Destinations and Data State-of-the-Art in Switzerland and Liechtenstein

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Abstract. This research investigates the state of the art among Switzerland (CH)'s and Liechtenstein (FL)'s destinations, intended here as Destination Marketing Organizations (DMOs), when it comes to their relationship with data: what data are collected, how they are stored, analyzed and what impact they have on the destination. This study aims at bringing insights into smart tourism studies as a key aspect of the debate is how DMOs deal with data. Based on a survey performed with CH's and FL's DMOs and related stakeholders, results suggested that there are common conceptual nodes shared by practitioners when it comes to defining smart destinations. However, when it comes to data-related practices (data collection, storage, analysis and sharing) DMOs have very different processes in place. There are organizations that collect but do not extensively analyze data, while others are still not so keen on sharing their data with the whole destination ecosystem. Furthermore, organizations' decision-making processes appear to be based to some extent on data, especially when it comes to (digital) marketing initiatives and campaigns, although behaviors are quite different also in this area. Destination managers might benefit from this paper as the study shows how to investigate data-related practices of an organization. This type of analysis could allow an assessment of the situation and an understanding of the direction in which the organization might move forward.

Keywords: Smart tourism · Smart destination · Big data · Data management · Data analysis · DMOs

1 Introduction

While “smart tourism” has become a very popular term among researchers and practitioners, its definition is still debated [1–9]. It is anyway clear that, in order to be smart, destinations should be able to properly collect, analyze and use relevant data [1, 4, 10, 11]. However, what the actual practices in data collection, analysis, sharing and storage are and what it means to be smart when it comes to data-related processes in tourism is still under study [12–15]. This article aims at contributing to this domain by investigating how DMOs and related stakeholders in CH and FL collect, store and analyze, as well as integrate data within their ordinary processes as actionable insights to make wiser and more effective managerial decisions. To do this, a survey has been conducted

with 35 tourism stakeholders in CH and FL investigating the following aspects (i) understanding of the concept “smart destination”; (ii) dealing with data (data collection and storage, data access and management; data analysis; iii) data-related decision-making processes; iv) perceived usefulness of data-related practices.

2 Literature Review

2.1 Smart Tourism

In the past decades, the word “smart” has become a buzzword in the tourism field, as a consequence of this sector’s highly reliance on information and communication technologies (ICTs) [4]. New concepts such as “smart city” and later on “smart destination” and “smart tourism” have started to be increasingly popular. The concept of smart is, generally, very much connected with that of (big) data [16], as being smart means “exploiting operational, near-real-time real-world data, integrating and sharing data, and using complex analytics, modelling, optimization and visualization to make better operational decisions” [4, p. 179]. This applies also to the tourism industry, where technology connects the physical with the digital world, supporting value creation, innovation, and competitiveness [4]. The term remains nonetheless ill-defined and it is not understood either in academia or in the industry in a univocal way [4]. However, Lopez de Avila [7]’s definition of smart destination is often mentioned in the literature. According to him, a smart destination is “an innovative tourist destination, built on an infrastructure of state-of-the-art technology guaranteeing the sustainable development of tourist areas, accessible to everyone, which facilitates the visitor’s interaction with an integration into his or her surroundings, increases the quality of the experience at the destination, and improves residents’ quality of life” [quoted by 4, p. 180]. In addition to smart destinations there are two other components that come into play in the so-called smart tourism ecosystem [4, 5]: smart experiences and smart business. The latter is very relevant for this paper: it describes how stakeholders at a smart destination should on the one hand, internally digitalize their business processes, and on the other hand, externally collaborate with other public and private stakeholders at a destination [1, 4]. This is expressed very well in the idea that in a smart tourism ecosystem different elements and stakeholders are interconnected thanks to the support of technology [17].

2.2 Destinations and Data

A key aspect of this ecosystem is data/information, which need to be effectively and efficiently analyzed to enrich tourism experiences [5]. Data include not only tourism-related and internal data, but also data coming from external sources. This, in addition to mobile and wireless technology data, social media, location-based and sensor technology is what enables a tourism destination ecosystem to become smart [6, 18, 19]. Considering the central concept of data and information, Gretzel et al.’s [4] definition becomes very relevant: smart tourism is “tourism supported by integrated efforts at a destination to collect and aggregate/harness data derived from physical infrastructure, social connections, government/organizational sources and human bodies/minds in the

combination with the use of advanced technologies to transform that data into on-site experiences and business value-propositions with a clear focus on efficiency, sustainability and experience enrichment” (p. 181). It is then crucial for stakeholders at a destination to know how to capture, store, manage, analyze and use the potential and opportunities that these data entail to create value, make better business-related strategic decisions and understand tourists at their destination [14]. In fact, in a smart tourism ecosystem data processes entail a smart information layer for data collection, a smart exchange layer for interconnectivity and a smart processing layer for data analysis, visualization, and integration [4]. So far, despite a clear increasing interest by researchers in the topic, studies on data in tourism are still quite fragmented [13, 20]. There are more general and conceptual articles discussing big data and their importance [10, 21]. Other studies have been conducted mostly focusing on User Generated Contents (UGC), device and transaction data [12]. These include, for example, online textual data, location-based/GPS data, and web search data [12, 20, 22–24] that can be used by destinations to understand and predict [25, 26] travelers’ profiles [27], behaviors and preferences, and to create value as well as increase competitiveness [28–30]. Looking at research in Europe, the focus is rather on the development of smart tourism applications to enrich experiences using already existing data [4]. Considering this, a gap is found: more research with a managerial perspective is needed [4]. While it is clear to most (or at least many) destinations that being smart and working with (big) data is crucial to stay competitive and to increase the value of communication and experiences, and while many destinations are nowadays claiming to be smart, a step back should be taken in order to analyze the actual situation and where destinations position themselves on a scale of “smartness” – what processes they actual have in place to manage data and what possible business issues need to be solved.

3 Research Design

This research aims at investigating which data-related practices DMOs and related organizations in CH and FL (convenience sample) have implemented, together with their actual understanding of the concept of smart destination. The following research questions were defined:

- RQ1. How do CH’s and FL’s DMOs understand the concept of being “smart”?
- RQ2. How do they deal with data when it comes to collecting, storing, analyzing and sharing them?
- RQ3. How do they use such data in order to make decisions?
- RQ4. Do they perceive their data-related practices as being useful?

A survey has been designed and shared with tourism stakeholders in CH and FL in order to answer the RQs. To define the structure and questions of the questionnaire, the existing literature on the topic, both from academia and industry was taken into consideration [4, 5, 12, 13, 31–33]: in particular, Gretzel et al.’s model [4] of smart data layers – smart collection, smart processing, smart exchange and Hortonworks [32] and Halper et al. [33]’s big data maturity models. The questionnaire’s structure is summarized in Table 1.

Table 1. Structure of the survey and background literature for its items.

Level of investigation	Data collection (and background literature)	Data treatment
i) Understanding of “smart destination”	Collection of 3 open keywords	Cluster identification based on a content analysis
ii) Dealing with data: – what data are collected (collection) – how and where data are stored (coll.) – how data are analyzed (processing) – with whom and how data are shared (exchange)	Pre-defined options + open-ended questions Sources: [4, 5, 12, 13, 31–33], interviews with ATT’s employees	Frequency investigation
iii) Integration on decision-making	Pre-defined options + open-ended questions Sources: [13, 31–33], interviews with ATT’s employees	Frequency investigation
iv) Perceived usefulness of data-related practices	Pre-defined options Sources: [13, 33], interviews with ATT’s employees	5-point Likert scale

3.1 Case Studies

CH is a country divided into 26 cantons, with about 8.6 million inhabitants. DMOs can be of different typologies: national, cantonal, regional, and city. Regional DMOs usually cover a territory that is smaller than a canton, however, there are regional DMOs which cover more than one canton. For the sake of this paper’s comprehensibility, sub-cantonal DMOs are here called “local DMOs”. On average, considering the time period from 2010 to 2019 (2020 was excluded due to the impact of the COVID-19 crisis on the tourism industry) – the country counts about 17.5 million arrivals and 36.5 million overnights per year [34]. Different budgets are allocated to different types of DMOs and it is not a given that cantonal DMOs have more money than local DMOs. FL is a small principality neighboring CH and has a population of about 38,500 inhabitants. It has a national DMO, which covers the whole country but also collaborates with Swiss DMOs. On average, considering the same time period, the country counts about 72,600 arrivals and 147,600 overnights per year [35].

3.2 Data Collection

To validate the questionnaire, a pilot study was conducted with five participants working in a Swiss DMO (their responses were not merged with the final results). In order to recruit participants to the survey, members of the Swiss Tourism Federation,

which includes 140 tourism organizations, were contacted. Additionally, ATT's network was used to contact stakeholders and ask them to participate in the survey via email and LinkedIn. Data were collected from June 24 to September 2, 2020. At the end of this timeframe, 35 valid and complete responses were received (30 by DMOs and 5 by attractions).

3.3 Sample

The geographical distribution of the 35 respondents covers FL and 18 of CH's 26 cantons. All the statistical regions of CH are represented: Lake Geneva region, Espace Mittelland, Northwestern CH, Zurich, Eastern CH, Central CH, Ticino. Also in terms of linguistic representation, all the different linguistic regions are included in the sample: German, French, Italian and Romansh. Respondents were divided into the following categories, according to their organization type: (i) national DMOs (#2); (ii) cantonal DMOs (#4) – one of the respondents in this category is a DMO operating in more than one canton; (iii) local DMOs (#13); (iv) city DMOs (#4); (v) attractions (#5). Seven respondents did not indicate their typology and hence could not be classified accordingly. Overall, among the respondents, the roles covered are that of online manager, (digital) marketing manager/assistant, communication manager (media/press/PR), social media manager, market/product manager, project manager, content manager, sustainability manager, CEO/member of the management board.

4 Results

4.1 Defining “Smart Destinations”

Respondents were asked to indicate three keywords they mostly associate with the concept of “smart destination”. 105 keywords were collected, content analyzed and grouped into topic clusters. Similar keywords were grouped together (words in German and Italian were translated into English, and words like “smart” and “smartness” were not considered in the analysis as the word “smart” was used in the question). Four main clusters of topics related to the concept of “smart destination” were identified:

- Cluster I “technology”: included 50 keywords related to technology, data and ICTs (e.g. app/application, data/big data, digitalization, ICTs), as in Lopez de Avila [7] and Gretzel et al. [4].
- Cluster II “management practices”: included 23 keywords related to expressing management practices by DMOs (e.g. connection, cooperation, decision making, integration, innovation, intelligence) as in Lopez de Avila [7] and Gretzel et al. [4].
- Cluster III “sustainability”: with 9 keywords related to the idea of sustainability (e.g. ecological, environmentally friendly, sustainability/sustainable) as in Lopez de Avila [7] and Gretzel et al. [4].
- Cluster IV “users”: with 13 keywords related to users/tourists (e.g. customer-oriented, experience, guest needs, user experience) as in Lopez de Avila [7] and Gretzel et al. [4].

9 keywords resulted as off-topic (e.g. ideas of heritage, fun and beauty) when considering the most widely accepted definitions of smart destination in the literature.

Despite the varied range of words mentioned by the respondents, the results show that there are common conceptual nodes shared by practitioners. Looking at the order in which words belonging to these clusters were mentioned by respondents, we can say that top-of-mind domains are those of technology and management practices, while users seem to come to mind only in the last position for the first keyword, and in third position for the second and third keyword. Based on the four topic clusters the authors could draft a definition of smart destination that could represent the understanding of the participants: “a smart destination is a destination where innovative and efficient management practices use technology and data to better serve users within a sustainable context”. We might consider it as a triangular relationship among sustainability, management practices and users, with technology/ICTs at the center. It is interesting to highlight that the clusters actually very well represent the elements of most definitions of “smart destination”.

4.2 Dealing with Data

Data Collection

Figure 1 illustrates data collected by the respondents. It is divided into internal and external sources: the first are sources directly collected by the organization while the latter are collected by other stakeholders and passed to the organization.

Fig. 1. % of respondents collecting specific data from internal and external sources (more than one answer allowed).

Visitor tax appears as both internal and external data source, since there are DMOs/tourism offices that collect this tax themselves while in other cases the tax is collected by an external party.

Data Storage

The tools used for data storage were analyzed. Interestingly, 28.6% only uses a single Customer Relationship Management (CRM) platform managed in house, 14.3% only uses spreadsheets (especially smaller organizations), while the most common combination is a CRM platform combined with spreadsheets (14.3%).

Data Analysis

Most of the respondents (74.3%) analyze the data they collect in house, 11.4% combine in-house with outsourced analysis, while only one respondent completely outsources the analysis. It has to be specified that two respondents claimed to analyze their data only partially and one respondent has just started developing an analysis process. 11.4% of the respondents do not analyze data collected (in particular attractions and a cantonal DMO). This result suggests that there is neither complete clarity on internal processes nor a unique understanding of what is implied and meant by data analysis. The organizations that are outsourcing their data analysis, or part of it, to external organizations mostly give their data to public bodies (universities, statistical offices and the cantonal DMO), only one is working with a private company. Looking at the categories, 100% of national and city DMOs analyze their data in house, while there is only one DMO that outsources the whole data analysis process, on the contrary, 40% of the attractions do not analyze their data. Respondents had the possibility to add comments to their answers. These comments were gathered to have a deeper understanding of the respondents' processes. It emerged that there are organizations whose data collection and analysis processes are still in their infancy, while there are others that are working on more advanced data management and analysis processes. In more details, three DMOs are not collecting a large amount of data, two are storing the data but not really analyzing them, and two do not have a platform dedicated to data collection. A DMO is starting now to develop a more elaborated data analysis process, while two other DMOs are only partially analyzing the data they collect. On the other hand, there is one DMO that is working to develop a marketing automation process and is oriented towards an open data strategy. This demonstrates that the situation in CH and FL is varied and not all DMOs and attractions have the same level of data management and analysis practices. The frequency of data analysis was also investigated. Most types of data are analyzed monthly and/or seasonally. On the other hand, data coming from social media is analyzed daily by 35% of the respondents gathering them. Data analyzed yearly by all the responding organizations gathering them are data related to electricity consumption, waste, data coming from other tourism stakeholders and ecological footprint.

Data Sharing

38.2% of the respondents do not share data with external organizations, those who do, mostly give their data to public institutions (e.g. other tourism organizations such as local DMOs), municipalities and cantonal bodies, and tourism observatories/universities. This shows that open (government) data is not yet largely adopted: DMOs do not extensively share data with the whole tourism ecosystem [4], possibly because of the complexity of the several Swiss administrative bodies.

In general, when analyzing respondents' answers according to the type of organization, there is no real pattern that emerges. In other words, national and cantonal

DMOs are not necessarily conducting more activities with the data they collect and analyze than local and city DMOs and attractions.

4.3 Integration within Decision-Making

Table 2 shows the activities for which the respondents use data.

Table 2. Usages of collected data (more than one answer allowed).

Type of data usage	%
Measure the performance of marketing activities	80.0
Making decisions and defining strategies for the company	71.4
Personalized messages and/or campaigns	60.6
Monitoring activities	60.0
Creation of new projects/services	54.3
Forecast	48.6
Institutional/corporate communication	45.7
Personalized products and/or services	43.8
Measure the performance of the employees in your organization	2.9

Participants were also asked to give more detailed examples of decisions that were taken by their organization based on data analysis. The most popular responses were related to decisions regarding the DMO's/attraction's strategy and investments (digital, business- and budget-related), the development/improvement of new products, marketing campaigns and partnerships, optimization of the website and other communication channels (social media, newsletter), rebranding strategies, and reaction/recovery strategy related to the COVID-19 crisis. Participants were also asked whether, based on data analysis, some initiatives/projects were discontinued. 39.4% of the respondents answered that their organization did indeed interrupt some initiatives/projects, 36.4% did not stop any initiative, while 24.2% of the respondents could not answer. As for the previous questions, examples were asked to the respondents. Most answers were concerned with marketing initiatives, products and partnerships that have been discontinued for not being successful and/or productive, and resources that have been differently allocated. It appears that, at the moment, responding organizations are more focused on using data to improve their communication rather than their products and services. The type of personalization initiatives described by the respondents, however, is more addressed to group segmentation, where tourists are clustered and messages are crafted for these clusters, rather than personalized for each individual. A respondent mentioned marketing automation initiatives being developed. Examples of more personalized messages/campaigns related mostly to digital campaigns regarding social media, newsletter, website, and in general more poignant communication to different groups of tourists, but also in terms of B2B communication with partners, travel agencies, tour operators, etc. Examples of more personalized products and services that were mentioned regarded the adaptation of offers and promotions of specific successful

products. As a last question on the actionability of data analysis, participants were asked whether their organization uses data to measure return on investment (ROI) of data collection and analysis. Only 6.3% of the respondents declared having a ROI measurement system (65.6% do not have one, while 28.1% do not know), but then most of them specified that it mostly refers to digital marketing campaigns.

4.4 Perceived Usefulness of Data-Related Practices

Respondents were asked, on a Likert scale from 1 to 5, whether the data they collect and analyze are considered as useful for their organizations. The data collected and analyzed by respondents are considered as very useful by at least 60% of the DMOs collecting them. This indicates that most organizations have reached an understanding of what is actually worth collecting and analyzing, or, in other words, the majority of respondents is not collecting/analyzing data that are not perceived as useful. Figure 2 shows the percentage of responding organizations that consider a certain type of data collected as useful. Data coming from digital tourism-related sources such as newsletters, social media, website, emails (and calls) and online booking tools, as well as data coming from statistical offices, tourism cards and info points appear to be the most useful. Also “niche” data - which is collected only by one or a few respondents - are said to be useful: that explains the effort and commitment by those collecting it.

Fig. 2. Usefulness of data (% on respondents collecting them). When the number does not reach 100% it means that some respondents answered that the type of data are “not useful” or that they do not know if they are useful (more than one answer allowed).

5 Conclusions

This study investigated the state of the art of CH’s and FL’s DMOs and attractions in order to understand their data-related processes, by using a questionnaire to which 35 DMOs and attractions responded. By analyzing the answers to the questionnaire, it was possible to investigate how CH’s and FL’s tourism organizations understand the concept of being smart. Results highlight how, despite the variety of words mentioned by respondents, when clustered into common conceptual nodes, they actually very well

represent the elements of most definitions of “smart destination” (RQ1). When it comes to dealing with data (RQ2, RQ3, RQ4), it emerged from the analysis that organizations in CH and FL have very different data processes in place. Some organizations are collecting and analyzing several types of data both coming from internal data sources, the most common being newsletters, social media and organizations’ websites, and external data sources, the most common being statistical offices, visitor tax and bookings for accommodation; on the other hand, others mainly gather data coming from internal touchpoints and their analysis processes are still in their infancy. Regarding data storage, most respondents declared to use a single CRM in combination with spreadsheets. With respect to data analysis most respondents conduct this activity either partially or totally in house, while only one totally outsources it. The results of the analysis of data sharing activities show that the idea of a smart destination in which data is shared and accessed by different stakeholders in order to create value is not present yet, especially when it comes to sharing data with private stakeholders in the tourism industry (e.g. hotels, restaurants). Respondents’ decision-making processes appear to be based to some extent on data, especially when it comes to (digital) marketing initiatives and campaigns, although behaviors are quite different also in this area. All in all, most of the tourism organizations are aware of the importance of data and of their usefulness in supporting strategic decisions. This paper contributes in the field of research of data management practices of tourism organizations, by providing insights on how organizations use data in terms of collection, storage, analysis and sharing practices, as well as how they integrate these data on their decision-making processes, and how useful they perceive them to be. Limitations of this research regard the limited sample, as only two countries were taken into consideration for the analysis. While this paper has mostly taken the perspective of adoption, exploring which data practices are integrated by surveyed organizations, future research might take the point of view of “maturity” [32, 36–40], providing a model of how (much) a tourism organization can be mature and hence smart when it comes to data. In this direction, future research could investigate obstacles in data usage and intention to adopt certain technologies. The actionability of data analysis could be also investigated with in-depth interviews in order to clarify respondents’ answers. Finally, this study also has practical implications: managers can benefit from it as they might find its structure relevant in terms of steps and processes to investigate their own data-management and -usage practices. This could allow an assessment of the situation and an understanding of the direction in which the organization might move forward.

Acknowledgment. The work described in this paper was funded by the DESy (Digital Destination Evolution System) Interreg Italy-Switzerland Project.

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