



# Is destination management data-driven and technology based? The perspective of the authorities responsible for destination management in a geographically diverse destination area

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## ABSTRACT

In order to determine whether the entities responsible for destination management at the local level are keeping up with market trends, especially the requirements on implementing “smartness”, and whether there is a recognition of the need for their decision-making to be guided by real-time information and data, this research surveyed most of the local tourism authorities in the recognized tourism region of the Adriatic, which regularly records high numbers of tourist arrivals and overnight stays in the Republic of Croatia, a country where tourism is an extremely important component of GDP. To explore the topic, a survey was conducted by using the methods of *Computer-Assisted Web Interviewing* (CAWI) and *Computer-Assisted Personal Interviews* (CAPI), depending on the preferences of the respondents, primarily heads of destination management entities. The study of a specific topic related to tourism development decision-making, the application of smart technologies in the destination, and the collection of input from visitors to the destination included 73.53% of tourism management bodies (tourist boards of cities/municipalities) in the observed region and resulted in interesting findings. It is indicative that the application of technologies varies by sub-region and that decision-making is based on similar sources, regardless of the strategic importance of a particular decision and its long-term impact. Also, the fact that a large proportion of destination planning and development managers interviewed had no knowledge about the existence of strategic documents on sustainable development, and that only a very small proportion implement a strategy for the application of smart technologies and recognize the benefits of such an approach, is somewhat alarming. The limitations in this research are mostly caused by the determinants imposed by the funding source.

**Key words:** Destination management, smart technology, tourism authority

## 1. INTRODUCTION AND THEORETICAL BACKGROUND

Data and analytics are changing the way we live and work, but the real value and power are the insights they provide. Using

data in business improves decision making, helps better understand customers, track their behaviours and attitudes, analyse feedback, improve customer offerings, and create a new revenue stream [1], [2]. Today, in the age of Big Data, appropriate business analytics techniques with implemented AI methods lead to valuable business insights and strategy definition. There is still a large amount of data that is not currently being used for decision making in tourist destinations. The emergence of technologies, especially Big Data and IoT, creates new opportunities for the application of innovations in tourism decision management [3]

Smart destinations are destinations that strive to improve their products and services with modern technologies and use them to engage with visitors. Physical infrastructure incorporated with technology is key [4] and examples like 5G and IoT being made part of the smart cities’ development [5] support the efforts. Moreover, the fundamental objective of smart destinations is to create a non-discriminatory state-of-the-art space, based on a modern technological infrastructure. By achieving the above goal, smart destinations facilitate their visitors’ immersion and connection with the local setting. In this way, they strive to simultaneously enhance visitors’ experiences and the local population’s life. To develop a strategy for destination competitiveness, a holistic approach must be taken, including a contribution to modern technology [6]

The growth of IoT networks is generating huge amounts of data. By 2025, they are expected to exceed 70 zettabytes (ZB) [7] Also, the Internet of Things (IoT) is considered the key enabler of smart capabilities due to the interconnectivity and Big Data processing potential [8], and artificial intelligence (AI) methods support further value exploitation [9]. Tourism destination management has recognized the need to use various forms of data to improve decision making and gain valuable insights [10] The Internet of Things enables devices to process and provide the services required to fulfil certain tasks [11].

Furthermore, IoT innovations have important implications for the development of tourism, as travel means movement through space and time - such as embedded sensors in attractions, smartphones connected to mobile networks, near-field communications (NFC), and wearable technologies. Tourists using smart devices together with the new technologies create new development opportunities for tourism [4], [12].

## 2. RESEARCH APPROACH AND SAMPLING

With the aim of exploring the destination management in the context determined by the research topic, a broad survey was performed on the opinions and attitudes of all groups of stakeholders regarding their behaviour, attitudes, mutual cooperation and perceived benefits and negative impacts of tourism in an established tourism region of Primorje-Gorski kotar. This research focuses on the group of tourism authorities, i.e. public bodies that manage tourism - the so-called tourist boards in the region - and is guided by the following specific research objectives, and determining:

- if there are tourism development strategies and how they are created,
- the types of (smart) technologies used in destination management,
- the types of information collected for the purpose of destination management and the sources of information for decision making,
- the extent and focus of monitoring tourist behaviour and input at specific destinations,
- the attitudes toward the impact of globalisation and related trends on the tourism market in a destination.

The research was supported by EU financing aimed at smart regional development, which is also reflected in the choice of the research area (County of Primorje-Gorski kotar). The subject of the research is the bodies responsible for destination management at the local level in all three sub-regions of the destination. It was also determined that the questionnaire on the part of the destination management bodies could only be completed by the director of the Tourist Board or an employee who, according to his function, leads the planning and development of the destination in the Tourist Board.

The research settings defined the sample as regionally representative of the three sub-regions of the County, with the criterion that approximately 45% of the respondents were from the coast, 30% from the islands and 25% from Gorski kotar (corresponding to the proportions of the local level of the destination management offices in their total number in the County), and that at least 50% of the total of 34 local tourism offices in the County of Primorje-Gorski kotar are included, which was achieved. The sample is a quota sample, which reflects both the determinants of the study and the source of funding.

Of the 25 entities participating in the survey, 36% were city level, 52% municipal level, and 4% subregional. 15 are from the coastal area, 9 from the islands and 1 from the mountainous part of Gorski kotar. At the same time, more than half (52%) act individually on local level and have no umbrella organization, while the rest are subordinate to the subregional level destination management.

Research realization is based in a combination of field (CAPI) and online surveys (CAWI), depending on the preferences of the respondents. The survey consisted from 17 structured questions, 8 of which were dichotomous, 7 multiple-choice and 2 on a Likert scale. The survey is based on the ETIS indicators [13], more precisely on the *DMO survey* template, but adapted to the specific interests and overall objective of a *Cekom* project's required outputs. For this purpose, questions from the work of [12] as well as from previous studies on tourism market trends related to the topic (e.g. [14]) were also used. The 17 questions presented in this paper are only a part of the information collected from tourism destination management representatives.

## 3. RESEARCH RESULTS

The survey covered most of the authorities responsible for destination management in the region studied, 25 out of a total of 34. The majority of the respondent tourism authorities (92%) belong to the local destination management level, while two bodies (8%) have a sub-regional character - Table 1, as determined by the scope of research and the criteria.

**Table 1:** Sample structure of the examined tourism management bodies according to the area of operation

Base: Total target population				
	Total	Subregion		
		islands	coast	mountain
N	25	9	15	1
sig		1		
City / municipality	23	8	14	1
Sub-regional	2	1	1	

It is important to note that the method of adoption of the strategic documents of the studied destinations is mostly associated with adoption at the level of the regional body for destination management (44%), or the best bidders are selected through a public tender and prepared by a third party (52% in total). Only one of the studied tourism authorities (4%) independently creates a strategy for tourism development in its territory, while the others adopt it from a higher level or hire experts to do it for them - as shown by Table 2.

**Table 2:** The method of creating a development strategy (Q: How is the development strategy of your destination created?)

Base: Total target population				
	Total	Sub-region		
N	25	islands	coast	mountain
%		36	60	4
sig	1			
the strategy is developed by the tourism management body independently	4			4
the tourism management body adopts the strategy of the higher level authority (which includes their local area)	44	20	24	
the tourism management body is the ordering party, and the contractor is the bidder selected through public procurement	24	8	16	
the strategy is commissioned by the municipality / city with the cooperation of other stakeholders	28	8	20	

Of the 25 surveyed destination managers, around half strategically approach tourism development sustainability – with individual strategy, or a strategic orientation in other developmental documents. The fact that 44% of the **tourist board heads** have no knowledge of the existence of such strategic document in their destination is worrisome. Table 3 shows that only 16% of tourism authorities have a **strategy or action plan for the application of smart technologies**, none of which are in the islands and only one is in the mountain regions.

**Table 3:** Destinations with smart technology implementation strategies

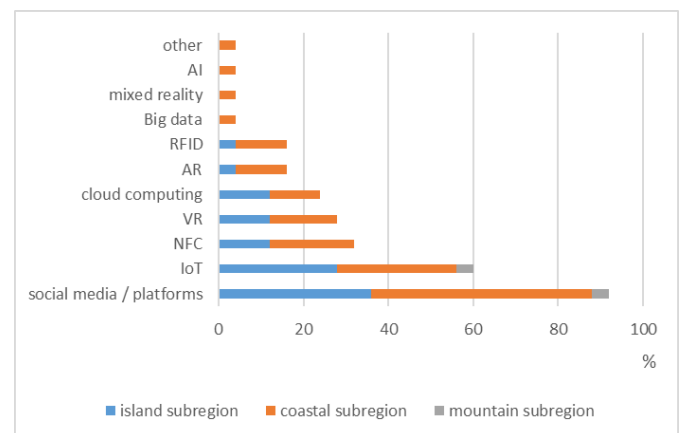
Base: Total target population				
	Total	Sub-region		
N	25	islands	coast	mountain
%		36	60	4
sig	1			
No	84	36	48	
Yes	16		12	4

The fact that even 84% of the surveyed tourist boards have no smart technology strategy indicates their narrow focus on local frameworks, failure to follow the trends in the tourism market, insufficient budget (due to the excessive fragmentation of the territories, which are not independently identifiable in the market) and/or lack of ability to meet the requirements of the tourism market, and insufficient human resources capacity, to name some of the possible circumstances. **Of the tourist boards that have a smart technology strategy, 75% believe that its implementation changes destinations functioning** -Table 4.

**Table 4:** Destination management's view on a topic of smart technology strategy leading to significant changes in the way their destination operates

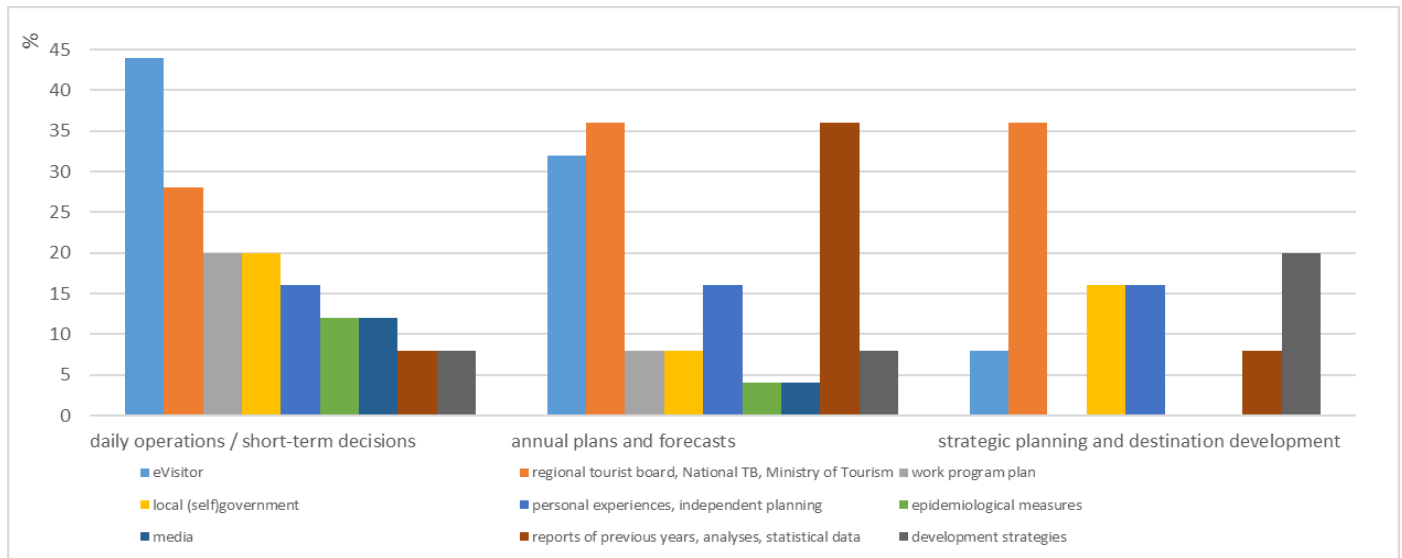
Base: 16% of target population				
	Total	Sub-region		
N	4	islands	coast	mountain
%		0	75	25
sig	1			
Yes	75		75	
No	25			25

In the destinations covered by the research, **smart technologies (STs)** are present mainly in the form of social media or IoT, followed by NFC, VR and cloud computing. Figure 1 also shows that all types of STs are available in the region's coastal area, albeit some on a very limited scale. The least diverse application of STs is observed in the tourist and generally least developed part of the region, i.e., it is limited to social media and IoT in the mountain sub-region.



**Figure 1:** Technologies used in destinations according to the responses of representatives of tourism management organizations, in relation to the subregion (Q: What kind of smart (tourism) technology services are available in the destination?)

As far as the **sources of information used** are concerned, the daily operations and short-term decisions of the tourism management body are largely based on the data from *eVisitor* (Information System for the Registration of Tourists, which functionally connects all tourist offices in Croatia), followed by the data from the regional and national level tourism authorities - Figure 2.



**Figure 2:** Information sources in relation to decision-making

Table 5 provides further insight, showing that destination management in the mountain (less tourism-developed) sub-region, relies exclusively on its own work plan and no

other relevant sources. For annual plans and forecasts, historical data (past years' reports, analyses, statistical data) are more important than *eVisitor* and also than all the other options offered.

**Table 5:** Sources of information for decision-making at the destination level

Multiple answers; Base: Total target population	Sub-region			
	Total	islands	coast	mountain
N	25	9	15	1
<b>Sources of information for daily operations / short-term decisions (%)</b>				
eVisitor	44	4	40	
Regional and national level tourism authorities	28	12	16	
Work program plan	20	12	4	4
Local (self)government	20	8	12	
Personal experiences, independent planning and work	16	8	8	
Epidemiological measures	12	4	8	
Media	12	8	4	
Reports of previous years, analyses, statistical data	8		8	
Development strategies	8	4	4	
<b>Sources of information for annual plans and forecasts (%)</b>				
Regional and national level tourism authorities	48	24	20	4
Reports of previous years, analyses, statistical data	36	8	28	
eVisitor	32	8	24	
Personal experiences, independent planning and work	16	4	12	
Development strategies	8	8		
Work program plan	8	4	4	
Local (self) government	8	4	4	
Epidemiological measures	4	4		
Media	4	4		
Other / n.a.	16	8	8	
<b>Sources of information for strategic planning and destination development (%)</b>				
Regional and national level tourism authorities	36	20	16	
Development strategies	20	4	16	
Local (self)government	16		12	4
Personal experiences, independent planning and work	16	12	16	
Reports of previous years, analyses, statistical data	8	8		
eVisitor	8	16	16	
Other / n.a.	36	12	24	

Strategic planning also recognizes the importance of data from the National Tourism Board and the Ministry, as well as existing development strategies. It is evident that in the mountain sub-region all decisions are based on a very limited number of data sources, while in other sub-regions many sources are taken into account and their cause-effect relationships should be studied in more depth.

**The types of information collected by destination management** are mainly about the satisfaction of their visitors (72%), visitors' proposals for upgrading their satisfaction (76%), visitors' motives (88%), visitors' loyalty to the destination (80%), and the reasons for which they return to the destination (68%), while 44% of them systematically monitor the arrivals of day visitors. In the mountain sub-region, visitors' satisfaction with the destination is not

monitored, but visitors' suggestions and recommendations regarding the experience in the destination are systematically collected. Half of the islands and 4/5 of the coastal ones monitor the satisfaction of their visitors, and about the same proportion systematically collect the opinions of their visitors about the experience in the destination.

According to Table 6 and the level of agreement with the statements about the globalization effects on tourism, on a scale from 1 - "I completely disagree" to 5 - "I completely agree", destination managers believe that the impact of globalization is also greatly manifested in the accelerated development of STs that enable and support better informed tourists about the offer of the destination or individual tourist entities.

**Table 6:** The effect of globalization on tourism from destination management point of view - the rank according to the highest mean value

Average values; Base: Total target population	Sub-region			
	Total	islands	coast	mountain
N	25	9	15	1
The quality and extensiveness of the offer during the stay in a destination play an important role and are crucial	4.6	4.4	4.7	5
Rethinking the provision of sustainable long-term business that will generate social and economic benefits	4.4	4.1	4.5	4
<b>Accelerated development of smart technology that enables better familiarization with the offer, the possibility of comparison and the best choice</b>	4.3	4.1	4.4	4
Building an individual destination brand (authentic offer profile, which will advance the destination)	4.3	3.9	4.5	4
Increasing number of initiatives for the development of tourism that can balance the economy, culture and natural environment - sustainable tourism	4.1	4	4.1	4
Increased competition, which directly affects the holders of business activities within the tourism sector	4	3.9	4	4
Tourists are increasingly active users, and natural beauty is no longer the main attraction of destinations	3.8	3.8	3.9	1

In evaluating the impact of globalization on the tourist season and its progression in the destination, *the quality and scope of the destination's offer* (mean=4.6) ranks first, while the *accelerated development of smart technologies* (mean=4.3) ranks third, in parallel with *building a recognizable brand of the destination*.

When expressing their agreement with the statements about trends and market demands (Table 7) destination management highly agrees that *the use of the online distribution has enabled additional supply* (mean=4.7) and that *guests without advanced reservations have disappeared* (mean=4.5) due to the *offer comparison options enabled by technological advances*.

**Table 7:** Trends and requirements of the tourism market in the years 2020-2021, from the perspective of destination management (mean value)

Average values; Base: Total target population	Subregion			
	Total	islands	coast	mountain
N	25	9	15	1
<b>Guests without advanced reservations have disappeared due to the offer comparison options enabled by technological advances.</b>	4.5	4.4	4.6	4
<b>Online distribution channels have enabled the creation of an additional offer</b>	4.7	4.6	4.7	5
COVID-19 pandemic resulted in slow booking, and delayed the start of the season	4.3	4.2	4.3	5
Large crowds (on roads and parking lots, in shops, on beaches) on non-working days affect destination's quality	3.2	3.8	3	1

Almost all destination management representatives (96%), regardless of the subregion to which they belong, fully agree (56%) or partially agree (40%) with the impact of smart technology development on communication with potential guests, while the remainder (4%; from an island destination) neither agree nor disagree.

Similarly, views on the potential of online portals for the placement of ancillary offers, with 76% of respondents fully agreeing, 16% partially agreeing and 8% (belonging to the management of island and coastal destinations) undecided on the topic.

#### 4. CONCLUSION AND DISCUSSION

The research findings have shown that data and analytics are not being fully utilized by the studied destination management authorities. Clearly, the data collected is quite broad (ranging from information on visitor satisfaction, their suggestions about the destination experience, and their motivations, to return rates and loyalty), but the recorded use of individual technology (Figure 1) and the types of information sources used (Figure 2, Table 5) suggest that the opportunities for ST to improve their operations and boost their tourism development efforts—at least those suggested by [2]—are underutilized. It seems that strategies built on Big Data or AI are neglected, while only a small part of destination management bodies use these technologies (4%). However, there are signs of STs awareness. Advanced ICT infrastructure, IoT, and cloud computing, a critical component of intelligence in tourism, are used by 60% (IoT) and 24% (cloud computing) of destination management organizations and offer some opportunity for innovating destination management [3]. Social media, another component of insight era technologies, is also present in 90% of the destinations participating in this research.

Thus, the destinations whose managers were surveyed show great potential for improvement, while many STs that are underutilized or not utilized at all are those that enable co-creation processes of the desired tourism experience and actual visitor engagement, visitor interaction, and integration with the environment. To encourage smartness and exploit the potential of available data to gain insights on market trends, smart capabilities are considered necessary. The studied region would benefit from an ecosystem approach (like suggested by [15], [16] or [17]), and the orientation on potential behind IoT perspective, interconnections between different devices, Big Data processing [8] and AI methods [9]

Various forms of data improve decision making by providing valuable insights [10]. Only 16% of destinations have a strategy for applying smart technologies (Table 3) and use only a limited amount of available data, mostly historical data or data in the form of reports, which shows that there is a lack of processing data from their own visitors' feedback, user-generated content, and communication with their visitors - based in STs. Considering that the development

opportunities for destinations involve tourists using smart devices and new technologies [12], destination management should expand its efforts to the area of technological improvements and innovation capability to be able to establish relationships with the new generations of demand.

A previous research in the same region showed a low frequency of smart tourism aspects in tourists' behaviour during the holiday [18], but a slightly higher tendency to use smart technologies in the destination [19] with an obvious focus on having control over their private and preference-related data being used by third parties (destination management and tourism companies) and privacy issues. Social media was determined as contributing to the distinctiveness of their experience. This data could be exploited by destination management as a market insight, which shows the apparent lack of data-driven and technology-based perspectives and decisions in the same region, regardless of sub-regional affiliation, although the situation is somewhat better in the more developed coastal and island areas. There is no doubt that destination management bodies of the geographically diverse region studied would benefit from implementing at least some of [10] suggestions to transfer themselves into the "insight-era", such as sharing data with stakeholders, leveraging user-generated data, or data-driven decision making.

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