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Revitalizing peripheries:

How digitalization will be reshaping the logic of Japan's regional revitalization

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Abstract

This thesis examines the relation between digitalization, in the form of smart cities, and the core-periphery logic, trying to understand how digitalization has affected the narration that shapes regional inequalities, smart city governance and the future of regional development. Through an analytical narrative approach, this research examines policy documents, alongside the case studies of Aizuwakamatsu and Sapporo, to underline the shift in the perception of regional inequalities, the change in the organization of smart city governance and the transformation of the narrative of regional revitalization under digitalization. The results of this research demonstrate a reframing of regional inequalities as issues of digital capacity, reimagining the peripheral areas of Japan as sites of experimentation to find digital solutions to the structural issues of Japan. Moreover, it highlights a shift in governance towards public-private partnerships that supports the digital experimentation, but also the local revitalization. This work contributes to the debates on digital governance and regional development by showing how digitalization policies are able to reshape not only policy tools, but also how regional inequalities are framed and the role of the state as the coordinator of the policies.

Keywords: regional inequality, digitalization, smart city, regional development, public-private partnerships, digital governance

Introduction

In the era of digitalization and smart technologies, regional inequalities continue being overlooked and tuned down, leaving issues as depopulation, aging, loss of job opportunity and economic shrinking unsolved, with peripheral regions potentially disappearing, in favour of the overpopulation of the urban centres. The Japanese total fertility rate reached another historical low in 2024 with an average of 1.15 children per woman, and a total number of births reaching an historical low of 686.000, while deaths totalled around 919.000 (Yokoyama, 2025). While the economy of Japan is generally considered strong, the accelerating demographic decline is expected to obstacle economic growth, thus leading towards a national economic shrinkage (Takeda, 2026). Behind the core areas of the country, in particular Ōsaka and Tokyō, there are areas that seem forgotten by academic and media discussions. Regions such as Tōhoku, consisting of the prefectures in northeastern Japan, or Shikoku in the south, have been continuously declining both in population and in economy (Mock, 2014, p. 5). Reports have recognized the necessity for policymakers to implement policies aimed at moderating the population decline and ensuring the sustainability of the currently shrinking regional towns (Masuda, 2014, p. 15).

In this context, the Japanese government has engaged in an array of digitalization policies that are directed at finding solutions to these issues. Among these, smart city initiatives are constructed as part of the effort to reduce the regional inequalities between urban and rural areas. These initiatives aim at introducing Information and Communication Technologies (ICT) in the urban context, enhancing the quality of life of the living population by optimizing city services such as public transportation, sewage control and city planning. The Japanese smart cities are linked with the national framework of Society 5.0, which aims at integrating the cyber and physical world. In this sense, smart cities are part of the effort of the Japanese government to translate the urban contexts in the cyberworld, by using the data collected by sensors and efforts by local governments to solve social problems and improve the quality of life. In this framework, digitalization becomes the driver of the development of smart cities throughout the Japanese archipelago, ensuring that these initiatives are able to implement digital technologies and measures that are able at reducing the urban-rural gap, mitigate the regional inequalities and finally revitalize the Japanese peripheral regions.

While existing studies have examined digitalization and regional revitalization policies, little research has been conducted on how regional inequalities have been reframed across

policy documents and reports in the light of digitalization. This research aims at examining one of the main measures presented by the Japanese government to challenge the urban-rural divide and to achieve the historical objective of regional revitalization of the peripheral areas of the archipelago. Alongside the examination of national policy discourse, this work will consider the implementation of smart city initiatives in two case studies, Aizuwakamatsu (Fukushima Prefecture) and Sapporo (Hokkaidō), to reflect the direction of the presented policies in the actual application in a peripheral area. By examining smart cities, representative of the digitalization process of Japan, this research will explore the shift that digitalization has produced in different levels of examination, from the perception of inequalities, to the broader goal of regional development. Building on existing debates in regional development, this research explores how the integration of digital technologies in rural Japan reshapes the understanding and governance of regional inequalities through the lenses of digital capacity, instead of considering the difficulties of peripheral areas as systemic issues. At the foundations of this shift in perception this research recognizes the policy framework of Society 5.0, considered the main driver of the digitalization policies and, by purpose, leading a societal evolution that expects the integration of the cyber-world into the physical world. This thesis aims at answering to the following research questions:

- How do digitalization policies, in particular smart city initiatives, reframe the way regional inequalities are perceived in policy documents?
- What role do public-private partnerships play in the development of smart cities and in the implementation of technologies at a local level?
- How does the Society 5.0 framework frame the future of regional development?

This work contributes to the ongoing discussions on the limits and potential of technology applied to regional development, extending the analysis to the governance models through which these initiatives are implemented and the effects the shift towards digitalization has had on the regional revitalization strategies.

The dissertation is structured as it follows. The following literature review will situate this research in the current academic debates, reviewing previous research on regional inequality, smart cities and regional revitalization. Then, the methodology chapter will outline the analytical approach, providing a background to the case studies examined throughout the thesis and showing the research practices engaged with in this project. After that, the analytical section will examine the policy documents collected, alongside examples from the case studies, analysing the narrative and the framing of the policies. Lastly, the discussion chapter will

collect the main findings of this research and will discuss their implication to the research question and the academic debate.

1. Literature Review

Regional inequalities have been represented as a persistent challenge in Japan, shaping the distribution of the population and the development of cities across the archipelago. However, research on regional inequalities has traditionally emphasized the economic factors, while setting aside the demographic and spatial factors influencing the disparity between urban and rural centres. This literature review plans on showing the ongoing debates on the matters of regional inequalities, smart city governance and regional revitalization discussing the findings of previous research.

This section will review the current state of the research on regional inequalities, showing how scholars have examined the core-periphery debate. In addition, it will examine the studies on smart city initiatives, from their origin to the examination of the initiatives in the rural contexts. Finally, this section will examine the debates regarding the evolution of the regional revitalization efforts in Japan, and the role of smart cities in its achievement.

1.1 Regional Inequalities

Regional development has been part of the research focus of economics, evaluating the persistency of regional disparities among areas of a nation, translating into disparities in the living standards of the population. Nijkamp and Abreu (2009) explain the logic behind the study of regional development as part of the nature of the regions. These areas differ from the others due to several socio-economic factors, such as the quantity of labor, the business environment and the existing infrastructure, all while being superseded by the national government (2009, p. 202).

1.1.1 Urban-Rural Divide

Urban-rural divide has been one of the focal points of regional development research during the past thirty years. Among the studies, Song has examined the factors influencing the rising regional inequalities during the past three decades. Japan's economic recession during the "lost decade" imposed fiscal strains on the government because of the massive fiscal stimulus packages produced, pressuring it to reduce the number of funding transfers allocated to the local areas. In addition, the electoral reform of 1994 forced the political parties to prioritize the urban electoral districts, "swing districts", allocating more resources to their electoral campaign

in the urban areas, contributing to the growing economic divide between urban and rural (Song, 2015, pp. 131-132).

This divide is illustrated by the demography of the archipelago. Over the period 2000-2021, the total population annual growth rate declined by 0.32%. However, the 0.09% growth in the larger metropolitan regions, such as Tokyo and Osaka, was measured as a consequence of the internal migration from the rural centres, as smaller metropolitan areas saw declines ranging from 0.30% to 0.61% (OECD, 2025a, p. 23). This decline was already recognized by the former governor of Iwate Prefecture, Hiroya Masuda, who had warned that the depopulation and aging trends will lead to the disappearance of regional cities by 2040 (Masuda, 2014). These shrinking regions were defined as "kaso chiiki" (too-sparsely populated regions), areas that are affected by heavy depopulation and fiscally dependent from the central government (Lützeler et al., 2020, p. 1). Research from Lützeler et al. has elaborated on the existence of a vicious circle that links internal migration with the fiscal erosion and population aging of the peripheral regions of Japan (2020, p. 3), thus recognizing that, while the larger urban centres of Japan are affected by overpopulation, the rural cities empty out and risk disappearing. Wirth et al. agree on these findings, recognizing in the loss of job opportunities, and the attractiveness of the urban areas the factors that are influencing the functional loss of small towns in the peripheral areas (2016, p. 64).

Literature on regional inequalities conceptualizes the urban-rural dynamic not only as a consequence of spatial dynamics such as the distance from the developed centres, but as affected by socio-economic factors, including the demographic decline, that help replicate it. On this understanding, scholars have conceptualized regional inequalities in relational terms, through the binary of core-periphery, framing peripheralization as a process through which structural imbalance is reproduced spatially.

1.1.2 Core-Periphery and Peripheralization

The relationship between urban and rural centres has been examined under a core-periphery structure, implying that there is an uneven development in place in the spatial dimension. The regions known as core are considered advanced economically, infrastructurally and in terms of industrial development, having engaged the earliest with economic development. On the other hand, the peripheral regions are considered as areas that supply resources, that are subject to degradation and decline due to their later, and slower, economic development. These areas are

framed negatively, as regions that depend on external aid from political interventions to develop and sustain themselves (Klimczuk & Klimczuk-Kochańska, 2019, pp. 1-2).

In the Japanese context, peripheries are examples of the gap between the urban and the rural areas of the country. While the core-periphery theory gives a spatial explanation to the inequalities, it is through the process of peripheralization that they are continuously produced. Lützeler et al. (2020) have defined this process as the disconnection of specific areas from social and economic development due to their dependency on political and economic decisions made by the core regions. This concept has to be considered as a dynamic socio-spatial process, as the peripheries are created through a reversible process influenced by the uneven spatial development of these areas (Wirth et al., 2016, p. 63). Thus, since periphery is not a static concept, but the result of the process of peripheralization, it is theoretically reversible, becoming the target of intervention by the central authorities (Wirth et al., 2016, p. 63).

Economic geography studies have examined the role that government policies may have to reduce inequalities between regions. On the one hand, they recognize that traditional policies aimed at relocation, or infrastructural improvement, reduce the inequalities among regions. However, these policies slow down growth by reducing the exchanges between companies when they are clustered together. On the contrary, policies that support innovation are considered as better options to reduce inequalities, as they spread economic activity more efficiently and provide a higher growth (Martin, 1999, pp. 101-102).

1.2 Smart Cities as a Policy Instrument

Researchers have been discussing the production of a single definition of the concept of "smart city". Das (2019) defines a smart city as a urban environment in which high-tech information technologies have been integrated to arrive at intelligent solutions and achieve a better quality of life, or as a tool to provide happiness and health to communities (2019, pp. 1-2). Across the world, several cities have been engaging with smart city initiatives. Amsterdam has been developing 90 projects to improve the quality of life of its citizens by introducing technological solutions. Stockholm introduced smart technologies with the ambition to become energy efficient and one of the cleanest smart cities in the world by 2030. The city of San Jose, California, is cooperating with Intel to monitor traffic flow and air quality following the city's Green Vision program (Das, 2019, pp. 2-3). These initiatives show a growing concern about the improvement of the urban environment, regarding the environmental and the quality-of-life aspects, to be found solutions through the integration of new technologies.

1.2.1 Origins of the Smart Cities

The official definition of "smart city" from the Government of Japan's Cabinet Office defines it as an initiative that "provides services to support each one of residents using new technologies, such as ICT, and various public and private data, and by enhancing management". Moreover, it "solves challenges faced by cities and regions, and continues to create new value" (Cabinet Office et al., 2021, p. 9). This definition aligns with those from researchers that consider a city "smart" when "investments in human and social capital, and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance" (Caragliu et al., 2009, p. 50), which underscores the importance of investments in technology and social capital to provide improvements in citizens well-being.

The approach that sees the introduction of new technologies to solve social problems has been defined by scholars as "technological solutionism". It is defined as a technology-driven approach to solutionism, or to say, an optimist perception of technology as a way of solving social problems, characterized by the confidence in the capacity of human beings to find and implement solutions to overcome obstacles. Sætra and Selinger identify Morozov as a critic of technological solutionism. He criticizes the optimistic perception of technology as a solution to complex social problems, considering it an unrealistic and dishonest shortcut to solve social issues. Sætra and Selinger show that this critique is shared by other scholars, such as Tarleton Gillespie, who criticizes the way crucial questions about the social base of any problem are ignored when technological fixes are applied. In this debate, smart cities and initiatives that plan to integrate technologies to manage communities are framed as technological interventions fitting the technological solutionist logic (Sætra & Selinger, 2024, pp. 2; 12-13).

Debates on regional development have recognized the shift towards knowledge and innovation policies, as a consequence of the ICT advances. In fact, the modern regional development, sees the innovation provided by ICT infrastructure as an increasingly necessary resource for regional development (Nijkamp & Abreu, 2009, p. 204). While this has been substantiated by the initial approach to smart city initiatives in Japan, Trencher criticizes the smart city 1.0 paradigm for its tendency to privilege the introduction of technologies without considering the regional issues that these technologies had envisioned to solve. Thus, he shows how the smart city paradigm has evolved towards smart city 2.0. This paradigm is framed as

needs-driven and human-centred, where citizens have now an active role and contribute to problem-solving, while technology is produced to solve social issues and enhance citizens well-being (Trencher, 2019, pp. 117-118).

Therefore, the scope of smart cities has evolved to put people at the centre of its focus, improving the citizens' well-being through digitalization, and starting to envision a challenge to regional inequalities as a result of their implementation.

1.2.2 Smart City Governance Evolution

Pianezzi et al. describe how the involvement of private companies in the national agenda is a consequence of the historical ties between government and private companies. The cultural tradition of Japan expects the private companies to cooperate on the basis of the concept of harmony (*wa*), following a hierarchy that makes the private companies willing to take part to the government's agenda (2023, p. 638). The empirical findings of Pianezzi et al. corroborate this, as shown by the interview to a private company corporate manager who stated that companies feel obligated to cooperate with the government's requests (2023, p. 638). In this sense, the role of the Ministry of Economy, Trade and Industry (METI) is crucial to path the cooperation with corporations, as the main promoter of the smart city agenda and creates the pathing for the industrial development of the country.

From the first conceptualization of a smart city model in Japan, the "technopolis project" of the 1980s, smart city initiatives were presented as government-led projects, such as the 2008 Future City Initiative. Barrett et al. recognize the government employing smart city initiatives as solutions for coping with societal issues with the "New Growth Strategy" of 2010 (2021, p. 77). The government-led initiatives were characterized by small-scale subsidies to support the deployment of hard and soft infrastructure in several urban contexts, with a focus on disaster prevention and environmental sustainability. After the March 11th disaster, in Fukushima, the second wave of smart cities started popularizing, increasing the partnerships with private companies. (Barrett et al., 2021, pp. 77-78). These so-called joint-venture smart cities took place parallel to the government-led initiatives. In 2009, several technological companies started grouping under the Smart City Project (SCP), that viewed the introduction of smartness as part of a multilayered approach to urban development. Barrett et al. found that the shift towards joint-ventures is due to a closer partnership between the local governments and the members of SCP, using these partnerships to create local value and fostering the development of other industries regionally, while allowing the private companies to showcase their

technologies (2021, p. 79). In joint-venture smart cities, the roles of the actors are divided according to the benefits they can provide to the initiatives. The local governments engage in a coordinating role, attracting private companies to partner and setting visions that align with the national frameworks. However, they tend to avoid taking risks to introduce pilot schemes, if it means costing on the residents. On the other hand, the private sector contributes with funding and technological expertise, experimenting with newly developed technologies. Contrary to the public sector, they are more willing to take on risks if they expect sufficient returns on their investments (Lam & Yang, 2017, p. 604; Pianezzi et al., 2023, p. 637).

To this behaviour, it has been defined the concept of entrepreneurial governance as type of policy-oriented entrepreneurship that promotes local development using new kinds of partnerships and institutions. This concept recognizes that the objective of each actor is finally going to differ, however classifying the entrepreneurial behaviour in a single conceptual framework that sees both actors identifying and evaluating opportunities, collecting and using resources and exploiting the opportunities that arise (Olsson et al., 2020, p. 2-3). The research from Olsson et al. suggests a positive outcome for entrepreneurial governance in the achievement of development goals in larger urban municipalities. In contrast, the rural municipalities have a limited effectiveness from entrepreneurial governance, due to their structural limitations, such as the reduced funding or demographic decline. This shows how the urban-rural divide has an effect on the implementation of developmental policies, as they are more effective in urban areas, rather than rural areas (Olsson et al., 2020, p. 12).

Regarding this, Japan has organized its own strategy of public-private partnerships with the so-called “Japan Incorporated”, a contested concept in economic and business literature, which is defined as a form of sponsored capitalism that fits the historical relations between the Japanese government and companies. In fact, this partnership represents a continuity with the traditional conventions that see the government and the corporations as partners in industrial development. Pianezzi et. al frame it as a compromise between the top-down planning from China and the capitalist model of the USA, considering it a model where the government and the businesses do not impose their will or their leadership on the other actor unilaterally (Pianezzi et al., 2023, p. 639).

Therefore, smart city governance is constructed around the nature of each actor participating in it and their historical relations that have been framing their partnership for more than a century. Moreover, as examined by Olsson et al., the inequalities between urban and rural Japan have to be taken into consideration to evaluate the results of the public-private partnerships in the rural smart cities.

1.2.3 Spatial Bias in Smart City Policy

After being included in the regional revitalization efforts of the Japanese government, researchers have found an underlying bias towards the urban areas, managing to develop smart cities more easily than their rural counterparts. This is due to their economic vitality, as the greater access to financial resources, skilled labor and attractiveness to private investment, benefit the urban areas that manage to develop the most smart city initiatives (Sanada & Zappa, 2025, pp. 77). On the other hand, regional cities and smaller municipalities are forced to compete to achieve resources to fund the development of smart city technologies, whereas the urban centres benefit the most from the subsidy scheme, provided by the Japanese government, for the development of smart cities (Sanada & Zappa, 2025, pp. 83).

According to the research of Chen et al., investigating on the role of smart cities in reducing inequalities in the Chinese regions, smart city construction has an effect in reducing regional income inequalities. However, these findings demonstrate that the effects are more evident in regions with higher economic development, where higher human capital and R&D investment reduce more substantially income inequalities. On the contrary, this effect is less evident in regions with lower levels of human capital. Their findings highlight the effects of smart city initiatives in reducing income inequality by increasing employment opportunities, narrowing the digital divide and improving the delivery of public goods (Chen et al., 2024, pp. 349-350). Researchers have also found that the policy frameworks implemented by the Japanese government, such as Society 5.0, with the aim of reducing the urban-rural gap, are contradicting themselves, appearing to be favouring the urban core, as they are more likely to achieve the objectives set by the policymakers (Sanada & Zappa, 2025, p. 83).

1.2.4 Smartness in non-Metropolitan Contexts

Rural innovation is happening across the OECD countries with a focus on renewable energy and the improvement of the working processes to build more resilient and future-oriented economies. Regional modernization is the consequence of the realization that rural areas are an untouched source of growth with a great adaptability towards economic and industrial renewal (OECD, 2025b, p. 10).

With the conceptualization of *smart villages*, launched by the European Parliament in 2017 as part of the European Network for Rural Development, smart cities have been

introduced in the regional context. Smart villages include the areas and communities that continue to build on their strengths, tied with new opportunities given by digitalization and ICTs to provide benefits to inhabitants and businesses (Zavratnik et al., 2018, pp. 1-3). Zavratnik et al. criticizes the tendency to consider smart cities and smart villages as distinct entities, which threatens the understanding of the framework, while they continue drawing parallels between smart cities and smart villages, giving importance to their interspatial dimension (2018, p. 3).

Sanada and Zappa have examined the materialization of smart innovation at a rural level, as a mean to address the regional inequalities, as the issues of energy production and depopulation (2025, pp. 71-72). The scholars have divided the process of smart innovation into three stages. First, innovation is introduced to improve the efficiency and productivity of public management. Second, the roles of public authorities are redefined, as they rely on private partnerships to compensate the lack of digital and technological expertise. Third, the new technologies reshape the existing frames of public management, creating new processes of regulating and monitoring practices. Their findings suggest that most cases manage to reach the first stage of innovation. Moreover, they discuss that least publicized cases from remote areas of Japan managed to achieve the second stage of innovation; however, while the research presents Aizuwakamatsu as one of the most publicized initiatives by the Japanese authorities, it does not provide examples from less publicized areas (Sanada & Zappa, 2025, pp. 73-74).

Drawing from the literature, digitalization can be applied to achieve regional revitalization. Through the development of digital infrastructure, the promotion of the role of digital economy in revitalization and the integration of technologies, it is possible to reduce the urban-rural gap. However, as shown by Sanada and Zappa, the implementation of smart initiatives in the peripheries is not straightforward, and the local stakeholders have to take into consideration the difficulties they might face.

1.3 Regional Revitalization

As a result of demographic changes and economic transformations, opportunities in rural Japan are diminishing. The total population is declining, in particular in the non-metropolitan regions which are losing their share of young skilled workers (OECD, 2025b, pp. 11-12). As of today, the main obstacles to revitalization include physical and digital infrastructure, development of skills and limited funding in regional contexts (OECD, 2025b, p. 11). The rapid growth in population and GDP per capita of the 1950s heavily transformed the geography of Japan,

leading to the expansion of the metropolitan areas of the cities of Tokyo, Osaka and Nagoya with the emptying of the countryside, in a process called hyper-urbanization (Fielding, 2024, p. 2).

1.3.1 Revitalization Policy Framing and Society 5.0

Matanle and Sato research on shrinking regions confirms the previous researches on depopulation, which consider them caused by the absolute increases in living standards within the nation as a whole. However, it has been found that the deepening economic decline of the rural areas of Japan is partly caused by the overconcentration of economic activities in the core areas of the country (2010, p. 188).

Entman's research recognizes the power of a communicating text as a way to influence the human consciousness. In fact, he considers "framing" as to "select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (1993, p. 52).

Researchers have examined the evolution of technology-led regional revitalization through the years, finding in the efforts of the second Abe Cabinet (2012-2020) the starting point. The 2014 Comprehensive Strategy for Regional Revitalization, supported by a hundred billion yen annual allocation for grants, aimed at generating stable employment and new inflow of people towards the regional cities (Kitagawa, 2024, pp. 608-609). However, in 2019, the Cabinet Office proposed the implementation of Society 5.0, an approach that imagines "a society that is sustainable and resilient against threats and unpredictable and uncertain situations, that ensures the safety and security of the people, and that individual to realize diverse well-being." (Cabinet Office, n.d.). Scholars, such as Wu et al., criticize Society 5.0 as it does not change productive forces and relations, thus does not impact the creation of a new type of society. Moreover, they point out that the integration of the cyber and physical worlds is solely a form of data collection and representation, and the creation of Society 5.0 is the result of the collaboration between companies, institutions and citizens, therefore recognizing the centrality of the human aspiration for future society, rather than focusing on data-driven decision-making systems (Wu et al., 2023, pp. 3-4). For political communication, as in policymaking, frames narrate specific aspects of reality, while masking others to direct the audiences reaction, managing to gather support from the citizens (Entman, 1993, p. 55).

Researchers have focused on the strategies by which the Society 5.0 framework has been implemented in the Japanese context, highlighting how the optimistic framing supports the direction by which policymakers aim at receiving support from the public. However, the application of Society 5.0 was criticized by academics which consider its effort in digitalization not efficient in the change of productive forces, thus in revitalizing regions.

1.3.2 Regional Implementation of National Narratives

The main objective of Japan's national policies, with regard to regional revitalization, is to prevent the outflow of the population from the rural areas towards large cities, thus slowing the acceleration of population decline across Japan, mostly due to shrinking regional economies. The main goals of the regional revitalization policies is to create jobs in rural areas, reverse the migration flow towards rural areas and promoting regional cooperation (Osanai & Yu, 2023, p. 5). Governments tend to prioritize the promotion of innovation, recognizing the role of technological advancement for improving productivity and addressing socioeconomic pressures. In this sense, social innovation theory focuses on the development of measures to address to complex societal needs. According to Le et al., in fact, social innovation theory gives a great importance to the implementation of practices and institutional arrangements that reshapes social norms and fosters new resilient communities (2026, p. 810). The results of Le et colleagues' research show that innovation-led development provides positive outcomes for the achievement of sustainable development, particularly in respect of inequalities, as it supports the reduction of the income gap by improving productivity and promotes social equity thanks to technology diffusion (2026, pp. 816; 819).

The findings from Holroyd (2022) show how the Japanese government has framed Society 5.0 as the desire to link the digitalization of the country and the efforts to respond to the economic and social challenges that the country is facing (2022, p. 19). Holroyd highlights the objectives of Society 5.0, showing how it aims at coordinating the direction of the actors involved in its achievement. Starting from the ministries, the establishment of the Cross-Ministerial Strategic Innovation Promotion Program (SIP) is aimed at accelerating government research and development by bringing together the projects of the agencies and ministries involved in digitalization (Holroyd, 2022, p. 25). In addition, the introduction of the Public-Private R&D Investment Strategic Expansion Program (PRISM) aims at creating a joint research and development program involving government, private industries and academic

research, to develop in the focus areas that include artificial intelligence and the use of big data and sensors, core technologies for a Super Smart Society (Holroyd, 2022, p. 25).

Regional revitalization strategies prove a dual approach to the policy. The goal of Society 5.0 shows a reliance on technology to improve citizen well-being, creating a human-centric society. Digital Garden City Nation extends it towards the rural areas, investing in innovation to prevent the depopulation of the peripheral areas of Japan and creating an inflow towards regional cities. Fu et al. discuss on the role of digitalization to reduce regional inequalities, entering the debate on the "digital divide", referring to the inequality in access to information and communication technologies (ICTs) and recognizes two levels of digital divide; the first-level divide concerns the disparity in access to physical technology, such as internet connections, computers, which is influenced by the development level, digital infrastructure availability and internet access cost. The second-level focuses on the ability and depth of technology usage, influencing the benefits derived from technology (2024, p. 2). Research, recognizes that ICT usage can widen the gap between urban and rural economic growth due to its skill-based nature, and that peripheral areas may have limited access and capacity for certain digital technologies, such as smart cities and industry digitization (Fu et al., 2024, p. 2). The findings of this research recognize the positive influence of digitalization on economic growth, supporting the reduction in income disparity between urban and rural areas. However, digitalization benefits the urban areas, as more likely to access industrial and financial opportunities, while rural areas keep lagging behind, deepening the digital divide (Fu et al., 2024, p. 6).

The review of the literature on the matter of regional inequalities, revitalization and smart cities provides the foundations for the research that will follow in the analytical section, regarding how the digitalization process, in particular smart city initiatives, have reframed the way regional inequalities are perceived, how smart city governance is structured and how regional revitalization is reimagined.

2. Methodology

This chapter outlines the methodological approach adopted in this thesis. It will be structured around four sections. The first section presents the research design and introduces the qualitative research. The second section illustrates the rationale behind the selection of the case studies of Aizuwakamatsu and Sapporo City. The third section introduces the data collection process and the type of data collected. Finally, the fourth section examines scope, the limitations and the ethical consideration of this research.

2.1 Research design

For this thesis, a qualitative, interpretive analytical narrative approach was adopted to examine the implementation of smart city initiatives in the peripheral regions, considered as a policy instrument to achieve regional revitalization. Moreover, this work aims at analysing the shift in three aspects, reflected in the three sections of the analysis. First, a shift in the perception of regional inequalities as a consequence of digitalization. Second, a shift in the governance of the smart cities, reflecting the influence of an innovation-led governance that requires the partnership of various actors. Last, the shift in the narration of the future of regions, with Society 5.0 at the horizon. The qualitative approach allows to interpret the literature and policy documents to show the researcher's own analytical perspective. In addition, through the analysis of policy documents, national and local, this thesis aims to examine how digitalization policies and smart city initiatives have been framed by the participating actors, using reports from consulting companies and academic literature to support the analysis of the policies.

This research follows the qualitative research steps presented by Bryman (2012, p. 384). First, a general research question was formulated, investigating the themes of smart cities and the role of regional inequalities in their development. Second, the two case studies were selected, Aizuwakamatsu in Fukushima Prefecture and Sapporo in Hokkaidō, to support the analysis of the policies presented. Third, relevant data were collected, mainly previous researches, policy documents and reports from the ministries and the cities themselves. Fourth, the material collected was interpreted and analysed, examining the narrative and the translation at a local level of the national initiatives. Finally, the conclusions were drawn from the analysis of the data, using the concepts presented in the literature review to justify the findings of the research.

2.2 Case selection

Together with the analysis of the Japanese national policies, this research will explore the local translation of the Digital Garden City Nation framework in the cities of Aizuwakamatsu, in Fukushima Prefecture, and Sapporo City, in Hokkaidō, as case studies. The selection of these cases is motivated by the core-periphery framework, focusing on two cities in peripheral regions, Fukushima Prefecture on one hand, Hokkaidō on the other, which have different trajectories due to their characteristics of small municipality, as in Aizuwakamatsu, and metropolitan urban area, as in Sapporo.

2.2.1 Aizuwakamatsu, Fukushima Prefecture

The city of Aizuwakamatsu is located 300 km north of Tōkyō and totals 107,854 people as of April 2026, declining by a total of -1.8% from last year's statistics (Aizuwakamatsu City, 2026). Its distance from the coastline resulted in limited damages during the 2011 Great Eastern Japan Earthquake and the subsequent tsunami, but the city received a moderate amount of radiation fallout from the Fukushima power plant disaster. The rapid aging of the population, around 34% of the population of the city is aged over 65 years old, is challenging the possibility of maintaining the public services due to the strains on the financial aspect (Trencher, 2019, pp. 120-121).

Aizuwakamatsu smart city was established after the Fukushima disaster, with the consulting firm Accenture establishing in the city to acquire expertise to create a smart city model to respond to the local social problems of the city. After the partnership with the city and the University of Aizu, several technology companies, such as Fujitsu, NEC and Intel, have come together with the city to build a collective smart city vision (Trencher, 2019, p. 121).

This city has been selected as a case study to this research as it is the expression of a smart city initiative in a small municipality inside of a peripheral prefecture of Japan. Moreover, its smart city vision is highly comprehensive, covering the integration of ICTs in several fields, from economic development to agriculture and public planning, maintaining however, the main human-centred logic as a leading vision for the initiative.

2.2.2 Sapporo, Hokkaidō

Sapporo, located in the northern island of Hokkaidō, is 1,150 km distant from the capital Tōkyō and totals 1,973,395 people as of 2025. Similarly to Aizuwakamatsu, and other peripheral areas of Japan, the population of Sapporo is rapidly aging, with around 28% of the total population

aged over 65% (Sapporo City, 2025, p. 20). The city recognizes a trend in population decline that expects the city to lose around 400,000 people by 2060. The reason behind this decline are the low fertility rate of the population, decreasing from 1.14 children per woman in 2018, to 1.02 in 2022, and the loss of population due to migration outside of Hokkaidō (Sapporo City, 2024, pp. 1-2).

The smart city project in Sapporo was launched in 2015 with the objective of reducing the CO_2 emissions of the city, inaugurating awareness campaigns and subsidies for households that introduced energy-saving equipment (Holroyd, 2025, p. 191). In 2016, with two following plans, the city has launched the Sapporo Future Creation Plan that promotes measures to counteract the population decline, investing in the digitalization and promotion of the attractiveness of Sapporo (Sapporo City, 2024, p. 1).

Sapporo City has been selected as it shows a different approach to a peripheral area of Japan. Being the fifth largest city of Japan, it cannot be considered strictly rural or peripheral, if not by its geography. Despite that, the city shares similar socio-economic issues with Aizuwakamatsu and other non-metropolitan cities, thus allowing this research to explore how smart cities are adopted in different contexts in Japan.

2.3 Data collection

This study reviewed and analysed material combining academic papers, policy documents and institutional reports. Academic literature was collected primarily through the main databases available including Elsevier (n=7), Wiley Online Library (n=4), Taylor & Francis (n=3) and Springer (n=3), collecting the material through researches on the University Library Database, Finn, and by keyword searches on Google Scholar, using mainly the keywords “smart city”, “regional revitalization”, “digitalization” and “regional inequalities”. It was not selected a specific time period for the academic literature, which includes recent articles from 2026 to articles from 1999.

The policy documents were collected by researching on the Japanese ministries websites, specifically the Cabinet Office, the Ministry of Internal Affairs and Communication (MIC) and the Ministry of Economy, Trade and Industry (METI). Moreover, reports from the OECD, within the Japanese context, were collected and reviewed. As per the case studies, reports and policy documents were collected from the cities websites, preferring English-translated documents and limiting the Japanese language documents. The Japanese language documents analysed in this work were personally by the author. These documents were selected

by year, choosing to analyse documents starting from 2019, after the formalization of the Society 5.0 policy.

In conclusion, the material collected covers both the academic and the policy discussion fields, integrating academic debates to the official narratives and postures from the Japanese government and the local municipalities.

2.4 Data analysis

This thesis adopts an analytical narrative approach, in which the policy documents collected are the main source of analysis of the research, supported by the academic literature that introduces the examination of the current academic debates on the fields.

The analysis of the data collected began by organizing the academic sources in Zotero, categorized by theme such as “Regional Inequalities”, “Smart City Governance” and “Regional Revitalization”. Following that, the policy documents and institutional reports were organized in the same software by issuing institution, thus categorizing the policy documents in folders such as “Cabinet Office” or “MIC”, or in the context of case studies as “Aizuwakamatsu” and “Sapporo”. This initial categorization allowed for an organized overview of the material that first supported the creation of the literature review, and then the analysis of the documents.

The analytical process of this research was inductive. The preliminary reading of the articles allowed to decide for the use of the material collected and their categorization. Later, the material was examined through a detailed reading and highlighting of the main themes arising from the articles and the documents. This allowed for a refining of the previously made categories, dividing the material by their emerging themes to support their use in the analytical section. This research employed a manual interpretative coding that was done through the repeated readings and highlighting of the material, with the themes continuously being refined and reorganized to fit the evolving structure of the research. The qualitative research design allows for the re-examination of themes that did not remain static but were reconsidered continuously during this project.

The case studies collected were used as empirical illustration of how national-level policies are translated to local-level practices, showing the evidence of the efforts of both local municipalities to implement digitalization policies.

Overall, the inductive analytical approach of this research supported the creation of the analysis of the policy documents and the academic material by making possible the emergence of the Japanese government’s narrative.

2.5 Scope and Limitations of the Research

While this research does not seek to evaluate the results of the Japanese government efforts in digitalization and integration of smart city technology, it does gather an understanding of how the digitalization process and the narratives build by the Japanese government have reframed the way regional inequalities are structured, changing the perspectives of policymakers. Moreover, it does not evaluate the successes or the failures of the initiatives produced by the government, but it takes into consideration the evolving governance model of smart cities, recognizing benefits from the public-private partnerships. Finally, this research aims at showing how Society 5.0 has become a beacon for policymaking related to regional development, showing how the digitalization process has led to a change in the policymaking of regional revitalization.

This research acknowledges that, by examining mostly English-translated material, there has to be considered the possibility that some information might be lost in translation, or might not be correctly reproduced in the English translation. Government policy reports and strategic visions might include tentative or temporary translation which have to be considered as the official translation of the Japanese government, or the organization that produced it. Moreover, the translation of Japanese-language material, while limited, does not ensure a working-level translation, but allows for an understanding of the measures introduced and the narratives arising from the document translated. The policy documents, collected by institutional websites, represent the official agenda of the Japanese government, thus reproducing a strategic narrative that is biased in favour of the governments initiatives. This thesis tried to represent the initiatives introduced by the government avoiding any potential biases or relating to any existing narrative.

Despite these limitations, this research manages to articulate an analysis of policy discourse and academic literature by providing evidence from the case studies of Aizuwakamatsu and Sapporo, suggesting discussions on the nature of the policies implemented.

2.6 Ethical Considerations

In terms of ethical considerations, the material collected and analysed in this research is publicly accessible, including the academic literature and the policy documents. This research does not intend to evaluate the Japanese government's measures; rather it aims to address the research questions without making an assessment of the policy outcomes. The research does not involve interviews or personal data, which might require the anonymization of participants.

The interpretation, coding and translation of the material involves the author's own judgment and work, committed to avoid misinterpretation and decontextualization. This work follows the ethical guidelines in research of the Swedish Research Council.

3. Analytical Section

The following section turns its focus towards how the regional inequalities are perceived in the Japanese policy discourse. First, this section will examine how policy documents discuss the orientation towards digitalization by looking at its representation of the structural issues of the Japanese rural regions. Following, it will be shown how the national policies frame the objective of revitalizing the region through a focus on modernization, rather than looking at the local reality. Building on that, this section will investigate on how policy documents perceive digitalization as a cross-cutting solution to respond to the structural issues of the Japanese rural regions. Finally, it will pursue the final objective of this section by looking at how policy discourse has reframed the inequalities between rural and urban regions.

3.1 Reframing Regional Inequalities

The process of digitalization is viewed as part of the modernization strategy of a country, engaging with the internal dynamics of citizen's life, and their urban areas.

The following section will examine how regional inequalities are perceived in Japanese policy discourse. First, this section will examine how policy documents discuss the orientation towards digitalization by looking at how they represent the systemic issues of Japan's rural regions. Then, the main revitalization strategies will be outlined, showing how they are translated at a local level. Building on that, the role of smart cities will be examined, showing how it assists in the achievement of regional revitalization. Finally, this section will explore the shift from traditional revitalization strategies and the new digital efforts.

3.1.1 Structural Regional Inequalities in Policy Discourse

Within policy documents structural issues in the Japanese regions have been identified as obstacles to the local population well-being and to national resilience. Demographic decline, depopulation of the rural areas and internal migration towards the core areas of the country are only some of the structural issues recognized by the Japanese policymakers contributing to the economic weakening of the rural areas of the country. Thus, to engage with these issues, Japanese government has chosen to digitalize rural Japan as a measure to revitalize regional economies and improving the well-being of its citizens. However, framing the potential solution of the structural issues of regional Japan through a digitalization-driven vision can be considered as a shift towards a technological solutionist vision. By reconsidering regional

inequalities as a problem of limited digital capacity in rural Japan, the government expects to reduce the urban-rural divide by integrating digital technologies.

In fact, digitalization policies recognize in the declining birthrates and the impoverishment of regional economies the enablers of a decline in productivity and competitiveness of the peripheral regions of Japan. Smart city initiatives are articulated as a solution to the economic decline of regional economies, mitigating the internal migration towards the core areas of the country by improving the productivity of the peripheral regions (SIP, 2020, p. 5). In the Smart City guidebook, government agencies share the guiding values for the achievement of digital society. They present digitalization as a solution to social challenges by boosting growth and leading the cooperation between public and private sectors. Moreover, they expect the acceleration of digital adoption to every citizen of Japan in order to create innovation and new value also in the peripheries of Japan (Cabinet Office et al., 2021, p. 16). The Smart City guidebook primarily discusses the government's philosophy behind smart city development, explaining how they will be realized and governed. However, there is a limited discussion of specific technologies or concrete examples implemented to solve social challenges. Therefore, this guidebook shows the government's vision and shapes its narrative, but lacks in details on how digital technologies will respond to social issues.

Academia frames rural depopulation as the result of Japan's modernization and industrialization, while the structural inequalities that are contributing to the existence of the urban-rural gap are considered as an effect of the absolute increase of the nation's living standard (Matanle & Sato, 2010, p. 187). However, the Japanese government's revitalization strategies reframe the structural inequalities behind the urban-rural divide, recognizing in the lack of digital infrastructure and technologies the logic behind the shrinking of the Japanese regions. In fact, policy documents tend to frame the social challenges presented earlier as to be solve through the implementation of technologies and systems that provide more efficient services (e.g. healthcare, autonomous goods delivery, and safety) that allow to improve the citizens well-being (Cabinet Office et al., 2021, p. 11).

The main objective of digitalization, and smart city initiatives, is to revitalize the regional cities and population. This is achieved through the implementation of Digital Garden City Nation, which plans to solve regional social issues by integrating technologies and ensuring the basic conditions for digital implementation. These efforts include the development of digital infrastructure, such as the promotion of fiber-optic networks and the development of technologies beyond 5G. Moreover, it includes the provision of the essential digital technologies in the regions who lack them, supporting the daily life infrastructure of local

residents. Finally, the development of digital human resources by training students and workers about digital technologies, particularly to the rural areas (Cabinet Office, 2022, pp. 17, 20-22). This strategy gives freedom to each region to shape their own strategy according to their issues and the background of the community (SIP, 2020).

Overall, smart city and digitalization policies recognize the structural challenges of the Japanese rural areas. Depopulation, economic shrinking and spatial inequalities are acknowledged by the government's agencies that reinterpret them as a consequence of the lack of digitalization and digital infrastructures. This perception of inequalities gives a new, central, role to digitalization, expected to be the driver of the regional revitalization by boosting productivity, mitigating demographic decline and reducing the urban-rural divide. However, policy documents, discussing their vision and philosophies behind the development of smart cities, tend to provide little information and examples about the concrete solutions to the social challenges that they recognize. As a result, the government's reframing of regional inequalities risks oversimplifying these challenges as problems that can be addressed only by digital technologies.

3.1.2 National Agenda vs. Local Translation

The smart city national strategy in describing the philosophy of the initiative, shows the construction of the narrative by the policymakers. In the Smart City Guidebook, "Three Basic Philosophies" of a smart city are presented. First, smart cities need to be resident-centric, aiming at improving the well-being of the population. Second, they have to be vision-focused, emphasizing the importance of technologies to solve challenges. Last, they give importance to the cross-sectoral and cross-municipal collaboration (Cabinet Office et al., 2021, p. 2). This philosophy constructs a narrative that shows the government giving the priority to the residents of a certain region, creating smart city not for national economic purposes, but to support the reduction of the urban-rural divide by improving the living conditions of the rural residents.

The measures driving the revitalization of the regions vary depending on the solutions they ought to find. The main policy framework, driver of the digitalization of the country is Society 5.0. This new approach imagines "a society that is sustainable and resilient against threats and unpredictable and uncertain situations, that ensures the safety and security of the people, and that individual to realize diverse well-being" (Cabinet Office, n.d.). This policy framework expects every aspect of society (e.g. urban and regional development, business design) to be reconstructed in the cyberspace and then reflected in the physical space to allow for the evolution of society (Cabinet Office, n.d.). This approach shows a convincing narrative

that demonstrates how the government frames technology as a solution not only to greater societal issues, but also to the everyday life of the citizens, taking advantage of the fascination towards new technologies to gather consensus on the application of this framework.

Under the Society 5.0 umbrella a number of policies, aligning to the broader framework, have been produced, showing how national revitalization efforts started being intertwined with the greater societal evolution that the government expects to produce. For example, the Digital Garden City Nation has been presented as a policy to promote the use of digital technologies to intensify the revitalization of regional economies, tackling the systemic issues they are currently facing (Cabinet Office, 2022, p. 1). Building on this policy, as part of the process towards digitalization, the Digital Infrastructure Development Plan 2030 has been formulated to promote the efficient development Japan's digital infrastructure, identifying the necessary infrastructures to develop for the achievement of Society 5.0 (MIC, 2025, pp. 1-4). The introduction of these policies indicates the alignment with what has been previously discussed, that is the digital backwardness of the peripheral regions of Japan contributing to the narrative shift of the Japanese government. The policy documents discuss the necessity of improving the digital capacity of the peripheral regions. Improvement of digital capacity, in this context, refers to the necessity to provide basic digital infrastructure and access for every citizen in Japan. The Digital Garden City Nation, for example, promotes the development of data centres and the creation of local 5G networks to be used in agriculture, factories and remote construction management. It also encourages the integration of the My Number Card on everyday services, such as the use as a library card or to facilitate reservation of people with disabilities (Cabinet Office, 2022, pp. 17-18). Similarly, the Digital Infrastructure Development Plan, aims to accelerate the realization of Beyond 5G communication infrastructure providing support to research and development activities. In addition, it looks into the expansion of optic fiber to the remote areas of Japan, aiming at achieving 99.9% household coverage by 2027 (MIC, 2025, pp. 2-3).

This effort is displayed by the smart city integration in regional towns such as the case studies of this research, Aizuwakamatsu in the Fukushima Prefecture and Sapporo in Hokkaidō. The two cities, aligning with the Digital Garden City Nation policy, demonstrate their efforts towards the achievement of the national government's objectives. However, each city's initiative shows their efforts in fostering their local reality, instead of benefitting national companies or actors. The city of Aizuwakamatsu generated the smart city to create a sustainable and resilient regional society that aims to introduce ICTs to create new jobs and support the relocation of companies in the city, to develop and provide digital services locally

(Aizuwakamatsu City, 2023a). Similarly, Sapporo City promotes the introduction of a smart city initiative to foster innovation and industry locally. In the Third Sapporo Future Creation Plan, the city highlights its effort to promote local investments for the development of new business in growth areas such as AI and the aggressive business attraction activities directed at the creation of local start-ups (Sapporo City, 2024a, p. 3). Moreover, the city plans to collect data, through services such as smartphone apps that collect health related data as the step count or body composition, which will then be analysed and reused for smart planning, a method that simulates movements and predicts the effects of the implemented measures (Sapporo City, 2019, p. 7). While these measures align with the vision of Digital Garden City Nation, Sapporo policies provide limited explicit reference to the national framework. In fact, the policy documents discuss the introduction of general digitalization strategies aimed at revitalizing the city and improve the well-being of the population, with the only reference to a national framework in the Vision for Sapporo Smart City, where Society 5.0 is introduced to explain the logic behind the collection of data in the city (Sapporo City, 2019, p. 8). However, as in Aizuwakamatsu, Sapporo supports its local development, shown by the creation of the Sapporo Area Regional Data Utilization Promotion Organization (SARD) that supports the production and analysis of locally sourced data, such as public transportation use data, payment data or the step count collected by the citizens' smartphones, to improve the smart city, instead of collecting insights from outside Hokkaidō (Sapporo City, 2019, pp. 4; 7).

The smart city visions of Aizuwakamatsu and Sapporo show how regional cities, while aligning with the ideas conveyed by national policy frameworks, maintain a degree of freedom to identify their local challenges. In fact, in Sapporo, the deterioration of urban functions will be addressed by reforming administrative procedures through the analysis of the locally-collected data (Sapporo City, 2019, p. 9). Aizuwakamatsu, through the introduction of the technologies will pursue the local development, as in the measures related to energy, aiming at realizing local production and consumption, and in agriculture, planning to reduce food waste by preferring the consumption of local produces (Aizuwakamatsu City, 2023a, p. 4). While aligning with the national framework, the cities' priority is given to the local challenges which, as shown by the documents, reflect a tendency to address local issues through local solutions, rather than following a uniform national model.

3.1.3 The Role of Smart Cities for Regional Revitalization

The realization of regional revitalization is a lengthy process that requires a clear vision projected to the future to lead the path towards its achievement. The following analysis of the

government's policy documents suggests how the framing of digitalization as the driver of revitalization aligns with a technological solutionist view, considering the smart city initiatives as the universal remedy to address social and economic issues of rural Japan.

The integration of smart city initiatives as part of the digitalization process allows for the adaptation of national policies in an urban context. The degree of freedom left to local municipalities shapes the integration of the initiative in each context. Sapporo Smart City integrates ICTs and technologies to achieve its own objectives, which consist in promoting industry, developing human resources and ensure the efficiency of public administration. In addition, Sapporo City objectives include the promotion of innovation by pioneering on new technological initiatives utilizing ICTs and creating value for the city. With these objectives, the city policy direction aims at developing an environment that contributes to the optimization of society (Sapporo City, 2019, p. 1-2). In fact, part of the smart city investments aim at improving the attractiveness of Hokkaidō to workers and enterprises, contributing to sustaining the demography of the prefecture, and supporting the competitiveness of the region (Sapporo City, 2024a, pp. 2-4). Similarly, Aizuwakamatsu, as a well-known rice producer, introduced technologies aimed at supporting the agricultural sector, to reduce costs and optimize the use of resources by integrating sensors that automatically supplies the right amount of water and fertilizer based on the data collected. This optimization is particularly efficient in shrinking regions as the reduction of working hours supports the agricultural efficiency with a diminishing population (Fukushima, n.d., p. 3). Moreover, to support couples that want to create a family in the city, the Maternal and Child Handbook has been digitalized in the city-run OS (operating system), Aizuwakamatsu Plus, where they can be provided information and services through the collected data, and help schedule medical examinations or vaccinations (Fukushima, n.d., p. 4). The smart city projects in Sapporo and Aizuwakamatsu suggest an alignment with the policy direction of the Japanese government, reducing the overconcentration of the urban core by attracting population to the regional cities, or mitigating the demographic decline of the country. It can be argued that measures such as the support for people returning or transferring to Sapporo, support the reversal of the economic decline of the regions, as more skilled workers mean higher production for enterprises. However, little pro-natalist policies are suggested by the municipalities, apart from what Sapporo City presents as reducing the economic burden on families with children, done by providing benefits or subsidizing medical expenses (Sapporo City, 2024a, pp. 4-5). This suggests that pro-natalist policies are not given a central role in the revitalization measures of the cities, which tend to prioritize the economic revitalization over the demographic trend reversal.

The initiatives introduced by the two case studies illustrate the intention of both cities to prioritize the revitalization of their area, before of achieving the objectives of the national government. In addition, this shows the capability of the peripheral regions to innovate and develop strategies to solve their systemic issues by prioritizing they localness, contrasting the core-periphery logic that frames the peripheries as unable to modernize. In this context, smart city initiatives are framed as the driver of digitalization, linking the digitalization process of the regions to the urban reality, supporting the creation of initiatives that adapt the national policies to the local needs of peripheries.

3.1.4 From Regional to Digital Revitalization

As the development of new strategies involving the integration of digital technology is currently taking place in Japan, it is important to examine how rural revitalization has shifted from infrastructure-led, involving investments and improvements in agricultural efficiency, towards a digital-led revitalization, making space to technological development to reduce the inequalities that have characterized rural and urban Japan since the end of World War II.

Since 1960s, Japan's rural revitalization initiatives were characterized by a focus on the promotion of agricultural efficiency improvement in the peripheral regions. The government supplied the rural areas with subsidies to encourage local population to engage in agriculture, supporting agricultural infrastructure and creating low interest loans for the purchase of agricultural equipment, in order to improve the overall income level of rural households (Youzheng, 2019, p. 78).

However, the shift towards digitalization, with the advent of Society 5.0, required for smart technologies to be integrated also in rural Japan. Moving towards digital rural revitalization, the government framed it as a necessity to ensure the achievement of the societal shift, to build regional resilience in the Japanese periphery and to foster competitiveness across the entire archipelago. In this regard, the Japanese government has narrated digitalization as a cross-cutting solution to issues towards which Japanese peripheries have been struggling for almost a century. In fact, while smart cities have been repeatedly framed as initiatives to solve social challenges, they have been engaging with other aspects of the urban ecosystem. Indeed, Sapporo City and the Fukushima Prefecture have been integrating smart cities and digital technologies as means to efficiently manage energy use and promote the reduction of carbon emissions by supporting the development of new products in the environment- and energy-related fields. For example, the adoption of hydrogen-generated energy in Fukushima, powered by the Fukushima Energy Research Field (FH2R). In addition, Sapporo supports the

introduction of electric vehicles and promotes the use of public transportation to reduce the carbon emissions of the city (Fukushima Prefecture, 2025; Sapporo City, 2024b, p. 11).

The analysis of the policy documents shows how digitalization-led rural revitalization is framed as a solution to a wide range of issues of rural Japan, engaging with shrinking population, by supporting maternity by digitalizing child care and medical information (Fukushima, n.d., p. 4). Digitalization is also framed as a solution to the economic shrinkage, creating new jobs and supporting the development of local enterprises such as in Sapporo (Sapporo City, 2024a, p. 3). The evidence found by Trencher supports the vision of the government, demonstrating that the application of people-centred ICTs is able to address the social challenges of the regions (2019, p. 125). However, the analysis of the policy documents does not reinforce the findings in Trencher, as the initiatives presented by the government, their vision and the potential initiatives implemented, do not provide results of the outcomes. The government's documents tend to propose initiatives with positive expectation, with little consideration of the challenges or potential failures, thus constructing an optimistic narrative where digital integration alone is able to solve social issues.

3.2 Reorganizing Smart City Governance

After having examined how regional inequalities have been framed in the light of the shift towards digitalization and smartness, this section examines how the governance structures have changed from the first examples of smart cities, involving the private sector and academia.

This section will explore the partnerships between public and private sector, exploring the traditional governance structure of smart cities and its shift towards a joint-venture scheme, explaining why this happened and what benefits each actor that chooses to participate. Moreover, this section will explore how this governance structure, and the efforts of local municipalities and companies, are trying to revive the regional economies by supporting local innovation.

3.2.1 Public-Private Governance Structures

Public-Private-Partnerships (PPP) in Japan are built on historically and culturally embedded tensions. Since the Meiji Restoration (1868), government and private have partnered together, with the government financing and regulating, while companies innovated and developed the country (Pianezzi et al., 2023, pp. 637-638). This is reflected in the smart city agenda where companies, while sharing similar interests as the government, feel obliged to comply to their

requests due to the cultural value of harmony (*wa*) to adapt to others' opinions to avoid conflict (Pianezzi et al., 2023, p. 638; 642).

Together with the introduction of the government-led initiatives, several technology companies came together in the foundation of the Smart City Project (SCP), which includes 27 companies such as LG, Kawasaki Heavy Industries, Toshiba etc. Aiming for the creation of a smart city business model, these companies started partnering with local governments to foster benefits for each actor; the local governments would see the industrial development in their area, with these companies relocating and investing in these territories. The private companies would have a space to showcase their technologies and have their R&D departments experiment with innovations in a real-world environment (Barrett et al., 2021, p. 79). Barrett et al. recognize in the joint-venture scheme a model in which local governments openly partner with private companies to support the development of new local industries and, thus, create new value for the region (2021, p. 79). The shift towards this new model results in a redefinition of the internal roles of smart city governance in the pursuit of the resident-first model. Residents, in fact, are the core of smart city initiatives, and they have an active role in city planning by identifying the issues to which the smart technologies have to find solutions. The public sector has to introduce mechanisms to manage and use the data collected from the citizens, through sensors and their smartphones, to improve the use of the local data. The collection of data such as public transportation use, health, sensors evaluating the quality of air, or public services such as sewage or waste collection through the simulation of user movement and behaviour, to design adequate measures that allow for the city to improve its efficiency to benefit the citizens, the main users of smart city technologies. The partnership is completed by the participation of corporations which provide the services and know-how for solving the regional issues, and academia that provides the expertise for identifying the root causes of the problems (PwC Japan Group, 2021, pp. 15-16).

Evidence from Trencher's research (2019, p. 125) suggests positive outcomes on the partnership between public and private sectors, with a resident-centric vision. In fact, in Aizuwakamatsu, the development of app tools that support the solution to local social challenges, such as locating fire hydrants buried under the snow for firefighters, was designed through a cooperation between the three actors. Moreover, Barrett et al. (2021, p. 81) identify in the same city the positive outcome of the partnership between the municipality and the consulting company Accenture. The partnership helped attracting international and national firms, while stimulating local ventures. These researches demonstrate the potential of public-

private partnerships, supporting the idea that the shift towards joint-ventures may contribute to solve the peripheries' social issues.

However, governance of smart cities under the public-private partnership underscores risks related to the cooperation itself. First, it was mentioned that the partnership, being beneficial for both actors allows for a better collaboration. Yet, the literature lacks the recognition of a possible failure of the cooperation due to missing investments, or simply as a consequence of the smart city not being suitable for solving certain problems. The government's documents, providing an optimistic view of the implementation of smart city initiatives, fail to consider the potential failure of partnerships or smart city initiatives. As a result, policy documents do not address what costs must be endured by the cities, who should be held accountable in case of a failure, and how a potential failure would impact on residents.

The joint-venture company, Future City Solutions Limited, established in 2012 from a partnership between the ICT company Fujitsu and the trading company Mitsui & Co., was created to actively engage in the cooperative development and management of smart community projects. Planning to engage in several sectors, from transportation, to energy and building, this company aimed at connecting businesses, municipalities and academia to actively participate in the smart city field (Japan Today, 2012). This press release, in examining this joint-venture aimed at the development of smart city technologies, shows the behaviour of private companies engaging in smart city initiatives. While the initial commitment of Future City Solution was limited to Japan, with time, the companies started wanting to expand overseas, with Fujitsu planning to capitalize the experience gained in Japan to support the design of smart community projects overseas. However, with the limited available information about this company it is difficult to evaluate the outcomes of the partnership and the results obtained in Japan and abroad.

3.2.2 Convergence of Interests

The literature on smart city governance highlights the role of the public sector in creating the vision and coordinating the efforts of the public-private partnerships. Government actors, such as the Ministry of Economy, Trade and Industry (METI), promote the smart city initiatives as part of a broader agenda that includes the industrial development of the country. Pianezzi et. al (2023, p. 638) discuss the alignment with the cultural traditions of Japan, as private companies willingly cooperate with the government on the basis of the concept of harmony (*wa*), feeling obliged to cooperate with the government's requests. In the case of Aizuwakamatsu, private sector involvement, such as the partnership with Accenture, goes through the cooperation with

the University of Aizu, which has helped attracting national and international enterprises interested in investing in the smart city. Similarly, in Sapporo, there is limited evidence in an obligation-driven cooperation between public and private sectors, rather the municipality aims at attracting companies to invest in the city. In particular, the city invests in attracting green transformation (GX) industries, to pursue its goal to become a Green Capital (Sapporo City, 2024a, p. 3).

Overall, Pianezzi et al. suggest that the public-private partnership is shaped by cultural and historical ties between the government and the private sector. However, the empirical evidence from the case studies shows that regional smart city initiatives tend to attract private actors through opportunities for investment or subsidies, as shown by the case of Sapporo. Moreover, as shown by the case of Aizuwakamatsu, the cooperation with Accenture fostered new local investments, thus the initial partnership became the catalyst for future collaborations.

The Public-Private partnership in smart city demonstrates a partial alignment of each participant. While collaboration is framed around the shared aim of regional revitalization through the implementation of digital technology, each actor obtains different benefits from the partnership. The national government, thanks to private companies, gets the experience and technological expertise to achieve its objective of revitalizing the regions through digitalization, a necessary objective for Society 5.0. Private companies benefit from access to public projects and "living labs", allowing them to test and refine their technologies in the real world, while opening for future partnerships with the government. These dynamics suggest that the partnership does not have to be perfectly aligned, but requires a partial convergence of interests to make the partnership possible and beneficial for the development of smart cities.

3.2.3 Local Support through the Public-Private-Academia Partnership

The partnership between the three actors involved in smart city governance demonstrates the interest of local governments to accelerate the digitalization of their community, to ensure the revitalization and restore the competitiveness of their economies. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) recognizes two crucial roles for digitalization: the first is to create new added value by introducing new services such as drones, robotics and sensors; the other is to create new innovation by incorporating AI and using big data to transform business models (MLIT, 2023, p. 6).

The partnership between public and private companies, especially in peripheral Japan, is directed towards the support of local innovation and support of the local infrastructures. The Third Sapporo Future Creation Plan supports the establishment of new enterprises in the

prefectural territory. In this plan, the competitiveness of the Sapporo area is ensured by supporting the efforts of local enterprises and startups, creating new added value and revitalizing the competitiveness of the region, helping expanding the domestic and international sales for local companies that are planning to expand overseas. This policy document, however, does not state concrete measures to support the newly established firms in the city. Nonetheless, the city of Sapporo provides subsidies to newly established companies to make investments in land, buildings and assets, supporting the creation of factories and research and development facilities. The support service STEP (Sapporo Transnational Expansion & Partnership) allows for the companies to receive funding based on the category they fit in. For example, in Category 1, the companies established in Sapporo must be research and development facilities, or data centres for food, energy and environment, or they must be established in the Sapporo City industrial park (Sapporo City, 2024a; STEP, n.d.). These measures show that local governments are open to offer concrete support to companies that plan to relocate locally. The case of Sapporo shows how the city's vision to promote next-generation industries is confirmed by the subsidies provided by STEP.

In the cooperation context, the private-public partnership has extended to include universities in a triple partnership, often referred to as the Triple Helix. Universities are starting to focus on research and how to turn academic research into products. Industries are not focusing only on producing, but look for hidden opportunities to undertake for profit. Governments do not only regulate but support, through policies and funding, big projects. The Triple Helix cooperation, thus, moved from the previous model, which saw each actor working in separate spheres, towards a more chaotic and constantly changing model where each actor overlaps and create friction with the other, allowing this system to create a positive innovation ecosystem that produces benefits for the final users (Etzkowitz & Leydesdorff, 2000, pp. 118-119). The result of the participation of academia as an actor in this partnership reveals a tendency of transformation of universities, recognizing its role as a supportive actor in generating strategies for economic growth and social transformation that are alternative to those of the national government or industries (Etzkowitz & Leydesdorff, 2000, p. 110). The case of Aizuwakamatsu illustrates how the Triple Helix is engaged with in the context of smart city development, involving a cooperation between the municipality, the University of Aizu and a private actor, in this case Accenture. The University of Aizu provides the research on how to improve the use of Artificial Intelligence and digital platforms for public services. Accenture supports the creation of an API (application program interface) designed to facilitate the spread of software and codes useful for the development of smart cities (Accenture, 2020a).

This partnership improves the innovation capacity of the city, accelerating the improvement of digital technologies through the research of academia, and the technological expertise of the private sector. This case demonstrates that the cooperative effort from the actors allows for an improved development of technologies to be applied in the municipality, and beyond.

Consulting companies as Accenture in Aizuwakamatsu, and PwC Japan Group started cooperating and reporting about smart cities in Japan. Their interest in smart cities is framed as "part of their effort to take on Japan's social issues" (PwC Japan Group, 2021, p. 2), or as a support to the Fukushima area after the earthquake of March 11th (Accenture, 2020b). In particular, PwC's reports are highly optimistic for the development of smart cities in Japan, expecting an impact similar to the post-war recovery. At the same time, PwC takes into consideration the potential challenges to the implementation, such as the lack of digital literacy of the population. Moreover, the analytical expertise of PwC, evaluating the development of smart city in Japan and comparing it with overseas examples, might be interpreted as part of a strategy in which consulting companies engage with the government to partner in smart city planning and implementation. For example, in the case of Accenture, while framed as a cooperation with Aizuwakamatsu to help the population to challenge societal issues, it suggests an interest in taking a bigger role in the smart city development program, as shown by the partnership between Accenture and EXPO 2025 that has selected the company to develop the master ICT plan for the exposition (Accenture, 2020c).

Overall, public-private-academia partnership is built around the convergence of interests, as mentioned earlier, and on a positive tension that allows each participant to benefit from the cooperation, supporting innovation and competitiveness at a local level in a way that supports the resilience of the entire country.

3.3 Reimagining Regional Development

After having examined how the Japanese government has shifted its revitalization focus towards digitalization, and how the initial top-down governance approach has changed towards a bottom-up cooperation between government, private sectors and residents, this section will now examine how the future of rural Japan has been reimagined in the light of smartification.

This section will first explore how Society 5.0 has become the central framework driving digitalization across Japan, to which the policies presented in the previous sections have been, directly or not, aligning to. Finally, this section wants to consider what the future of regional development might be by taking into consideration innovations introduced in peripheral, isolated areas of the country.

3.3.1 Society 5.0 as the Normative Beacon

Policy discourse increasingly frames Society 5.0 as the key framework guiding digitalization and shaping how smart city development and digitalization are understood. This policy framework is presented as a way to ensure happiness and comforts through all aspects of life, from energy to human and goods transportation, to medical care. This is done through an iterative cycle in which data from the living population is gathered, analysed and converted in the real world (Deguchi et al., 2020, pp. 2-3). Smart city initiatives are presented as tools to achieve a broader national vision, not only regional revitalization, but to get to the societal shift that Society 5.0 plans. The process of connecting the cyber and the physical world respects the premises of smart city initiatives. The physical city, through the population, is the provider of data that the virtual city, through sensors to visualize the movement of people and goods and evaluate the effectiveness of the physical city, will process to provide services aimed at improving the well-being of the local population (PwC Japan Group, 2021, p. 30). This process, framed as a way to render cities more efficient and sustainable, however, risks masking the potential of surveillance that it might create. In fact, policies tend to lack taking into consideration how data will be managed and by who, opening up to risks of privacy guarantees and potential national security from cyberattacks.

The Society 5.0 framework is designed to link together the digitalization of Japan and the efforts of the government to respond to the economic and social challenges that the country is facing (Holroyd, 2022, p. 19). Policy documents from Sapporo align the city vision with Society 5.0, expecting a solution to regional issues through the use of public and private sector data. Thus, the data-driven smart city in Sapporo plans to provide services to improve the well-being and the services offered by the city (Sapporo City, 2019, p. 8). In contrast, the alignment with Society 5.0 is not directly referred in the policy documents, however, its measures are associated with the expectation of Society 5.0 to integrate the cyber and physical worlds, such as the digitalization of medical consultations, or the development of a disaster prevention app for the self-organization of neighbourhoods (Aizuwakamatsu City, 2023a, pp. 8-9).

Altogether, Society 5.0 has been framed as the path to achieve a reform of the society in its entirety, and through collateral policies such as the already presented Digital Garden City Nation, as the path undertaken to achieve regional revitalization. This framework aligns with what has been reflected in the Sustainable Development Goals (SDG), where the technological innovations support the achievement of the targets of the United Nations' goals. For example, the integration of technologies for smart agriculture, as in the case of Aizuwakamatsu presented

earlier, supports the achievement of Goal 2, Zero Hunger. Moreover, supporting the connection of industries, academic institutions and other stakeholders, as discussed in the previous section supports the achievement of Goal 10, Reduced Inequalities. Finally, the development of smart cities, paves the way for the achievement of the goals 10 and 13, Sustainable Cities and Communities and Climate Action, in supporting the creation of cities that are safe, convenient and environmentally sustainable (Barrett et al., 2021, p. 83). Therefore, Society 5.0, the SDGs and smart city initiatives co-exist in the same environment, where SDGs supply the goals that are expected to be achieved by nations. Society 5.0 provides the vision for the digitalization of the country, whose initiatives are aimed at engaging with SDGs. Smart cities are part of these initiatives, contributing to the achievement of the development goals by integrating technologies in the cities' context.

3.3.2 Policy Alignment to Society 5.0

The Japanese national government's policy documents frame Society 5.0 as a normative beacon to which various policy levels reproduce its strategy and align to it. Government policies regarding the revitalization of regions, economy and the contrast to the demographic decline all converge around the logic of digitalization, showing the coherent alignment to the Society 5.0 framework. The horizontal integration of Society 5.0 as a broader framework is shown when looking at the areas that the policy covers. Policies regarding healthcare, social safety, energy management, education, industry and transportation are covered by policies that are strictly aligned to Society 5.0 (Gurjanov et al., 2020, p. 3).

Smart cities, as the executive tool for the Digital Garden City Nation, align to the greater framework of Society 5.0. Aizuwakamatsu Smart City shows the rationale of the implementation of smart city initiatives to achieve the societal evolution. Through its "Three Points of View", the city council explains that the integration of ICTs plan to cover several sectors of the city's life, such as agriculture, healthcare and disaster prevention (Aizuwakamatsu City, n.d.). While not explicitly related to Society 5.0, these measures align with the objective of merging the cyber and the physical worlds, suggesting the collection of data to improve the quality of services provided by the city. For example, Aizuwakamatsu City, collecting the medical data from the city's medical institutions and from home measurements of the individuals, can compile a common record that increase the efficiency for the healthcare staff, providing online medical consultations, and through the Aizuwakamatsu App, the citizen can check its own medical information at any time (Aizuwakamatsu City, 2023a, p. 14). Similarly in Sapporo City, through the "Data-Smart City Sapporo", the plan expects to

overcome population decline by improving the quality of life, develop the urban area and create new jobs using ICTs, promoting the digital development of several aspects of life through data utilization by using the Sapporo Area Regional Data Utilization Promotion Organization (SARD) (Sapporo City, 2019, 2024a). The alignment is more evident in the policy documents of Sapporo City, which suggest the realization of a data-driven society by utilizing the data collected by SARD to solve regional issues and enable urban development (Sapporo City, 2019, p. 8).

The participation of the two cities in the smart city initiative, therefore to Society 5.0, shows how the policy was produced to be participated by every city and every actor, without any written consensus, thus being forced to align to the national vision as the previous policies all have aligned with the new broader framework. This highlights the narrative of the Japanese government to achieve the societal evolution and, together with the redefinition of the functions of the ministries under Society 5.0, how this has become the leading developmental model for the country.

3.3.3 The Future of Regional Development

Predicting how the revitalization process of rural Japan will unroll is a difficult task, as it is not easy to anticipate how smart cities will support the challenge to demographic and economic decline of the Japanese peripheries. However, it is possible, through adopted initiatives across Japan, to examine how digitalization, and with-it smart cities, can provide tangible effects on regional Japan.

The city of Kamiyama, Tokushima Prefecture, located in the island of Shikoku was a declining community that, through the integration of digital tools, became a major IT city that is attracting offices from several tech-companies and young skilled workers. The benefactor of Kamiyama, Shinya Ominami, installed across the town high-speed internet, that attracted startups, young workers thanks to the low costs of living and the peacefulness of the area. Moreover, thanks to the idea of Chikahiro Terada, CEO of the start-up Sansan specialized in the digitalization of business cards who, in April 2023, the first Japanese school of tech entrepreneurship was opened in Kamiyama, attracting students aged 15-20 to learn about engineering, programming and designing, contributing to the revitalization of the town's economy, population and supporting a digital-driven future for Kamiyama (Government of Japan, n.d.; Oi, 2022). The effort of Terada in Kamiyama shows how a declining region can be revived through digital infrastructure development and, taking advantage of the low living costs of rural regions, can help attract startups and companies that generate new value to the area.

This example shows how the plan of the MIC and Sapporo City of improving the digital infrastructure and investing in local startups might give results to the revitalization project.

Masaki Island, in Mie Prefecture, experimented with autonomous grocery deliveries to the elder population, completing the crossing of 5.5 kilometres in 15 minutes, supporting the connection of the isolated population with the mainland (Zoldi, 2025). In the context of medical transportation, between the cities of Urasoe and Nago, in Okinawa, ITOCHU corporation has tested drone-based blood transportation to support and optimize the medical supply chain of the Okinawa archipelago, matching the quality of ground vehicles transportation (Zoldi, 2025). These two examples, highlighting how digitalization provides benefits to the local populations of remote areas can suggest a positive outcome of the smart city initiatives' technologies of human and goods autonomous transportation or healthcare digitalization can benefit the local population of cities, reducing the costs on the government and making it more efficient for citizens.

While these beneficial initiatives provide well-being to the local population, the national and local governments should participate in the integration of these initiatives throughout the archipelago, without being influenced by the core-periphery logic that expects rural Japan to become the testing lab for urban areas, but respecting the premises of the visions of regional revitalization, maintaining a human-centric approach providing wellness to the local population.

4. Discussion

This research aims to identify how Japanese policies have framed smart city initiatives as responses to regional inequalities, giving emphasis to the role of digitalization on the reframing of regional inequalities, reorganization of smart city governance and the reimagination of regional development.

The following section will discuss the implications of these findings by first restating the key takeaways of this research, emerging from the analysis presented in the previous section. Then, it will interpret these findings by taking into consideration existing literature and critically examining them through the empirical evidence provided by the case studies.

4.1 Main Findings

The findings of this research show how the implementation of digitalization policies, in the form of smart cities, has contributed to the shift in the perception of different aspects concerning the Japanese society, thus influencing present and future of digitalization in the country.

The first finding of this work regards the shift in the perception of regional inequalities. The analysis shows that, while policies recognize the existence of structural challenges such as depopulation and economic decline in the rural areas, they are reinterpreted as problems of limited digital capacity and infrastructures. In this context, smart city initiatives are framed as drivers of digitalization, supporting the creation of initiatives that adapt the national digitalization policies to the local needs. At the same time, policy documents from the case studies of Aizuwakamatsu and Sapporo show the alignment of the local efforts to the national agenda, but prioritizing the challenge to local issues by engaging with local solutions.

The second finding regards the redefinition of smart city governance under the increasingly adopted public-private partnerships. The adoption of these joint-ventures saw a redefinition of the internal roles of smart cities. The public sector becomes a coordinator, making sure that measures align with the government's vision. The private sector provides the services and expertise on how to solve regional issues. Moreover, the residents have a crucial role, discovering issues and cooperating with the city planning. In this context, it has been found that it is a collaboration based on the partial alignment of interest by both parties, which benefit from each other's participation. In addition, the involvement of private consulting firms

such as PwC Japan and Accenture is interpreted as a will to engage with the Japanese government to partner in smart city planning and interpretation.

The final finding regards the role of Society 5.0 in the redefinition of the future regional revitalization efforts of the country. In fact, it has been found how the national policies, such as Digital Garden City Nation, and the local initiatives of the case studies align to the Society 5.0 agenda, showing the efforts of the national government to create a centralized normative beacon that leads the regional revitalization and development efforts of the country. In this sense, it has been found how revitalization initiatives, bound to improve the wellness of the population, have been reframed through digitalization lenses aligned with the goals of Society 5.0, thus expecting the achievement of an evolution of the Japanese society through the integration of the cyber and physical world, supported by the implementation of ICTs and digital technologies across the Japanese archipelago.

4.2 Discussion of the results

As introduced previously, the results have shown how the engagement of the Japanese government to achieve regional revitalization with digitalization has changed the perception of regional inequalities, the governance of smart cities and the perception of the future of regional development, shaped by digital technologies.

The first question this thesis sought to determine was to understand how digitalization policies have affected the perception on regional inequalities. This research has shown how, in the light of digitalization, regional inequalities have not been cancelled or ignored by policymakers, but they have been reframed through a technological solutionist approach which expects a project of social engineering, Society 5.0, that introduces digital initiatives, such as smart cities, to improve services and communities. Through the criticism of Morozov to the implementation of technological fixes as a remedy to social issues, it is possible to understand how the way the government frames technology as a remedy to all socioeconomic issues of Japan, is an optimistic perspective on the real solutions it might find. In fact, while technological development might mitigate the economic decline, and might support a deceleration of the demographic decline, these issues require structural changes to produce an actual turnaround of the current conditions. Nonetheless, technology may be supportive of this process, particularly when it comes to creating new opportunities and jobs, supporting local industries and population. Therefore, the shift is not limited to the perception of regional inequalities, but in the way regional revitalization is imagined, framing the peripheries as

trailing, in terms of digital capacity, requiring technology to reduce the digital gap with the metropolitan areas.

Through the examination of the processes of governance of smart city initiatives, this dissertation reviewed the joint-venture scheme to answer to the second question of the research: What role do public-private partnerships play in the development of smart cities? This research agrees with the findings of Trencher's research (2019), which considers beneficial the shift towards a resident-centric public-private partnership, considering the benefits of the cooperation between all parties demonstrated by the case studies, as in the case of the development of tools and collection of data, such as the steps count or medical data, by Sapporo City (Sapporo City, 2019, p. 7). The analysis has shown a shift from a government-led scheme to smart cities being developed under a partnership consisting of public and private actors. This partnership revolves around the concept of localness, thus a cooperation with local firms to use their knowledge of the local environments to tackle local challenges and meet their needs, as shown by the efforts of Sapporo City to support the development of local startups and funding of local companies. This shift in governance supports the shift in the perception of the regional areas, which are now considered sites of investments and experimentations instead of recipients of aid. As demonstrated by Sapporo City experimentation in the "living labs" and Aizuwakamatsu introducing technologies to find solutions to local issues, the regions are now considered innovation sites, places where government and technological companies work together to test their cooperation, where the government can experiment with policymaking to improve the efficiency and support the local population with them, and the technology firms can observe the functioning and the application of their technologies in real life settings. However, this thesis has found limited evidence on the evaluation of possible failures of the initiative by the Japanese government, not addressing potential drawbacks or alternative solutions in case the smart city initiative, or the partnership with private companies does not go through. However, the analysis of the potential challenges to smart city implementation was provided by the consulting company PwC, which recognized in the lack of digital literacy of the population one of the main issues. In this sense, the participation of consulting companies such as PwC, underscores an interest in participating in smart city initiative, whether providing their analytical expertise in reporting the state of development, or using their experience in supporting the development of technologies, as Accenture did in Aizuwakamatsu.

The last finding builds on the reframing of inequalities and the redefinition of smart city governance, highlighting the way in which Society 5.0 has contributed to the reimagination of regional development under the digitalization light. The analysis has found that the

implementation of digitalization policies related to Society 5.0 anticipates a reduction of the urban-rural divide, as demonstrated by the Digital Garden City Nation policy which focuses on peripheral areas catching up with the core areas by introducing digital infrastructures and technologies in rural Japan. This is done by ensuring that the national policies align with the Society 5.0 framework, which has turned to become the normative beacon that defines the developmental model for rural areas first, but turning to the societal evolution of the entire country. However, reconsidering regional revitalization with a digitalization approach risk masking the regional inequalities under a process of managing the decline of the shrinking regions, rather than finding permanent solutions to the social problems. For example, one of the main principles of Society 5.0 is to "realize well-being" (Cabinet Office, n.d.), which regards the improvement of the lifestyle of the living population, creating new jobs and making the rural areas more attractive to workers, but does not engage in pro-natality policies that reverse the declining birthrate in rural Japan. This study aligns with the findings of Sanada and Zappa, which show how, thanks to digitalization, the political power of local governments has increased, finding alternative ways to support the structural changes produced by innovation, as in the cases of Sapporo and Aizuwakamatsu, cooperating with private companies and finding alternative ways to fund their initiatives (2025, p. 76; 85).

Conclusion

This thesis has examined how digitalization, through the implementation of smart city policies, is leading a general shift in the perception of how regional inequalities are understood, how smart cities are governed and how regional revitalization is addressed. The findings showed a shift from the traditional redistribution-oriented regional revitalization policies, towards a model that aims at the development of the digital capacity and infrastructure of the peripheral areas of Japan. The objective of this shift is to improve the innovation capacity of the regions, thus supporting the mitigation of the demographic and economic decline of the non-metropolitan areas. With the examination of the case studies of Aizuwakamatsu and Sapporo, it was shown how this transformation gave new opportunities for local innovation, with a focus in investments to support local startups and industries. However, this shift risks masking the actual structural inequalities of peripheral Japan, finding temporary solutions that do not solve the systemic issues that have been affecting rural Japan for decades.

This research has highlighted some limitations. The recent enactment of the presented policies renders difficult the evaluation of the effects of digitalization in rural Japan, having to consider the necessity of giving more time and research to assess the impacts of these policies on local communities. Moreover, while the current research examines smart cities in the context of one of the mostly advertised initiatives, Aizuwakamatsu, or a prefectural capital, Sapporo, it is crucial to examine the implementation of these initiatives in smaller centres, to broaden the research towards underexamined projects. In addition, future research should look into unsuccessful smart city projects, to evaluate the challenges encountered and prevent similar outcomes in future initiatives.

In conclusion, this study highlights the need to critically examine the role of digitalization in the rural contexts, consisting not only in a tool to innovate and provide new technologies to the peripheral regions, but as a process that drives a reframing of how regions and their inequalities are perceived.

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