes

Entrepreneurial bricolage theory assumes that resource environments are socially constructed, suggesting that entrepreneurs in locations with significant resource constraints can

work with the limited resources they have at hand to create the resources they need (Fisher, 2012). Bricolage entrepreneurial processes are value creating processes that involve exploration and exploitation of entrepreneurial opportunities while refusing to be discouraged by existing resource constraints and institutional barriers (Baker and Nelson, 2005; Vanevenhoven et al., 2011). Bricolage resources can be distinguished as internal bricolage and external bricolage (Venevenhoven et al.,2011p.54). It is the entrepreneur's internal resources such as accumulated knowledge that determine the entrepreneur's ability to recognize emerging opportunities, while the entrepreneur's adaptive capabilities such as improvisation, critical thinking, integrative thinking and active engagement determine the entrepreneur's ability to exploit that opportunity. On the other hand, external bricolage refers to resources that are within the entrepreneur's external environment especially the established network of relationships with various stakeholders (Vanevenhoven et al., 2011). For social entrepreneurs, especially in rural areas successful entrepreneurs need to have networking skills required to create social value. Due to market failures and government failure, social value creation becomes a community endeavor that pulls resources from an extended network of stakeholders that includes local and central government agencies, private corporations, non-profit organizations, consumers, suppliers, multinational enterprises, financial institutions, schools, universities, hospitals, and other private and public institutions (Alvord et. al., 2004). Successfully exploitation of entrepreneurial opportunities from the network depends on the entrepreneurs own internal resource capabilities to extract resources from stakeholders, that is, the entrepreneur's absorptive capacity and the willingness of stakeholders to share their resources and their resource capabilities. Access to network partners with sound complimentary resources brings more value enhancing capabilities to the entrepreneurial process.

Hypothesis 1: Bricolage entrepreneurs in rural communities are likely to overcome resource limitations by repurposing their internal resources and leverage their established networks.

2.3 Bricolage Institutional Processes

Existing regulations or cultural norms can be a barrier to entrepreneurial processes. The behaviour between community members and the way they interaction and exchange of resources is highly influenced by institutional forces. Institutional forces are distinguished as formal and informal rules and regulations that govern individual behaviour (North, 1990). According to Scott (2014) institutions are distinguished into three systems, that is, as regulative systems made of rules and regulations issued by authorities, or normative systems made of informal networks, or cultural-cognitive systems which determines the society's shared values and meanings. In a regional community, formal institutions are set up by the local government laws and regulations, while informal institutions are shaped by local cultural norms and values (Cleaver 2002). Cultural norms and values are often taken for granted by local community members who through their interactions and knowledge of customs and traditions shape their attitude and behaviour in a manner that is acceptable in that community. In this paper we refer to bricolage institutional processes as the changes in a society's formal and informal institutional arrangements to accommodate social innovations that create positive social change. It is based on, institutional bricolage which is a concept emphasising the need to consider the nature and process of institutional formation and adaptation at the local level, recognizing that institutions change in response to the external environment and internal views (Cleaver 2002). The need to overcome institutional constraints is a requirement for entrepreneurship, especially in rural communities where rules and cultures are much stronger due the cultural proximity and isolation from multicultural interactions found in large cities.

Hypothesis 2: Bricolage entrepreneurs in rural communities are likely to overcome local cultural and regulatory constraints by using their established relationships with various stakeholders to communicate the social value of institutional change.

2.4 Digital Platform Entrepreneurial Processes

A digital platform is an internet-based software that is designed to create a digital market place to facilitate interactions between producers and consumers (Parker, 2017). Digital platform entrepreneurial processes are entrepreneurial ecosystems that leverage on digital platform technological resource capabilities by matching users with producers ((Parker, 2017). To facilitate exchange, digital platforms often use internet-based algorithms that can be combined with emerging technologies such as, cloud computing, data analytics, artificial intelligence, blockchain technologies, internet of things, additive manufacturing, drones, or robots to create capabilities that can significantly reduce most of the institutional market failures that are characteristics of rural locations. Rural locations are often located at long distances away from market center that lead to higher costs of doing businesses. Through digital platforms rural producers can find buyers who are located anywhere in the world who have been directed to the platform marketplace based on their search criteria and platform filters. Products can be delivered at a relatively lower cost to rural locations by using drones or driverless trucks. Digital platforms using blockchain technologies can link rural producers directly with consumers (regardless their location) without the need of intermediaries. Through blockchain technologies rural producers do not have to go through the complicated process of export financing transactions without a letter of credit. With internet of things, rural producers can trace and control their products regardless where they are located in the value chain. Equipment and machines located in remote rural areas can be updated, repaired and maintained by the manufacturer using internet of things technologies without the need of traveling. These 3D digital platforms allow rural entrepreneurs to adapt the product and tailor-make it to specific locational needs using locally accessed materials and local labor input. It also gives rural locations greater autonomy and less market dependence on mass manufactured goods and tools, especially for pharmaceutical and health care products.

Hypothesis 3: Bricolage entrepreneurs in rural communities are more likely to overcome the liability of geographic isolation by using digital platform technologies to gain greater access to external market opportunities.

The concentration of prestigious schools and universities in Tokyo was one of the key drivers of rural migration for rural Japan to Tokyo. Digital education platforms with content delivered by prestigious schools with global recognition in such a way that credentials offered through the platform are recognized in the same way as residentially earned credentials reduce the need for students migrating to urban centres for quality education. With state-of-the-art quality education delivered to rural communities on location, rural communities will be able to gain knowledge that can be used to develop local talent. Such knowledge will empower local entrepreneurs' internal bricolage that can be used to develop economic and social value to the local community and beyond. Local rural entrepreneurs can be linked with research university to collaborate with university research that can be applied and commercialized as a collaborative project. Digital platform technologies will therefore reduce knowledge gaps between rural and urban centers, reduce rural migration, develop local talent, and empower local entrepreneurs with knowledge to accelerate entrepreneurial processes. Rural communities can also actively generate local knowledge that can be monetized as patents or copyrights facilitated through digital platforms.

Hypothesis 4: Bricolage entrepreneurs in rural communities are more likely to overcome knowledge and learning constraints by using digital technologies to gain access to knowledge located elsewhere.

Digital platform technologies can be used to facilitate social interactions to reduce social isolation. By using digital platforms, community members can learn more about their neighbors which can accelerate information sharing between community members who share common interests build relationship and strengthen community cohesion and social capital. The boundary of network social relationships expands beyond local residents to include other communities connected on that digital platform. Low birth rates common in developed economies are often caused by search costs that make it hard for singles to meet their right match. By using digital filters one can reduce the search on a digital platform to a select few that can then be tested to find the right match and hopefully raise a family together. Digital platform can facilitate social interactions that can help local entrepreneurs develop their network bricolage that can be leveraged for local economic and social value creation.

Hypothesis 5: Bricolage entrepreneurs in isolated communities with limited social interactions are more likely to leverage digital platform technologies to facilitate social interactions between local and external residents.

Asset sharing through digital platforms can maximize the exploitation of abundant or idle rural resources. Asset sharing between community members or between community members and the external community across the world has shown rural residents with underutilized resources can trade those resources through digital platforms. Facilitating asset sharing through digital platform technologies in rural communities will also help to reduce waste and landfills.

Digital platforms can facilitate the development of new ways for labour arrangements to allow greater utilization of talent located in rural areas. In rural areas there are unemployed or retired residents who are talented but cannot find work or can only work in flexible time schedules. Digital platforms enable individuals to work virtually online with flexible work schedules from their own rural homes. The reverse is also true local communities lacking talent, can source talent through digital networks from anywhere in the world. Adoption of digital technologies in the healthcare sector can provide a wider range of health care coverage to larger number of people regardless of their geographic location. In rural remote locations where households live far from hospitals mobile medicine technologies can reduce hospital visits. Digital platforms dedicated for electronic health care services that use mobile devices and visual communication technologies allows the limited number of health care providers in rural areas to share their services to a wider range of rural members who are often located further away from rural hospitals. Doctors can visually be able to see the patient while the patient through interactive visual technologies can reduce the need for frequent hospital visits especially for the elder community members who may be physically constrained.

Hypothesis 6: Bricolage entrepreneurs in rural communities are more likely to leverage digital platform technologies to facilitate greater local resource utilization.

Digital platforms have the ability to link an infinite number of stakeholders on one digital place making it easier to exchange resources and innovation without the limitation of distance that puts many of the remote locations at a disadvantage. Through digital platforms investors can find their desired project regardless of location, the unemployed can find work without having to leave their home. Local enterprises can virtually collaborate with other enterprises across the world to fill in their resource shortages. Rural start-ups can leverage digital platform technologies to source funding for their entrepreneurial start-ups using crowd sourcing

platforms to kick off their project. Opening up sources of funding through digital platform can open up financial resource for entrepreneurial development in rural communities.

Hypothesis 7: Bricolage entrepreneurs in rural communities can overcome capital resources limitation by leveraging digital platform technologies to generate external capital.

2.5 Rural Transformation

Bricolage entrepreneurial processes bring economic and social change to communities by transforming the quality of their lives as individuals and improved social relations among the entire community. For example, entrepreneurial processes create jobs that reduce unemployment raising the standard of living for those individuals. Employment created to women can improve the social standing of women in rural society providing greater self-esteem and empowerment. Rural transformation that leads to a shift from polluting industries such as coal mines to cleaner energies such as solar power creates a better natural environment and better working conditions for workers who shift from dangerous coal mines to safer and less physical harm. Through local entrepreneurial processes residents are in charge of their value creating processes which bring greater economic empowerment of community residences. Unlike foreign investors that come and leave based on profitability of their ventures and can pollute the environment and leave, rural resident entrepreneurs are in their own homeland and therefore have greater interest for preserving their environment for their future generations to enjoy. Bricolage entrepreneurial processes in rural areas encourage entrepreneurs to be more creative and are more mindful of how they use their resources and are more creative with innovations for greater utilization of their existing resources. This attitude leads to less resource waste and hence less landfill and pollution.

3. Research Method

Following Yin (2009) we use the case study method guided by the above conceptual framework for data collection and data analysis. The case study examines the social enterprise Irodoi, which is located in the rural township of Kamakastu, Tokushima Prefecture, Japan. This case was selected after an initial search from a list of registered social enterprises in Japan and found this to be one of the best success story that fits the conceptual model and data access. Data was also collected from company documents offered to us during our visit as well as other online and paper publications. We made several visits to Kamikatsu, and met with Irodori's employees, the main entrepreneur Mr. Tomoji Yokoishi now president of Irodori Co. Ltd. We had a tour around Kamikatsu, visiting local businesses, other non-profit organizations, and other Kamikastu residents. Secondary data was collected from internal company documents that were made available to us when we visited, as well as, other online publicly available documents and publications on Irodori and Kamikastu.

We used our conceptual framework as a guide for data collection. From our interviews with Irodori company employees we were able to gather information on the bricolage entrepreneurial processes that Irodori went through and the design and resource capabilities of Irodori's digital platform technologies. Through internal and public documents and our first hand contact with key actors in Kamikatsu, we were able to gather information related to institutional bricolage and the economic impact that Irodori has made to the rural community of Kamikatsu.

4. Case Analysis

Mr. Tomoji Yokoishi is a bricolage entrepreneur who transformed a struggling rural agricultural cooperative into Japan's market leader of the leaf business. It was not until 1986 that Mr. Tomoji began contemplating the idea of establishing a leaf business to overcome the

falling agricultural activities at Kamikatsu. This idea of a leaf business first emerged when Mr. Yokoishi was dinning at a restaurant in Osaka, where he noticed how high-end restaurant customers were attracted by garnish of beautifully arranged leaves that came along with meals served. His entrepreneurial mindset quickly recognized the value of the leaves to the dinner and the role it played in branding high end restaurants of Japan's major cities. His knowledge of Kamikastu's rich forests with a wide varieties of leaf species prompted him to start exploring the opportunities for developing a business model for creating value to the high-end Japanese restaurants.

His first major barrier was tied to institutional barriers coming from cultural norms where farmers resisted to sell leaves, because it was culturally inappropriate. They were afraid that their neighbors would look down up on them because leaves were considered trash. Farmers were also hesitant to switch to leaves due to the fear of not being able to raise enough revenue. However, Mr. Yokoishi did not give up, he made several attempts convincing farmers by taking them to city restaurants so that they can appreciate the value that leaves can create. Another major barrier he faced was getting market access. High end Japanese restaurant chefs were difficult to reach unless you have established networks, that is network bricolage. It was hard to reach a chef unless you are connected with someone who knows the chef. He spent a lot of his hard-earned cash visiting expensive restaurants, until finally one chef invited him into the kitchen. When he finally was given the opportunity to supply to leaves, the clients rejected them because they could not meet the high standards required by that market. It took several attempts, visits and negotiations with restaurants and wholesalers before Kamikastu leaves would be accepted into the distribution system. Once wholesalers were convinced and began handling Kamikatsu leave supplies, restaurants began ordering their leaves from wholesales and that's when the leaf business became a viable alternative for Kamikatsu farmers. According to company documents, today the leaf business has grown to become a major source of income for many of the Kamikastu residents with an average annual turnover of more than 260 million yen (Irodori Company documents). Some women have an annual income of up to 10 million yen a year (Irodori Company documents).

At the heart of the Irodori business model is the digital platform technology known as the "Kamikatsu Information Network". This digital platform serves as a market-place connecting all Kamikastu farmers to the network of suppliers across Japan with real time market demand information. All market information about the leaf market across the country is made available to all individual farmers on this platform. There are more than 320 types of leaf products to choose from. Demand changes every day. Prices are determined based on the market needs and availability of supplies from farmers. Irodori has more than 90 percent of the market share which gives them the power to control market prices. Apart from the digital platform, Irodori uses representatives in major wholesale markets across Japan who feed market information shared through the Kamikastu Information Network to local farmers. Apart from the computer network, Irodori farmers also receive information by email or fax at 10.30 a. m. Based on this information farmers have to quickly lock in their orders and quickly process, pack and deliver the packed leaves to Irodori by noon on the same day. When the system was first created in the early 1990's there was no computer network infrastructure in Kamikastu, so to ensure fairness that all farmers received market information at the same time using a radio communications system designed for disasters which every household had. It was against government regulation to use the disaster prevention radio communications system for other purposes than emergency evacuation. However, using institutional bricolage, Kamikatsu township made an exception to Irodori to support the successful operation of its market operations. Since 2005 the entire township of Kamikastu has fibre optics installed, allowing computers to be connected on the internet. Individual farmers now monitor the market trends

from their own desk top computer and tablets to get information of daily sales and market prices from wholesaler across the country. To track and monitor the sources of each leaf, Irodori provides barcode labels that have an identification number for each farmer. Farmers place these labels for every package they send to help identify the source and track each item across the value chain.

Conclusion

This study has made three main contributions. First, it contributes to the social entrepreneurship literature by providing a conceptual framework that combines social entrepreneurial process and digital platform strategies as drivers of social innovation and social change. Secondly, by amplifying the role of social entrepreneurial processes in regional transformation this study contributes to the literature on regional revitalization which has often taken a top down approach by emphasizing large multinational corporations as the main driver for revitalizing communities. By having social entrepreneurial processes at the center of regional transformation, especially in rural communities where market conditions do not provide a return on investment that is large enough to attract large investors, this study provides a bottom-up approach that is more inclusive, practical and sustainable. Thirdly, this study brings to light the game changing role that digital platform technologies can play to advance economic and social change in isolated rural communities.

Using the case study of Irodori this study has demonstrated how digital entrepreneurial processes and bricolage entrepreneurial process can drive the transformation of rural communities. Previous research on bricolage entrepreneurial process has often been used in developing countries to address bottom of the pyramid societies. The current digital platform at Irodori has a lot more potential to be expanded to reach other business ecosystems that can benefit from Kamisakstu's unique resources and locational advantages. The system can be used to increase Kamikastu's potential for the sharing economy to unlock unused asset capacities residing at Kamikatsu. Policy makers and entrepreneurs can learn from the Irodori business to identify opportunities and the potential of exploiting emerging digital technologies such as block chain, internet of things, artificial intelligence, drones and robots to bring social and economic change that takes advantage of local resources and improves the quality of life for it rural communities. Both electronic tools, human skills, and physical tools will have to be innovated and redesigned to address rural demographic challenges as well economic and social needs. Future academic research can build on this framework, refine the concepts to test hypothesis using quantitative methods such as regression analysis or structural equation modeling from large survey data.

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