# Catching the Digital Train? The Impact of Digital Technologies on Rural Communities' Capitals. The Case of Southern Manitoba, Canada

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**Abstract.** Uneven access to broadband has deepened a divide, which sees rural residents struggling with digital technologies (DTs). This situation has resulted in the emergence of creative attitudes to take advantage of the potential of DTs even though full potentiality cannot be accomplished. In this paper, the impact of the utilization of DTs is analyzed through the lens of the community capitals framework. Focus groups and interviews were carried out with youth (out-migration), seniors (ageing), and businesses (survival) in three communities of southern Manitoba, Canada. Building on an emerging concern, two complementary focus groups were conducted with emergency services personnel and residents who experienced emergencies. The results show that the interactions that exist between the resources of rural communities are being re-shaped by the progressive adoption and utilization of DTs. Three conditions for rural communities to take full advantage of digital opportunities are highlighted: reliable access, cheap access, and digital skills.

**Keywords:** Digital technologies; Rural broadband; Community capitals; Canada.



## 1 Introduction

Many perceive Digital Technologies (DTs) as instrumental to remedy extra costs induced by the rural constraints of low densities and long distances to metropolitan areas (Warren, 2007; Kilpeläinen and Seppänen, 2014; Salemink et al., 2017), which stem in a rural urban divide. In this context, the role of DTs appears to be double-edged and results in two discourses. A positive one depicts rural areas as alive, while a negative one portrays rural areas as dying (Lundgren and Johansson, 2017). In summary, DTs might be, under certain conditions, which we attempt to highlight in this study, a transformative tool for rural development.


Proceedings of the 9th International Conference on Information and Communication Technologies in Agriculture, Food & Environment (HAICTA 2020), Thessaloniki, Greece, September 24-27, 2020.

In Canada, pressure for better services is strong (Auditor General of Canada, 2018). In 2016, the Canadian Radio-television Telecommunications Commission recognized affordable broadband access as a need and right of today's world. In 2018, the broadband standard included speeds of 50 Mbps download/10 Mbps upload for fixed broadband services, unlimited data option for fixed broadband services, and the latest mobile wireless technology available not only to all homes and businesses, but also along major Canadian roads.

In this paper, we investigate the impacts of DTs on rural community capitals to highlight whether DTs boost or hinder their potential and discuss whether rural communities have achieved meaningful digital outcomes. We mobilize the Community Capitals Framework (CCF) to highlight the impact of the adoption and utilization of DTs on the stocks and flows of the diverse resources available at the community level in a community-based approach. We conducted phone interviews with businesses and focus groups with residents in three francophone communities of southern Manitoba. Results show unlocking the potential of DTs requires quality services, affordable access and digital literacy in order to boost the limited entrepreneurial initiatives relying on DTs. In the following literature review, we highlight the community capitals framework. We then describe the method and data used for this analysis. We finally present the results and discuss them.

## 2 Literature Review

The multidimensionality and complexity of community capitals open the door for varied dynamics of community development (Pigg et al., 2013). The CCF hypothesizes that communities invest in their own resources to produce new ones (Flora and Flora, 2004). It is a flexible tool that allows interfacing at the community level with all its resources and has the mechanistic ability to chart capitals' progress. Table 1 characterizes the distinct features of each capital.

**Table 1.** Community capitals' characteristics.

| Capital | Definition |
|---|---|
| Built | Infrastructure or the planned construction in a community. |
| Cultural | Shared worldviews framing decisions. |
| Financial | Resources available for investment in capacity building. |
| Human | The skills and abilities of healthy individuals in the community. |
| Natural | Environmental resources and geographical features. |
| Political | Influence a group may have on the allocation of resources. |
| Social | Close connections that build trust and norms along with loose ones that diversify sources of information. |

The CCF aids in visioning in a systemic approach the potentials that a community possesses (Gutierrez-Montes et al., 2009). It presumes that strategies can be employed to improve community capacity and economic development, even with drastic declines in population and income per capita (Emery and Flora, 2006; Fey et al., 2006). Since

the utilization of DTs impacts several aspects of rural life, the CCF is relevant for investigating the impact of DTs in rural communities. We also build on Jacobs' (2011) description of rural communities to include inflows and outflows of resources while DTs can also contribute to fostering capitals interactions (Figure 1).

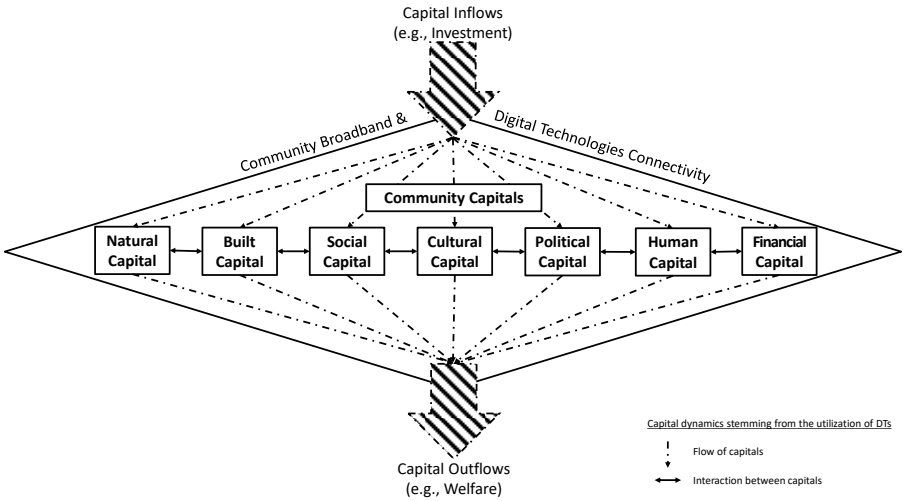


**Fig. 1.** A framework for analyzing the re-configuration of the community capitals

## 3 Method and Data

We used a combination of phone interviews and focus groups to tackle three major issues faced by Canadian rural communities: the outmigration of youth, the increasing share of seniors, and the survival of businesses. In addition, we also integrated the emerging theme of safety issues.

We selected three rural communities of southern Manitoba (Figure 2), a polarized Canadian Province where 61% of the population lived in Winnipeg metropolitan area in 2016. The selection was based on complementary characteristics (population, metropolitan influence, community area, and distance to Winnipeg), which make their comparison relevant.

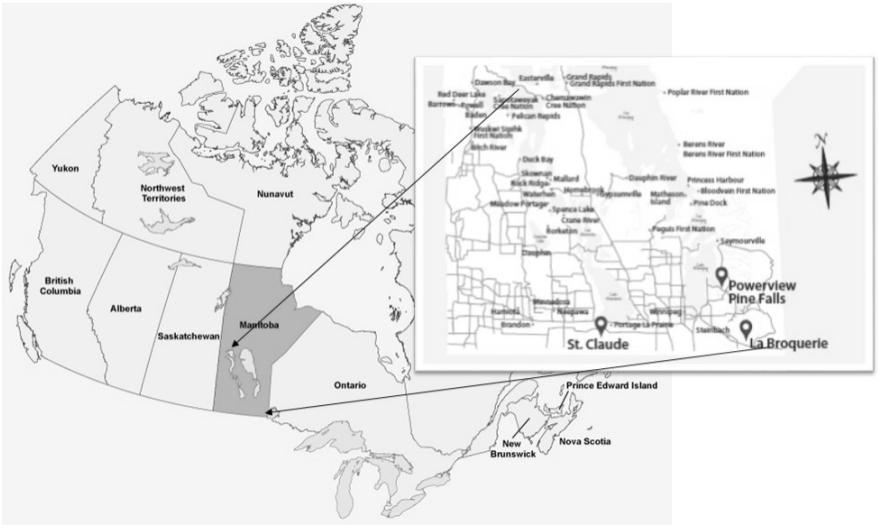


**Fig. 2.** Shows the location of the three communities in southern Manitoba, Canada.

Phone interviews with 28 business representatives (B) were structured around the types of DTs used by employees, employees' digital skills, the benefits and drawbacks of using DTs, as well as the presence of businesses on social media and the internet. Each interview lasted on average half an hour. Businesses were purposely selected to reflect a wide range of activities ranging from banking to camping sites.

One focus group with youth and another one with seniors were organized in each community. They focused on DTs utilization, access to devices, learning processes, and safety issues. Youth and seniors volunteered in response to calls shared by community leaders. A total of 16 youth (YFG), aged 16 to 25 years old, and a total of 20 seniors (SFG), over 65 years old, participated. In La Broquerie, focus groups with emergency services personnel (ESFG) and residents who had experienced emergencies (RFG) were conducted to tackle the emerging theme of safety issues.

In both cases, audio records were transcribed and coded using NVIVO.

## 4 Results

### 4.1 Built Capital: The Foundational Role of Digital Infrastructure

Built capital was participants' primary concern. Youth, seniors and business representatives across the three rural communities consistently acknowledged a lack of infrastructure supporting the utilization of DTs. Participants felt limited in their capacity to capitalize on digital products. The inconsistency of service placed a burden

on residents for daily actions. Dead zones forced most participants to plan their location for efficiency and safety; knowing points of connectivity was a challenge. Seniors were particularly concerned about their ability to call for help. Emergency services personnel stressed the difficulty to provide effective responses due to both the inability to communicate with each other and for victims to reach them.

### 4.2 Financial Capital: The Opportunity Cost of Staying Connected

Business representatives were particularly enthusiastic about DTs, which can potentially lower their operating costs by saving time in communications and money in paperless systems. A few senior and youth participants heralded the entrepreneurial opportunities unlocked by DTs as they have developed presence on digital marketplaces. Participants also commonly emphasized the benefits of on-line shopping to access a wider product selection and having items shipped to close delivery points.

Businesses, seniors, and youth alike opted for a technology or a service that aligned with their budgets. The range of affordability was wide, with participants transitioning to smart houses to those that remained on frugal phone plans. Emergency services personnel affirmed their inability to afford investing in satellite phones to eliminate reliance on broadband. The cost of services, compared to urban areas, was a grievance.

### 4.3 Human Capital: Maintaining Capacities

Because seniors perceived that increased development of DTs could help them at home, they were hopeful of a time when DTs would eliminate the option of transitioning to care homes. Participants of the three communities also expressed the advantage that DTs provide in the acquisition of knowledge. For instance, youth that could not attend institutions, because of distance and affordability, took advantage of digital distance-learning opportunities. Although both youth and seniors enjoyed the digital learning opportunities, they still appreciated human contacts.

Learning approaches diverged significantly. Although both seniors and youth showed capacities to learn about DTs, they seemed to learn at different paces, using different methods. Whereas seniors tended to learn under the guidance of somebody that they considered an expert, youth tended to learn more individually through trial and error.

### 4.4 Social Capital: Coming Together through Social Connectivity

In the three communities, DTs tended to contribute to the development of social capital through both the maintenance and the creation of relationships. For instance, participants noted that DTs had assisted them in remaining in contact with family and friends. Both youth and senior participants explained that shared digital challenges provided a feeling of camaraderie and support. For youth, DTs provided greater access

and comfort for communication with teachers, parents, and seniors. In this regard, DTs empowered youth by enabling them to share their input for local decision-making. Distant communication enabled youth to break the ice with intimidating seniors; the digital interface creates a non-threatening interaction. On the other hand, seniors learned to appreciate and involve youth, because they began to understand that youth had resourceful solutions and represented the future of the community.

### 4.5 Cultural Capital: Informing New Norms

Testimonies commonly aligned on the fact that DTs contribute to reshaping norms. Both seniors and youth developed their own intra-generational culture, and both were critical of the other group's usage of DTS. Their testimonies highlighted a contention between enjoying the benefits of DTs and mitigating drawbacks.
Participating youth relied extensively on social media, which were perceived as delivering current view of fads, shaping careers, romantic relationships, and personalities. The departure from how older generations forged lifelong relationships also showed how DTs could trump traditional manners through the exposure to new cultural standards. The youth were aware of how to maintain safety with online friends. Some of these rules included: never meet someone alone (especially at night), always have an image of the person you are meeting, always call the person before meeting and know their voice.

## 5 Discussion

Results highlighted three conditions for a meaningful utilization of DTs: investing in infrastructure, maintaining affordable access, and building digital literacy. Low levels of built capital limit the utilization of DTs. Inflows of built capital require investment (e.g., towers, fiber) while rapid technological turnover results in an outflow of digital infrastructure as it outdates. While DTs can promote entrepreneurial activities, DTs can also enable access to marketplaces outside the communities, creating an outflow of financial resources, thereby limiting the accumulation process underlying economic growth. The learning curve for using DTs, and acquiring relevant digital skills, is another barrier that seems to slow down the meaningful utilization of DTs for entrepreneurial pursuits. Interestingly, the learning process can add leadership, which is particularly true for youth who can use their digital skills to lead their community into new pathways.

## 6 Conclusion

While rural actors clearly perceive the benefits of DTs, be they financial (e.g., expand market, save resources), socio-cultural (e.g., maintain social connections, define new norms), and human (e.g., access resources to develop capacities, improve

health), they also perceive the existence of risks, be they financial (e.g., outflow of financial resources resulting from on-line shopping), socio-cultural (e.g., introduction of new behaviors and norms), and human (e.g., more difficult access to resources fostering knowledge creation). This contention between benefits and risks appears to be associated with the lag characterizing digital infrastructure available in rural communities. It appears crucial for rural communities to engage with DTs despite a lag in infrastructure that hinders the impact of digital utilization.

**Acknowledgments.** The authors would like to warmly thank the participants for their contribution, as well as MITACS, which funded the Manitoba Rural Broadband project.

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