

Working strategically with Big Data in the tourism sector: a qualitative study of twelve European destination management organisations

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ABSTRACT: This article presents the results of 12 semi-structured in-depth interviews with data experts from destination management organisations across Europe. The analysis revealed three overarching themes concerning the use of Big Data in the tourism sector: (1) size matters when it comes to utilising the information from Big Data sources – bigger is not perhaps better, but larger companies are more capable of harvesting the full potentials of the information; (2) companies lack the required competencies to work with Big Data strategically; and (3) one of the proposed solutions from the respondents was surprisingly a desire to share their data with the competitors thereby gaining a competitive leverage. Concluding on the above we suggest further areas for potential research: clarification of relevant competencies when working with Big Data, furthering collaboration between tourism companies to maximise the potential of sharing, and research into the effect on COVID-19 on Big Data and strategy.

KEYWORDS: DMO's, hospitality industry, strategy, leadership, Covid-19, competency development, HRM (Human Resource Management)

Introduction

Big Data is without a doubt a pertinent topic in the current technological debate in the tourism and hospitality industry. Together with artificial intelligence (AI) and machine learning, Big Data is something that has an increasing influence on how many companies make their everyday decisions. It has also drawn the attention of scholars from various fields, and new knowledge on the topic is constantly being produced.

This discussion paper is written as a part of a research project running from 2020 to 2023. The purpose of the overall research project is to formulate a model which will enable companies from the tourism sector to understand how to transform the vast amount of information that is to be gained from numerous Big Data sources into something tangible on a strategic level.

The objective of this discussion article is to present the results of 12 in-depth interviews with various destination management organisations (DMOs) from across Europe about their current use of Big Data, and how they viewed the potential of using Big Data in a more strategic way going forward. This study focuses on the DMOs due to the overall strategic focus of the question frame, which we doubted that a single operator from the tourism industry would be able to answer sufficiently on their own.

Methodology

The overall research design of the project running from 2020 to 2023 is an *explanatory sequential mixed-methods* design rooted

in the pragmatic worldview, combining both qualitative and quantitative sources. This article presents the *qualitative* results from 12 semi-structured interviews conducted with DMOs from across Europe from September to November 2020. As part of the interview process, all 12 respondents signed consent forms which allows for the use their full names and job positions in all types of publications. Due to COVID-19, and the ensuing traveling restrictions, all the interviews were conducted and recorded on Zoom and subsequently transcribed and analysed by the research team.

Initially, a list was compiled of 120 potential candidates from DMOs across Europe working with Big Data. Subsequently, the following criteria were applied to narrow down the number of respondents:

- 1) The respondent should have a minimum of five years of experience in the field of Big Data and strategy;
- 2) The DMO where they were employed should be *actively* working with Big Data as part of their business model; and
- 3) The study sought to include both smaller, medium and large DMOs from a variety of countries throughout Europe to obtain as wide a range of respondents as possible.

All 12 respondents interviewed met the requirements listed above and there was an equal distribution in terms of the size of DMOs. Of the 120 potential candidates contacted, 40 showed an interest in participating; however, 28 were excluded from the study as they did not meet the criteria for participation. Before moving on to the results of the interviews, we will give a definition of the term Big Data based on the prevailing research literature.

Definition of "Big Data"

In terms of the concept of "Big Data", a lot of research has been conducted over the past years, and Big Data is a concept that has been defined in various ways. However, it appears clear that there are similarities among different scholars' interpretations of the concept. In his review from 2016, Hilbert mentions three characteristics which describes the core of the Big Data concept. These characteristics are *volume*, *variety* and *velocity*.

Volume

The term Big Data is based on the understanding that a significant amount of data is being analysed and interpreted at any given moment. Hence, conclusions are based on a solid foundation of data (Hilbert, 2016). This viewpoint is supported by Chen et al. (2017, p. 425), who refer to Big Data as "datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyse". Vinod (2016) adds another aspect to this perspective in the sense that Big Data volume should be seen as dynamic. For instance, his study in the travel industry suggests that the amount of data increases in time, based on consumer actions and purchase decisions.

Variety

Another important aspect when working with Big data is the fact that data is much more than numbers. Hilbert (2016) mentions data sources such as video, audio and text as valuable sources for gathering data. Some support for this perspective is given by Miah et al. (2017, p. 771), who state that "Big Data is characterized by its volume, velocity, variety" and Chen et al. (2017, p. 425) who say that Big Data "...can be generated through multiple information technologies and systems...".

Velocity

In addition to the perspectives of volume and variety, there is a shared understanding of the importance of velocity as a characteristic of Big Data. According to Kitchin and McArdle (2016), the term *velocity* means that data is produced in real-time. A contribution to this viewpoint is one of the most commonly cited definitions: "Big Data is high-volume, high-velocity and high-variety assets that demand effective, innovative forms of information processing for enhanced insight and decision making" (Hartmann et al., 2016, p. 1384).

Among scholars, there has been an addition to the definition and understanding of the Big Data concept. The fourth characteristic is *veracity*.

Veracity

This contains the perspective that data can be both messy and ambiguous (Kitchin & McArdle, 2016). The same perception of Big Data is mentioned in a study by Cheah and Wang (2017, p. 230), who argue: "With availability of consumer data at high volume, velocity, variety and veracity, new business opportunities are presented". Veracity deals with the uncertainty and reliability of a certain type of data.

In our question frame for the interviews presented in this study, and in the overall research project spanning from 2020 to 2023, the abovementioned four characteristics of Big Data have been used extensively to understand the nature of Big Data and how companies are working with Big Data on a strategic level.

Themes

Below we will present the findings from the interviews with the DMOs. We chose to divide them into three overall themes that were prevalent among the respondents: 1) size of the DMO and its effect on the usage of Big Data; 2) competencies (or lack of competencies) of the DMO; and 3) the benefits of sharing knowledge to counteract strategic disadvantages.

It is important to stress that these were not the only themes accentuated throughout the interviews. Issues such as lack of an overall strategy for handling Big Data, challenges concerning the General Data Protection Regulation (GDPR) that was instituted by the European Union as a way of protecting citizens' data (which was seen as an obstacle by several of the respondents) and using Big Data to enhance the company's sustainability efforts were also mentioned throughout the interviews. These topics were, however, more dispersed and had different meanings to the different respondents and thus were not considered to be overarching themes in this study.

Another noteworthy topic that could have been interesting to delve deeper into was COVID-19, which was mentioned several times as a potential gamechanger concerning the use of Big Data and the shift towards a more digitally driven DMO. However, none of the respondents had suggestions for how this could come about.

Theme number 1: size matters

The first major commonality among the respondents was the notion of size. The smaller DMOs are often not equipped with the right tools to handle the vast amount of data available. According to several of the respondents, most small to medium-sized DMOs choose to ignore the flow of information or use it minimally due to the lack of understanding of the data. The cost of hiring trained personnel or acquiring the expertise from external consultancy agencies dissuades them from doing more with the data they are able to obtain. It is thus not a lack of available data that prevents small to medium-sized DMOs from using Big Data, but rather a question of the necessary funds and competencies. Analysis of data requires trained personnel, and as mentioned before, this is usually not a viable option for small entities.

I think it links to the size of the company. Larger companies are more equipped to use data in their process and in their business. But of course, there are good examples of small businesses that do it as well, but we kind of see a line between the size of the business and to what extent they use data (Dagný Hulda Jóhannsdóttir, managing director, Visit South Iceland, Iceland).

The competition from the large online travel agents (OTAs), and their ability to harvest and utilise Big Data because of their size, was a recurring theme throughout the interviews. The inherent digital nature of the OTAs has given them a head start due to their accumulation of data sources over a substantial period of time since the first OTA's entered the market from around 1995. Combined with their size, they pose a formidable challenge to small and medium-sized DMOs in terms of using Big Data to gain a strategic leverage.

Theme number 2: competencies

A considerable challenge for several of the interviewees was a lack of sufficient competencies in the company to collect and

process the vast amount of information flowing from Big Data sources. This was again connected to the size of the company as larger entities were seen as more likely to have the capacity to hire a specialist to work with collecting and processing data.

Andrew Sutherland, a tourism strategist at Visit Västerbotten in Sweden, explains what comes to mind when thinking about Big Data:

Competence, ability to understand what you're processing it for and what the value is. It's easy to get lost in the jungle and the swamp of data. I mean any form of analysing, it's particularly easy to get lost in there. No matter the usage, knowing exactly what you're looking for, milling through it and finding what you're looking for is such an important thing. So, your competence and experience and what you're looking for and value.

Later in the interview, Andrew Sutherland elaborates on this issue and points specifically to the problem of size and competencies:

It is quite obvious that digitalisation and tourism and such is important, but the situation in the smaller and medium-sized company is quite different. There is a lot of need for skilled people and a new strategy.

In summary: size matters when it comes to the ability to collect and process knowledge gained from Big Data sources. The larger the entity, the greater is the chance of having people with the right competencies present in the organization.

Theme number 3: sharing data

As a resource, Big Data can be valuable if used correctly. Sharing that resource with other stakeholders could hold numerous benefits, according to several of the respondents. The first one is decreasing the problem of usability for the smaller companies and DMOs.

For me, the main issue is to get people to understand that Big Data isn't valuable unless you use it. And actually, even sharing data enhances its value. If I speak in terms of challenges, that is when I speak to the people who finally become aware of Big Data and that it exists, and when they are told that it is valuable, they gather it and then they kind of hold it like a pot of gold and they sit on it, and that alone doesn't create value and they still do not understand that because "someone told me that it's valuable" (Inga Rós Antoníusdóttir, Digital Development, Icelandic Tourist Board, Iceland).

Making data more obtainable in smaller but more targeted ways might be the way to optimise usage. Working with the data in-house and joining forces with other DMOs and tourism companies could be a feasible way to eliminate costs and promote sustainable advantage through mutual cooperation rather than competitiveness.

Using traditional ways of collecting data, combined with big data for the near future, I think more companies will start to do that, and especially if it's possible to do that in combination with other companies, like we've done...That's a development that is pretty new — that we are more willing to share data. More than we did, for example, 10 years ago, then we were only looking into the competitive advantage, never looking at, okay by sharing data we can obtain a competitive advantage, which is more or less a paradox (Yvonne Cornax, Marketing Strategist, Visit Drenthe, the Netherlands).

Topics of interest for further research

When comparing the different themes, two of them stand out as obvious topics for further research:

- 1) If a recurring problem is that tourism companies fail to employ big data due to a lack of competencies (which, according to the respondents, seems to be related to the size of the company), more research into a clarification of the necessary competencies is needed. This is especially relevant in small to medium-sized tourism companies; and
- 2) Sharing — if there is a common consensus concerning the willingness to share data, this warrants further research into ways of collaboration between tourism companies.

In addition, as mentioned, quite a few respondents pointed to COVID-19 as a potential gamechanger in Big Data; however, without any indication of how this was to happen. When the dust settles, and the pandemic (hopefully) finally recedes in 2022/2023, this would be a most interesting topic to delve into further.

Conclusion

Initially, the prevailing research literature on the topic was used to define the term Big Data. Subsequently, we have presented some findings of the 12 interviews conducted with DMOs from across Europe. This yielded several interesting conclusions. However, three were paramount among the respondents: 1) size matters when it comes to utilising the potential of Big Data; 2) specific competencies are required to work with Big Data; and 3) several of the respondents accentuated the sharing of data with stakeholders as a possible way of harnessing the power of data sources. As suggested, further research on specifically "competencies" and "sharing" is warranted, together with the potential ramifications caused by COVID-19.

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