

Data Sharing in a Smart Tourism Destination: Analyzing the Case of Sapporo Using the Concept of Coopetition

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ABSTRACT

Data plays an ever greater part in the tourism industry. While the platform-based sharing of open public data, private-sector intermediary platforms, and the use of social media to understand consumer trends are already well recognized, more potential for innovation exists in sharing private data among organizations in Smart Tourism Destinations. Research into the factors enabling and hindering coopetition in this kind of data sharing platforms is still in the nascent stage of development. Our case study of Sapporo, a major Japanese city endeavouring to create itself as a Smart Tourism Destination, sheds light on the initial approaches to involve organizations to such a data sharing agreement. Founding on seven interviews with ten participants of Sapporo Smart City project organization (SARD), we derived enablers and impediments that promote coopetition in data sharing as part of Smart Tourism Destination development. We also present practical recommendations and future research opportunities for such initiatives.

Keywords: Smart Tourism Destination, Value Creation, Open Data, Shared Data, Coopetition, Japan

1. Introduction

A Smart Tourism Destination is an integrated network of organizations (Buhalis and Amaranggana, 2015; Leonidis et al., 2013) that emphasizes innovation, sustainable development, and the destination's quality of experience (Lopez de Avila, 2015).

It is based on the concept of Smart Tourism which assumes the integrated collection and harnessing of data from different sources, including government, organizations, and human beings (Gretzel et al., 2015). While many Smart Tourism approaches focus on individual technologies and their uptake by customers and organizations (Law et al., 2021), a broader

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view would consider tourism destination -based data platforms that facilitate the sharing of data among various entities in the destination and serve to integrate the organizations in the destination.

Prior research on Smart Tourism data platforms has discussed the collection and analysis of public data, examples of which are the development of public data repositories for a locality that are available for free to all members of that locality (McLeod and McNaughton, 2016; Medina et al., 2014; Lo Duca and Marchetti, 2018; Wu et al., 2014). Smart Tourism research has also discussed private data platforms; for example, hospitality data platforms such as Booking.com (Bilbil, 2019), Hotels.com, and Expedia.com (Lee et al., 2013). These private data platforms are transactional sites where firms are able to include their offerings for a commission or a fee. And prior research also includes investigations on the collection and analysis of data freely available on social networks (Del Vecchio et al., 2018; Mukhopadhyay et al., 2022; Pantano et al., 2017). However, prior research on private data platforms does not typically address tourism destinations and that on social network data extraction projects does not usually report on platform construction.

When data is owned by a public entity, such as the government, there are few problems associated with its collection, sharing, and analysis using platforms in the Smart Tourism Destination. Private data is much harder to handle in this way. Hence, private data management presents itself as a conundrum for Smart Tourism Destinations. The issue of privacy has been widely recognized (Gong and Schroeder, 2020; Kontogianni and Alepis, 2020), but if privacy requirements are strictly applied, the collection, sharing, and analysis of such data using platforms will be greatly impeded or even prevented. Gretzel et al. (2015) point out that widespread data sharing

in the tourist destination is a requirement for Smart Tourism. They also suggest that such data sharing will lead to an improvement in various outcome indicators at the destination relevant to tourism. Smart tourism destinations can benefit from widespread data sharing among organizations in the locality because data produced by one organization is not always useful for that organization; instead, it can be useful for another organization in the locality. To achieve this, a realistic view into the development of a Smart Tourism Destination should consider what is required for a collaboration of actors in the destination, including public and private. Unfortunately, prior research from the viewpoint of policymakers or multiple destination entities is extremely scarce (Law et al., 2021).

The concept of cooptation, or the balancing of competitive and cooperative relationships for mutual benefit (Bengtsson and Kock, 2000; Brandenburger and Nalebuff, 1996; Gajdošík, 2019), has been identified as a beneficial approach for organizations (Ritala et al., 2014). Previous studies have examined cooptative arrangements in the form of clusters or networks, and have identified a range of factors that promote cooptation. Until now, cooptation has attracted some interest in the area of platforms (Bacon et al., 2020; Burström et al., 2022; Geurts et al., 2022; Planko et al., 2018), although less so in open innovation systems (Bacon et al., 2020) and Smart Tourism -related platforms (except Bahar et al., 2022a, 2022b; Liu et al., 2023). Understanding the conditions which promote and inhibit cooptation for Smart Tourism data platforms can provide insights for the management and innovation in Smart Tourism Destinations.

This research seeks to answer the following research question: “what are the enablers and impediments for data sharing in Smart Tourism destina-

tions?” As the sharing of public and private data on platforms involves both cooperative and competitive relationships among organizations, we use the theory on coopetition in exploring this research question to understand what such data sharing can mean for Smart Tourism Destinations.

We conducted seven interviews with the stakeholders of Sapporo Area Regional Data Utilization (SARD) Organization (<https://data.pf-sapporo.jp/>). In fact, SARD is simultaneously a data platform as well as an organization managing this data platform and its development. Through SARD, Sapporo strives to become a Smart City (Anttiroiko et al., 2014; Lee et al., 2020) and prioritizes tourism as one of the core fields where SARD is to contribute, effectively making it an incipient Smart Tourism Destination. SARD is an example of a particularly ambitious project, as it attempts private-sector data sharing among organizations with the objective of innovation. Unlike many existing platforms focusing on a single industry, particularly hospitality, this data sharing is planned for a diversity of industries in tourism; hospitality, retail, catering, sports, and others. Therefore, SARD presents a rare case that may provide new knowledge to the scholarly community.

In the following sections, we first review the literature on smart tourism, smart tourism data use and coopetition (section 2). Next, we present Sapporo’s background as a smart tourism destination, explain the conditions surrounding the foundation of the SARD organization, as well as describe the SARD initiatives and their expected impact to the destination (section 3). Then, we explain the method of the study (section 4). After this, we describe and discuss the findings of the study, which are the enablers and impediments to SARD initiatives (section 5). We include our theoretical and practical contributions to the end of section 5 and explain the

limitations of the research as well as expected future research directions in the last section (6).

II. Literature Review

2.1. Smart Tourism and Data

Smart Tourism involves the integration of various technologies such as the Internet of Things (IoT), big data analytics, and mobile applications to optimize the tourism experience (Gretzel et al., 2015). The use of data in the tourism destination is a central tenet of Smart Tourism (Gretzel et al., 2015; Kontogianni and Alepis, 2020), and Smart Tourism assumes this data use to be very intensive in the Smart Tourism Destination (Gretzel et al., 2015; Kontogianni and Alepis, 2020). Prior literature shows Smart Tourism to be a broad concept that includes individual tourism applications to collect and process data – this kind of research is plentiful (Kontogianni and Alepis, 2020; Law et al., 2021) – but also larger configurations encompassing an entire tourism destination, or even the entire world, such as platforms and ecosystems.

Prior research in the field of smart tourism has recognized the importance of both data from the public sector, such as data from government agencies and publicly available sources, and data from the private sector, such as data from businesses and organizations in the tourism industry. In this research, we categorize tourism data with its sources and stakeholders, as previous studies’ categorization of data as either private or public oversimplifies the complex relationships and dependencies between these sectors in the tourism industry (Gretzel et al., 2015) and can lead to confusion in the context of recent data platforms that collect and share data among multiple

stakeholders or for multiple purposes.

Data from the public sector in tourism refers to data that is collected and owned by public agencies or organizations, such as tourism boards, destination marketing organizations, and government agencies. Examples of data from the public sector in tourism include visitor statistics, tourism infrastructure data, and cultural heritage data. Public-sector data is often “open data”, being founded on the idea that more benefit can be extracted from data that is available to be shared. Research on public-sector data typically showcases projects focused on communities that are reliant on tourism and where public data was shared to be of greater use particularly to tourists interested in visiting the community. There is a fair number of prior projects relating to public-sector data repositories in tourism destinations, such as the Canaries Open Data Project (Medina et al., 2014), the Taichung-Changhua-Nantou mobile tourism application (Wu et al., 2014), the Tourpedia case (Lo Duca and Marchetti, 2018), and the emerging Caribbean open data ecosystem (McLeod and McNaughton, 2016; McNaughton et al., 2014). Other research showcases individual applications based on open data, such as the Nagoya University Cultural Path application (Ogishima et al., 2016). The type of data shared in these open data projects has typically been relatively simple, relating to establishments such as accommodation, restaurants and shops, as well as touristic events. It is this kind of data that is often possessed by public organs and also of possible benefit for tourists entering a destination.

Data from the private sector in tourism refers to data that is generated and owned by private businesses, organizations, or individuals. Examples of data from the private sector in the tourism industry include worldwide intermediary platforms for hotels such as Booking.com (Beritelli and Schegg, 2016;

Bilbil, 2019; Lee et al., 2013), private accommodation, such as AirBnB (Kuhzady et al., 2021), and retail, such as Amazon.com (Ritala et al., 2014). Other types of private-sector data can be device-based (e.g., GPS data, mobile roaming data, RFID data) or transaction data from Web searches and company point-of-sale and customer relationship management systems (Li et al., 2018). Private-sector data has the complication that it relates to exclusive individual or corporate ownership and its use can therefore be limited by privacy (Gong and Schroeder, 2020; Kontogianni and Alepis, 2020), trade secrecy, or intellectual property legislation. Private-sector data involves the possession, acquisition, or loss of potential benefits in the marketplace in comparison with one’s rival firms, e.g. access to a large customer base through inclusion into hotel accommodation, flight ticket reservation, or retail Websites. Therefore, the use of private-sector data platforms is associated with financial compensation and huge wealth accumulation, exemplified by Amazon.com.

Data from social media can also be considered as data from the private sector, as the data originates from individuals and these platforms are generally owned and operated by private companies. Li et al. (2018) suggest that about half of tourism-related Big Data originates online and a majority of the remainder originates from user devices, such as smartphones. Tourism organizations initiate analysis of social media data to generate insights for supporting innovation at the tourist destination (Del Vecchio et al., 2018). For example, consumer sentiment was analyzed using data from Expedia (Xiang et al., 2015) and Tripadvisor (Pantano et al., 2017). Alaei et al. (2019) conducted an in-depth review of such sentiment analysis projects. Tourist behaviors were analyzed using data from travel blogs and 11 travel websites (Marine-Roig and Clavé, 2015) and Flickr (Miah

et al., 2017). According to Li et al. (2018), the type of data used in these projects typically falls into three categories: text data, photo data, and location data, where image-based data is not typically used because of the difficulty to analyze it. Instead, images can be a source of metadata relating to text or location. Marine-Roig and Clavé (2015), Xiang et al. (2015) and Pantano et al. (2017) are examples of projects analyzing text data originating in social media, whereas Miah et al. (2017), Salas-Olmedo et al. (2018) and Kim et al. (2019) are examples of projects analyzing location data. Research on social media data is typically conducted by a single organization without the intention to share the data with other organizations. Additionally, the projects are one-off due to the limited shelf life of the data; hence, there is no attempt to establish a platform for the collection and analysis of social media data (except Fuchs et al., 2014).

Data from the public sector and the private sector can be combined and interlaced. The private-sector data in these cases can be, for example, geographic location information, which is added to public-sector data about touristic establishments and events to produce map-based navigation tools for tourists. The Hakodate Map+ application (Okuno, 2014) and Arukou! Guide (Urata et al., 2016) demonstrate the combination of public open data to show touristic information, such as sightseeing spots, with the user's location data on a map that can be used while walking around Hakodate and Nagoya Cities.

The use and sharing of especially private-sector data on platforms can be interpreted as a kind of partnership among the organization sharing the data and the platform (Bilbil, 2019) that deviates from a pure competitive relationship. However, at the same time, a competitive relationship continues to exist since the organization sharing the data maintains

its independence and can even utilize rival platforms, such as in the case of hotels offering rooms on multiple booking intermediaries (Bilbil, 2019). This is analogous to the divergence between the supply-side view and the demand-side view in tourism and hospitality services; on the supply side, firms and platforms compete for cost minimization and customer attention, but on the demand side, an interdependence among firms and platforms exists which creates a compound effect on the customer (Beritelli and Schegg, 2016). Hence, we turn next to stakeholder relationships on platforms that combine competition and collaboration.

2.2. Smart Tourism and Coopetition

Sharing private smart tourism data is difficult. It hinges on creating a collaboration framework around these organizations and companies. Prior literature has theorized such arrangements as “coopetition” (Bengtsson and Kock, 2000; Brandenburger and Nalebuff, 1996), where participants balance competitive relationships in the market environment with cooperative relationships for mutual benefit, similar to co-production (Luo, 2005). As such cooperation is limited in character, it does not entangle the companies together, and members still retain their competitive independence (Chin-Miki and Batista-Canino, 2017). Coopetition benefits individual enterprises through increasing the size of the market, improving resource efficiency, and improving the firm's competitive positioning against other business models (Ritala et al., 2014).

What factors promote coopetition? Different features of similarity and togetherness have been found to help coopetition, including shared goals and the degree of interdependence (Czakoń et al., 2016; Czernek et al., 2017); characteristics of the cluster,

including its size and spatial level of firm concentration; and the firm population, including number of SME's and supply heterogeneity (Bengtsson and Kock, 2000; Brandenburger and Nalebuff, 1996; Della Corte and Sciarelli, 2012; Kylänen and Rusko, 2011; Lorgnier and Su, 2014); awareness of governance, centralized coordination of projects, management of shared resources, and leadership (Braun and Hollick, 2004; Chin et al., 2008; Wang and Krakover, 2008); shared commerce (Kylänen and Rusko, 2011); and trust and integration (Braun and Hollick, 2004; Della Corte and Aria, 2016; Tuohino and Konu, 2014).

Coopetition is expected to be particularly helpful to smaller companies (Ivanis, 2011), as they often lack resources that larger companies have, and thus can use cooperative relationships to acquire these resources, also allowing them to attain economies of scale when working in unison with each other (Tayler and McRae-Williams, 2005). Additionally, small companies do not necessarily understand whole-of-destination value creation (Braun, 2004; McRae-Williams et al., 2005), enabling them to benefit from a variety of perspectives present in a cooperative group.

Coopetitive arrangements can form as clusters (Porter, 1999) or industrial districts (Pyke et al., 1990), where participants share a geographical location, or as networks (Lazzarini, 2007), where such proximity is not necessarily implied. Arrangements that have a defined geographical focus are particularly relevant for tourism destinations, because tourism is constrained by distance. Clusters can be achieved in different ways: horizontal clustering denotes collaboration in the same business sector, whereas vertical clustering denotes collaboration along the value chain, i.e., connecting suppliers to customers.

Clustering of like-minded tourism organizations in the same locality can enable IT services -based

coopetition among cluster members. Braun (2007) argues that cooperative marketing and various cooperative transactions can take place over ICT portals, brokering access to collaborative procurement, customer relations, knowledge management, and supply/value chain management. Hence, data sharing could be used to create clusters by enabling access to an increased amount of data for companies in the same business sector, or enabling companies in a value chain to share information among each other in order to help them attain cost savings or create better service offerings. However, according to Braun (2007), such collaboration should take place in partnership with the local destination marketing organization.

To summarize, a Smart Tourism Destination may be able to foster member organizations' interest in sharing private data through coopetition if certain conditions are met. Such conditions are, as described by this research area: shared goals, shared commerce, interdependence, and integration; leadership, centralized coordination, and management of shared resources; trust; and finally, characteristics of the cluster.

III. Background of the Case

3.1. Sapporo as a Tourist Destination

Sapporo embodies several basic success factors as a tourist destination (Crouch and Ritchie 1999; Ritchie and Crouch, 2000), which are explained below.

Sapporo is characterized by a cool climate and nearby mountainous terrain that, together with ample snowfall and well-developed ski resorts, makes it amenable to be a winter sports destination. These are

complemented by volcanic hot springs that can be enjoyed all year round. Within Japan, Sapporo is also popular as a Summer retreat destination for e.g. mountain hiking and other activities involving the nature. The cultural and historical appeal of Sapporo comes from the distinctive “frontier” roots of the locality, as well as from being branded as a source of a variety of delicious produce, including seafood, dairy products, meat products, and non-rice cereal products. The most important special event in Sapporo is the Snow Festival (“Yuki Matsuri”), and there are several events of smaller importance, such as the Beer Festival (“Beer Matsuri”), which can attract tourists. However, the Snow Festival is the most likely to be of interest to foreign tourists, getting international media coverage and coinciding with the busiest travel season. Destination management is tasked to the Sapporo City Economic & Tourism Affairs Bureau.

Although Sapporo has been long considered a viable tourism destination within Japan, it has been overshadowed by other cities such as Kyoto and Tokyo for international tourism. Due to financial pressures arising from the declining population in the region (and, indeed, throughout Japan), the City of Sapporo has shown an interest in fostering international tourism. The aim of these efforts is ultimately to impact the critical indicators of destination management; namely, inbound tourist numbers and tourism spending.

Although foreign tourists come from all around the world, Sapporo draws in the largest foreign tourist groups from other Asian countries/areas, and especially those nearby, such as Korea, China, Taiwan, Thailand, and other Southeast Asian countries. For foreign tourists, Sapporo is accessible mainly through Sapporo Chitose Airport, either directly from abroad or via a transfer from other domestic airports such

as Tokyo Narita Airport. Because most international flights to Japan do not land in Sapporo Chitose Airport, this connection via Tokyo is likely the main route by which foreign tourists arrive. Some foreign tourists may also select to tour other locations in Japan and then arrive to Sapporo using a train; however, because a direct Shinkansen (high speed train) link from Tokyo to Sapporo is due to be completed only in 2030, such overland routes are likely to remain a small minority as a transport method to Sapporo for the recent years.

3.2. The Establishment of SARD (Sapporo Area Regional Data Utilization) Organization

The City of Sapporo, recognizing the future challenges facing the City, primarily aging and population decline, established SARD as an organization in July 2016. The aim of SARD was to promote innovation, and this is expected to contribute to improvement in areas such as health and transportation, and the creation of new business that exploits the touristic value of the region. This type of Smart City approach in Japan is not unique to Sapporo; other cities such as Fukuoka have initiated similar projects; and in fact the Government of Japan fosters these digital initiatives by granting regional cities and municipalities with additional finance to support the initiatives.

SARD is established as a foundation separate from the public administration, and is a spin-off from the Sapporo Electronics & Industries Cultivation Foundation (SEC). As the latter is a joint public-private venture (so-called “third sector organization” in Japan), it is capable of fostering a collaboration among the City and private companies. This makes SEC very important for SARD, and consequently SEC retains a membership in SARD that

exerts a leading role in SARD management. The organizational form of foundation also has a function to ease the legal constraints that govern public entities' data management. The connection with the City of Sapporo is also strong; the mayor of Sapporo City chairs SEC, and one of the vice mayors chairs SARD as an organization. Through the role of the City, the influence of other City institutions such as the Sapporo Tourism Bureau is evident. In terms of the private sector, SARD has 35 member organizations from Sapporo and its environs at this early stage of its existence. Prominent corporate members that were interviewed are NTT, a nationwide telecommunications and IT consulting firm, Aeon, a multinational retailer, Hokkaido Shimbun, a local newspaper and media company, and Fusion, a locally established direct marketing company. In addition, early experiments with Satsudora, a local drugstore which is also a SARD member, were frequently mentioned in the interviews. As an entity, SARD embodies several distinct objectives around the theme of smart city, one of which is the stimulation of international inbound tourism.

In this research, the focus is on the stimulation of local tourism business through innovation that is based on shared data. Hence, as SARD operates through a foundation with multiple local organizations as its members, it may be considered as a lever by which Sapporo can emerge as an incipient Smart Tourism Destination.

3.3. SARD Initiatives and Expected Impact

SARD plans to collect and share four major types of tourist behavior -related data: (1) increased frequency for collecting and sharing tourist overnight stays data, (2) collection and sharing of tourist/consumer mobility data, (3) sharing of anonymized and

aggregated tourist/consumer purchasing data by member organizations, and (4) enhancing the collection of tourist outcomes -related data. Each of these four types is explained below.

The first major type of data SARD plans to collect is that on tourist overnight stays in hospitality establishments. This type of data can be considered public-sector and has already been collected by the Sapporo Tourism Bureau for years, but the frequency of data collection has been sparse, with only two questionnaires sent to hospitality companies per year. When analysis time is factored in, the time lag for this data to be available for decision-making has been eight months. Because of this problem, SARD plans to increase the frequency of data collection and speed up analysis by replacing the questionnaires by an application to submit monthly data from hospitality establishments directly to the SARD system. This could require some more work at those establishments but result in possible benefits to the catering and retail industries which would have more updated data to respond to inbound tourists' needs.

The second major type of data is mobility-related data. Such data can be generated from a number of sources, including smartphone applications, motion-tracking sensors, and public transportation smart cards (SAPICA). Mobility data is interesting to businesses such as retail and catering, because these companies are dependent on foot traffic to stores where products and services can be offered. When these companies are able to profile the potential customers in proximity of stores, they are able to modify their offerings to suit these potential customers' tastes and conduct promotional activities to draw them to visit the stores. SARD is leaning on mobility data as a focal case to demonstrate the value of data sharing to Sapporo companies, and is conducting experiments to collect and analyze such data by pur-

chasing cell phone base station impressions from NTT, as well as planning the deployment of applications (including MAAS-related), that could result in generating location data. There are also plans to install sensors in the Sapporo station underground walkway that would detect pedestrian traffic and provide similar data. As this kind of data would be collected by Sapporo City organs, it would be labelled as public-sector data.

Example#1: The number of tourists and their visitation time around various Sapporo landmarks was analyzed using data from cell phone base station impressions. While the number of tourists was found to be high in the vicinity of Sapporo Television Tower and the Clock Tower, their visitation time was higher near the Nakajima Park area. Among this latter group of tourists, Taiwanese nationality registered particularly high.

The third major type of private data is anonymized and aggregated POS (Point-Of-Sale) data from retail and catering companies. POS data is generated when a sale is recorded in establishments. By having access to such data, companies in retail and catering industries are able to significantly improve their understanding of tourists' consumption patterns and perhaps gain valuable insights; however, POS data is private-sector data, highly valuable and jealously guarded by all companies as a critical corporate asset to be used in strategic planning. It is also legally impossible to share raw private data that includes customer personal information. Hence, for companies to accept sharing this kind of data to SARD, the data must be carefully processed and aggregated so that individual consumers and companies cannot be identified. Sample data items to be shared include the product type sold, the price of sale, and country

of the shopper when foreigners take advantage of their tax-free advantage (which requires that passports be shown). At this stage of SARD formation, it is yet to be decided how POS data would be requested and how would be handled.

Example#2: Upon analyzing the POS data from several outlets of a Sapporo drugstore, it was found that the average number of items purchased by tourists of Chinese origin at outlet A over a given time period was 5500, whereas the average number of items purchased by tourists of the same nationality at outlet B was only 30. However, the number of Chinese tourists traversing near these outlets was almost equal. One possible conclusion is that outlet B has been unable to make use of customers' purchasing opportunities, and it should set up ads, hire Chinese-speaking salespeople, or change its product variety to make better use of the opportunities.

SARD also plans to enhance the collection of tourism outcomes -related data, another type of public-sector data. In destination management, the critical outcome information indicators are related to the number of incoming tourists, their spending levels, and their satisfaction levels. The data on tourist arrivals and departures to and from the destination has been measured by an annual questionnaire that has been administered to each transportation company, such as bus companies. It provides the fundamental quantitative awareness of domestic and foreign tourist numbers that visit Sapporo every year. The data on tourist spending has been measured with an annual survey. The collection of these types of data is expected to be largely unchanged in the future.

Regarding the data on foreign tourist satisfaction after their stay, it has so far been measured with an annual survey during the Snow Festival ("Yuki

Matsuri”). While the selection of this event as a representative case of tourist satisfaction may be defended by the fact that it is an internationally acclaimed event, in the future, it is unsustainable to rely merely on this one event in measuring foreign tourist satisfaction. Hence, SARD plans to conduct questionnaire studies and interviews to foreign tourists in the departures area of Sapporo Chitose Airport to obtain a more representative sample. Hence, an improvement is expected with regard to this tourism outcome data collection.

Also addressing tourist satisfaction, the fourth major type of data is social media data. The analysis of online word of mouth in social media platforms is already a familiar technique in tourism, with Facebook, Twitter and Instagram being the major platforms where data has been collected. Sapporo Tourism Bureau focused on Twitter data and conducted sentiment analysis based on positive and negative words that were linked to Sapporo tourism. This kind of data may be useful for marketing promotion of the entire destination since sentiments that are uncovered this way relate to a wide range of experiences in Sapporo. But the data would be private-sector since it is produced by individuals.

Example#3: Twitter activity by Taiwanese tourists within Sapporo City were analyzed and it was found that tweets concerning cross-country skiing were particularly numerous. Upon follow-up interviews at hotels, an explanation emerged. As opposed to traveling to a real skiing center out of town, Taiwanese tourists can enjoy trying cross-country skiing in parks around the City center, closer to their hotel locations.

In conclusion, the expected impact of SARD on tourism-related data collection and sharing lies primarily in improved understanding of tourist behav-

iors in and around Sapporo, as well as improved understanding of tourist satisfaction of their experiences in those localities. However, these initiatives have different enablers and impediments, which are to be discussed next.

IV. Method

The method used in this research was the case study (Yin, 2009), with data collection conducted by semi-structured interviews to a number of SARD member organizations (<Table 1>). Interview topics were threefold: (1) introduction to SARD and its inception, (2) current initiatives in SARD and their expected impact, and (3) prospects of SARD in terms of enablers and impediments. Interviewees were selected based on which organizations and persons were seen to be critical stakeholders of SARD. All interviewed persons were very forthcoming and frank in their answers. The interview durations ranged from 30 minutes to 2 hours, being typically around one hour long.

Four of the interviews were in a group setting, with more than one interviewee present, whereas the remaining three were focused on a single individual. Interviews were conducted at two time points: August 2019 and October 2019. Both of these time points can be considered early in the development of SARD, and apart from progress in individual projects, there appeared to be no large shifts in the direction or fundamentals of the organization between these two time points.

Interviews were audio-taped and transcribed using professional transcription services. Then, the transcriptions were read by all authors and passages related to the “prospects of SARD in terms of enablers and impediments” were labeled using the following

<Table 1> Detail of Interviews Conducted in the Research

Interview #	Organization(s)	Interviewed Persons	Time
1	- Fusion (direct-marketing company) - Sapporo City University	Fusion: Manager Sapporo City University: Professor	August 2019
2	- Fusion (direct-marketing company) - Hokkaido Shimbun (media company)	Fusion: Manager Hokkaido Shimbun: Two managers	August 2019
3	- Sapporo City - Sapporo Electronics & Industries Cultivation Foundation (SEC)	Sapporo City: Manager SEC: Manager	August 2019
4	- AEON Hokkaido (retailer)	Manager	October 2019
5	- NTT (telecom company)	Two managers	September 2019
6	- Sapporo City Economic & Tourism Affairs Bureau	Manager	August 2019
7	- Sapporo City Economic & Tourism Affairs Bureau	Manager	October 2019

scheme: 1.) motivators and incentives for the contribution of data to SARD, 2.) SARD resource acquisition and organization, and 3.) the business environment. This scheme was created based on the conditions for coopetition as presented in the literature review. As a result of the categorization, enablers and impediments were uncovered in each of the three categories for data sharing in Smart Tourism Destinations.

V. Findings and Discussion

Related to the contribution of data to the SARD platform, interviewees emphasized the motivators and incentives for the provision of private-sector data, rather than public-sector data. POS data sharing is particularly problematic, since the data is almost invariably key to firms' competitive advantage. POS data sharing can occur as a result of corporate knowledge transfer or other strategic collaborative partnerships, but it is almost unheard of in other contexts, proving therefore to be a hurdle for SARD success.

5.1. Data Sharing Challenges

A focal concern for SARD companies to agree to share their private data, particularly POS data, is whether they can extract any benefit from the data residing on SARD. This is problematic as the benefit of data would only be realized after it is analyzed and connected to real-world business problems. As long as POS data is kept secret, companies have no way of imagining the business applications and consequent benefits of data hypothetically shared into SARD, which makes it almost impossible to assign any value for this data. Interviewees described this as a chicken and egg problem: data should be shared first by other companies to realize its value and create an incentive to join SARD, but there is no incentive to share data before its value is recognized fully.

Prior literature suggests that firms in competitive relationships that seek to both compete and collaborate (engage in coopetition) in open innovation systems must create and deepen their mutual relationships in order to attain knowledge transfer success (Bacon et al., 2020). From the perspective of value

recognition, the existence of stronger mutual relationships could enable the firms to have more solid information exchange that could result in a better understanding of each other's potentially valuable data. Indeed, SARD has taken steps to enable potential members to understand the benefits of data. SARD staff have started to write sample success stories for shared data which would be discussed in hands-on workshops where attendees could see the connections with data and their own companies' business. Individual meetings could be continued with interested companies after these workshops. Such workshops are not only useful because of the sample success stories shared, but based on theory, could be seen as the first step to foster stronger linkages among participating companies that already possess the willingness to learn new knowledge. Ultimately, holistic measures such as member trust to the coordinator and to each other are critical to foster levels of cooperation and collaboration that are necessary for competition. Interviewees stated that SARD can only be successful if participants believe in the "goodness of human nature", aiming for "local consumption" of locally produced data.

While forming relationships, firms should still continue to maintain independent postures vis-a-vis their rivals. In fact, firms should seek to attain a balance suitable to them when engaging in competitive and collaborative actions (Bahar et al., 2022a, 2022b). This indicates, as also noted by Planko et al. (2018), that innovation ecosystem members should consider carefully about sharing data and set their own boundaries. If SARD member firms overemphasize cooperation and carelessly share key data, they may find that they have lost their competitive advantage to their rivals who are also SARD members. However, these firms may still possess other data that can be shared to the platform without jeopardizing key assets

and thereby contribute to the prosperity of the entire tourism destination.

The perception of whether SARD provides any benefits toward firms considering to join it may also be viewed from the perspective of IT adoption; how attractive are the services and the data that SARD can provide to them that would make them "adopt" or "accept" the SARD platform? The situation is analogous to organizational adoption of IT services, for example, financial IT services (Tapanainen, 2020). Prior research appears to be lacking in the area of tourism platform adoption by organizations using classic theories such as Innovation Diffusion (Rogers, 2003) and the DeLone-McLean model of IS success (DeLone and McLean, 2003). However, there have been research approaches focusing on organizational platform adoption which applied other theories, such as RBV (Zhong and Nieminen, 2015), or were lacking of any theoretical framework (Gupta et al., 2013). In the tourism context platforms are extremely important, and investigating firm adoption of tourism platforms can offer new insights into the development and growth trajectories of smart tourism destinations.

5.2. Sectoral Challenges in Catering and Hospitality

In addition to the private-sector data sharing problem, SARD has also faced sectoral problems. Firstly, there has been a lack of digital technologies in the catering sector. Interviewees note that POS data provision by such companies is complicated because many small catering companies in Japan do not use electronic POS terminals; they might only accept cash payments. Therefore, POS data in these companies would exist only in paper accounts and it would be difficult and time-consuming for such companies to send data to SARD. As small firms comprise the

majority of all companies, a smart tourism destination without small firms could not live up to its potential. Excessive reliance on cash as a method of payment has, however, been recognized by the Japan Government, which offers monetary incentives for company purchases of cashless terminals since October 2019. Sapporo City has pounced on this opportunity too, and has agreed to pay for the remainder of the cost of these terminals, effectively making them free to businesses. If companies jump on this trend, it will clear one hurdle for SARD to convince even small businesses that they should share their POS data.

Secondly, there is a problem in the participation of companies in the hospitality sector. The creation of a successful tourism destination requires broad participation and involvement of firms that are offering tourism services. SARD has thus far contemplated the involvement of accommodation establishments - a vital component of tourism - through enforcement of City reporting procedures, rather than through the creation of incentives. While such an approach may be effective, this will only allow access to a limited data set from accommodation establishments. In the long run, accommodation establishments should be invited to SARD as members, which can give access to more of their data to other members. For that to happen, however, there needs to be interesting data that hotels can acquire by joining. According to the interviews, hotels may not experience such an interest toward data produced by local retail and restaurant businesses, and this is related to the fact that they are located in the beginning of the tourism service cycle. Tourists only start to consume retail and restaurant services in a location when they have decided on their accommodation options in the location, i.e., reserved a hotel room. Hence, retail and restaurant businesses are interested

in knowing about incoming tourists who have reserved hotel rooms in the location. However, hospitality businesses may not share a similar interest toward data from retail and restaurant firms, because tourists have already made their accommodation decisions once they start to generate data in retail shops and restaurants.

This dynamic among hospitality businesses and retail/restaurant businesses reveals that smart tourism destinations should not only consider coopetition in separate tourism service value chains, such as hospitality, retail service, and catering service, but take the tourist's perspective in their journey of experience in that location. This journey starts from the reservation of flights, accommodation and activity packages, and continues with the actual visitation, which is accompanied by the consumption of various services in the location and its environs. The initial step of reservations is separated from the visitation, which creates a demarcation and results in different interests to market participants. In terms of coopetition, this demarcation indicates that research should consider not only intra-industry (Chai et al., 2020; Crick and Crick, 2021), but also inter-industry relationships as a motivator to coopetition.

As the tourist decision of hotel is often made at the point of origin, it would require the collection of inbound tourist data at the origin in order for hotels to be seriously incentivized to participate in and provide data to SARD. This could be done through hotel recommender systems such as proposed by Al-Ghossein et al. (2018), which rely on event data or other input given by consumers regarding their intended activities at the destination. Another issue of critical relevance for hotels is the role of infomediaries, which has been found to be even more important than social media presence (Raguseo et al., 2017). Hotels may be incentivized

to participate to SARD if they are convinced that the data in SARD allows them to better understand which online travel agencies (OTA's) attract the potential guests they are targeting. Hotels could then select to link with those OTA's to obtain greater visibility among their targeted customer group.

5.3. Mobility Data from Applications and Social Media

In comparison with data sharing among SARD members, the collection and analysis of mobility data directly by SARD is a promising area to grow the data content on the platform. This depends on visitors' consent, which means that users of mobile phone applications must be motivated to use those applications so that they will agree to provide their personal mobility data to SARD. Different types of applications to collect this data have been discussed, including the already existing "Sapporo Info" tourist information application and a newly trialled share-taxi (MAAS) application. The Sapporo Info app works as a guide to Sapporo area tourist destinations and provides coupons for tourists to save money on relevant purchases while spending their holiday, thereby creating an incentive for tourists to download and use the app. The share-taxi app is based on the premise that tourists are impeded by language barriers, financial cost, and uncertainty to use taxis to get to remote suburban sightseeing spots, thus motivating them to rely on the app to get around these barriers. In this way, the creation of new services can incentivize tourists to use them and organizations to consequently collect data and share their data to SARD.

The promotion of tourist adoption of smartphone applications is an area that has received a great deal of attention, as described in the literature review section. Well-known determinants such as encapsu-

lated in the Technology Acceptance Model (TAM) and similar theories define what is of greatest importance to individuals when considering the use of new technologies, and these determinants have also been investigated in the area of smart tourism (Law et al., 2021; Ye et al., 2020). In particular, the area of mobile advertising shows that consumers can accept to divulge personal data if they obtain benefits from the use of an application. Hence, SARD may be able to increase its attraction to potential organizational members by developing applications that capture data from international tourists, such as mobility data based on their movements (Okuno, 2014; Urata et al., 2016) and add this data to the platform for members to analyze.

In the case of social network data utilization, SARD has been less active thus far. This is a low-hanging fruit where Sapporo City could take more initiative in order to bolster the data content on the platform. Studies have shown that social media can yield various kinds of data, such as emerging hotel preferences (Li et al., 2015), data for strategic business decision-making (Amadio and Procaccino, 2016; Marine-Roig and Clave, 2015), and mobility-related data (Kim et al., 2019; Miah et al., 2017; Raun et al., 2016; Salas-Olmedo et al., 2018). When SARD's record and capability to analyze such data improves, adding to the knowledge base gained by members, this is expected to create further incentives for organizations to join SARD. However, it should be borne in mind that social media data may often have a limited shelf-life or a limited scope of use; existing projects on social media analysis have been mainly one-off and rarely established sustainable mechanisms to utilize the collected data.

5.4. SARD Resource Limitations

In a Smart Tourism Destination, firms are competing and cooperating at the same time. That is, while they may be direct rivals, they still benefit from an agglomeration of business under the same location brand. For this reason, the destination needs a coordinator providing a rule set that promotes healthy competition as well as cultivates factors of cooperation within the locality which encourages the firms to pitch in for the benefit of the entire destination. In SARD's case, the coordinator would logically be Sapporo City, which controls the rule set applied in the City and is also holding the chairmanship of SARD. Sapporo City is a neutral participant of the tourism market environment and was willing to donate SARD an initial database from its holdings of public data. Sapporo City also donated resources to create SARD's starting capital and continued to provide incentives for companies to purchase cashless terminals in an effort to make it easier for them to join SARD.

In essence, the environment created by the coordinator must balance the incentive for competition against one's rival firms with that of cooperation with other firms in the destination, for common benefit. Prior literature suggests that this is not an easy task. Geurts et al. (2022) explain that multilateral coopetition is governed by two sets of tensions, the value creation - value capture tension and the generalist-specialist contributions tension, which are inter-linked and result in the formation of coalitions and an unpredictable evolution of the ecosystem. Hence, the coordinator and regulator should maintain a close watch on the development of the network in order to manage how the tensions affect it. Scholars have also found that the use of reward and relationship power by the hub firm can influence coopetition success for service innovation in ecosystems (Liu et al., 2023).

One possible way to motivate and incentivize members to share data is the provision of complementary resources, primarily, data analysis resources, which are often lacking in SME's and perhaps even larger firms. Presently, there are no staff belonging solely to SARD, let alone data analysts; hence SARD is running mostly as a virtual organization, with analysis resources borrowed from the Fusion direct marketing company. Neither do major participants in SARD such as Aeon have sufficient data analysis staff. To adequately take advantage of data to be uploaded to SARD, either SARD or the individual companies have to address this lack of data analysis resources, or then continue to depend on Fusion for their data analysis needs. This will require additional financing.

Smart Tourism Destinations are also characterized by marketing coordination of the entire destination. The City of Sapporo is well placed to act as this coordinator; however, establishment of the DMO (Destination Marketing Organization) within the City organization is expected to require additional financing. While Sapporo Tourism Bureau might be naturally suited for such a role, with the establishment of SARD, there are questions as to what are the roles and responsibilities held by this new organization and what is the collaboration and division of responsibilities with Sapporo Tourism Bureau. According to interviews, Sapporo Tourism Bureau has mostly focused on the arrangement of popular tourism events such as the Snow Festival (Yuki Matsuri) and Beer Festival (Beer Matsuri) and has not had the resources to properly act as a DMO for the City and the wider area. If important data is held by SARD rather than Sapporo Tourism Bureau, and additionally if SARD's funding situation develops favourably, it is possible that the authority of Sapporo Tourism Bureau is eroded and deci-

sion-making powers naturally shift toward SARD, where a number of powerful private-sector members are present. Even though the City currently holds chairmanship of SARD, the influence of corporate bodies there is significant, unlike in the publicly administered Sapporo Tourism Bureau.

Regardless of whether the DMO role will be taken by SARD or Sapporo Tourism Bureau, additional resources are required to fulfill these responsibilities. An initiative to raise the hotel tax that was discussed by interviewees would provide such financing that may be enough to kickstart more DMO activities and possibly provide for the employment of data analysis staff. Burström et al. (2022) note that the lack of financial resources is one of the “initial conditions innovation barriers” for cooptation.

5.5. Characteristics of Sapporo Touristic Business Environment

From the perspective of the entire Sapporo touristic business environment, it is critical how the presence and sharing of data will foster new business generation in the destination. Indeed, innovation is an important factor in enabling Smart Tourism Destinations to develop. Prior research has, for example, analyzed the innovation potential of Innsbruck, Austria (Eichelberger et al., 2020), using the Entrepreneurial Ecosystem (EES) framework, which includes factors such as talent, knowledge, and culture, which were recognized as present in Sapporo, as well. Several of the interviewees noted that Sapporo has a special business culture in Japan – exhibiting a more open and “casual” atmosphere. This may stem from the origins of Sapporo as a “frontier town” in Japan. In terms of the use of IT, interviewees characterize Sapporo companies as excelling in technology, though not always in marketing and design

aspects. This is evidenced by a record of IT-related start-up business and innovation in Sapporo area that can be traced to the present founders of SARD. It remains to be seen whether the IT-related innovation drive in Sapporo will extend to the use of open data in the tourism industry. However, the EES framework also includes factors such as finance, demand, and networks, which are crucial to foster entrepreneurial activity over the long term. Such factors may be somewhat lacking in Sapporo and be better available in Tokyo. Interviewees noted that many local companies had relocated to Tokyo, or been bought by Tokyo-based conglomerates, while Sapporo still remained a start-up hub for IT companies.

5.6. Theoretical Contributions

In this research, we investigated data sharing on SARD, a multi-industry Smart Tourism data platform, applying the concept of cooptation, and derived enablers and impediments for incipient Smart Tourism Destinations that point to three theoretical insights.

First, in a multi-industry platform sharing private-sector data, there are challenges over and above getting firms to join the platform and collaborate with one another for common benefit. Cooptation is fostered by shared goals, shared commerce, integration, and interdependence, but the formation of these characteristics can be impeded by the different positions held by firms. Different business models may cause asymmetric interests toward data that other market participants hold. This finding elaborates on prior literature related to the industry-level characteristics of cooptation (Chai et al., 2020; Crick and Crick, 2021), which is lacking with respect to inter-industry research. In the case presented in this paper,

the hotel industry and retail industry exist in a symbiotic relationship with respect to tourism which might be seen to foster coopetition, but which have ultimately asymmetric interests toward tourism-related data.

Second, and this applies equally to platforms aiming for public or private data sharing, stakeholders are unlikely to be able to immediately recognize the value of data residing in the platform, thus frustrating their involvement to create the Smart Tourism Destination. Actors in the SARD organization found that they must in fact conduct marketing of their data to local companies which can be seen as evolving into a one-on-one consulting model. Our research adds to Planko et al. (2018), and especially Bahar et al. (2022a, 2022b), who investigated the balance of competition and collaboration in coopetitive strategies. In particular, our findings illustrate that in private-sector data sharing platforms, an early-stage challenge is to foster collaboration in order to kickstart the coopetitive dynamic.

Third and last, the tasks as well as the resource need of the DMO and aligned central organization will grow significantly in a Smart Tourism Destination that uses a platform for sharing private-sector data. As outlined above, involving the consumers and private sector companies is a foundation of sharing private-sector data. This requires management, leadership, centralized coordination, and the establishment of trust among the different companies and industries that comprise the membership pool. We concur with Burström et al. (2022) about financial resources being critical for coopetition, particularly for the platform coordinator itself. Additionally, we contribute to the limited research available on policymaker and multiparty perspectives in Smart Tourism (Law et al., 2021), particularly related to incentives or rewards to coopetition (Liu

et al., 2023).

5.7. Practical Contributions

The three theoretical insights that we obtained give rise to two practical implications, which we outline below.

It was found that inter-industry differences complicate the formation of Smart Tourism Destinations using private data. The practical lesson here is to foster the creation of motivations and incentives that account for differences in business models in various industries. Without such an approach, it is extremely difficult to create a sustainable ecosystem within the Smart Tourism Destination, as some critical industries are not involved. Those in the process of establishing such ecosystems should therefore consider all the major industries and prevailing business models in those industries when designing their management approach, including hospitality, retail, transportation, travel information, and entertainment.

Another result was that the platform operator must be able to shift the competitive mindset in the marketplace toward a more collaborative approach. This does not refer to industry-level differences but the lack of information and trust that characterize competitive systems. One technique to incentivize firms to collaborate is to provide resources that interest these firms and make them anchor themselves to the platform. Therefore, the platform operator must possess something of interest that can be provided, which is linked to the third theoretical finding. In practice, interesting resources could be consulting about the use of new data for business insights, or they could be more concrete, such as provision of external data analysis capabilities or subsidizing digital payment terminals. Before the platform reaches sufficient size to be able to rely on its own mass

and popularity, such as Booking.com, such resources will be essential for firms to buy-in to the platform, which will increase the mutual stake among these firms.

VI. Limitations and Future Research

The research was conducted during the early stage of development for SARD, and the set of enablers and impediments for Smart Tourism data platforms that were extracted from the interview data may therefore be limited to those pertinent for this stage. Additionally, interviewees were from the City organization and major companies in Sapporo, which may

have limited the perspectives included in the collected data set. Because SMEs are expected to be in a key role in building city-wide collaborations in tourism, future research should focus on the enablers and impediments for these participants. Moreover, future research is needed on inter-industry cooperation (particularly in tourism) and the adoption of data platforms by organizations in the area of Smart Tourism.

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