

### Big Data for dynamic, volatile, time-sensitive service industries:

The case of Tourism sector

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#### HANDBOOK ON Big Data Marketing and Management in Tourism and Hospitality

Edited by NIKOLAOS STYLOS • JEREMY ZWIEGELAAR



'The Handbook on Big Data Marketing and Management in Tourism and Hospitality is a vital resource for both professionals and scholars in our field. . . I wholeheartedly endorse this Handbook as a pivotal source that will empower its readers to navigate the complexities of Big Data marketing and management within our industry. Congratulations to the editors on assembling such a timely and invaluable resource.'

#### FEVZI OKUMUS

University of Central Florida, USA

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#### **General Background 1**

- Tourism is a complex business ecosystem
- Management and marketing offline and online activities

Agenda 1/2



- BD transactions: webpage visiting data, web search data, online data for bookings & internal databases on management (Pereira-Moliner et al. 2024)
- New opportunities and challenges for consumers and tourism organizations
- Social, business & institutional challenges humanity faces unprecedented circumstances bristol.ac.uk



### The (post) COVID-19 Crisis and Big Data

- COVID-19 had a devastating effect on tourism and challenged the traditional ways of doing business.
- BD was key in monitoring the spread of the pandemic, and the emerging financial crisis (Sharma et al., 2024).
- COVID-19 crisis introduced new operating models to meet the changing demand patterns (Jiang & Stylos, 2021)





#### Big Data is a game changer

- Technological Developments: Devices and software for collecting and leveraging voluminous data → innovation and performance evaluation
- Power of Data  $\rightarrow$  Intelligence and improved Decision-making
- Value for stakeholders, and Speed of info via e.g. Social Media
- Businesses → adaptive business strategies to respond reliably to consumers' purchasing needs by trying to avoid disruptions to supply chains in periods of crises: resilience (Loukis et al., 2021).

## Big Data Flows through a tourism organization





#### **Big Data Tourism** Analytical Framework



### Agenda 2/2

#### General Background 2

- BD's usefulness has been acknowledged widely for creating effective customer targeting and service delivery in the tourism sector (Mariani et al. 2018).
- Due to the interdependence of various actors in the delivery of goods and services → BD flows require an efficient coordination among stakeholders for creating performance advantages (Li et al., 2018).

#### **General Research Question**

What are the key drivers and performance implications of BD use for dynamic, real-time and agile businesses?



• This study investigated the utility of BD in tourism contexts and the relevant factors that contribute to advancing the sector's marketing intelligence capacity.

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#### Main Aim **Big Data** BIG DATA? THE FUTURE I VINIDA -EXPLORE Mars Dos Re 1644 Come Trans DATA Is This the TIMERARIES FUTUR DEFINED for Travel of the Pataset RESEARCH m VHAT DOFS BIG 7. 1111 STRATEGIZI Contractory Contractory CAN IT INCREASE TH NDUSTRY? Warming Des Average IF INTERNA = OPERATIONS: IS THIS HOW PRODUCTS? \*\*\*\*\* Name Will I produ 省 日日日日日 ISSEMBL THE END?



#### Main Research Objectives & Anticipated Contribution

- to explore how BD influences the performance of service organizations in the tourism sector.
- it draws on IT professionals' experiences of BD applications in marketing to determine how BD can improve organizational capabilities
- it systematically demonstrates the technical and managerial requirements for leveraging the practical value of BD
- to design and implement effective marketing strategies to improve consumer engagement and business effectiveness



#### BD Source Suitability Decision (underlying) Framework



(Sigala et al., 2019)



### **Focus Group Guide**

- (1) 1.a What are the tourism industries where you have seen big data in use?
- (2) 1.b. What are the reasons for using big data in dynamic, volatile and time-sensitive industries, as those of the tourism sector?
- (3) 2.a. Is the uptake of big data helpful in the context of tourism-related services?
- (4) 2.b. How would you assess the usage rate of big data among tourism-related business managers?
- (5) How do managers and marketers use big data to solve business issues in the tourism sector from both a technological and a managerial perspective? (this could be from either corporate, business or functional and/or combination)
- (6) What are the challenges for adopting big data in the dynamic, volatile and timesensitive industries of the tourism sector? (capability, resources, barriers/constraints)
- (7) What business models are being used for developing a knowledge base for integrating big data for businesses of the tourism sector?
- (8) How can big data be used to improve and integrate departments, such as operations, marketing, IT and supply chains?
- (9) How can management use big data to create a differentiated tourism product, through unique selling positions that may lead to a competitive market advantage?
- (10) How can management use big data to enhance product offerings, customer experiences and branding within and across organizations in the tourism sector?
- (11) What do you think is the likely future of big data in dynamic, volatile and timesensitive industries and particularly those of the tourism sector?



### **Original Quotes** - Findings

'Using BD by extracting industry wide pricing-related data to understand patterns and dynamically predict demand, helps us to optimize our pricing.' (P29)

'To collect data at the individual level, rather than aggregated, as access can be challenging; conducting multiple data collections in this respect, real-time if possible, is what is needed.' (P24)

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'In the next 10 years BD will become the norm. There is a need to have enterprise architects and experts in machine learning. They will be key to extract value from the data in real-time and point-in-time data.'(P3)

'There are difficulties in assessing the data from different sources. It requires a change in mindset to treat the data holistically. There is a need to focus on data and software architecture that can be properly integrated within the organization and across partners.'(P26)



### Theoretical framework – Output 1/4



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(as per Gioia et al., 2012)



### Theoretical framework – Output 2/4





### Theoretical framework – Output 3/4





### Theoretical framework – Output 4/4

- Regional DMOs use smartphones to track additional variables
- Chatting online to resolve problems
- Dynamic & time-sensitive industries cannot survive without high-level of interconnectivity
- Advanced understanding supported via selected software
- Reengineer processes
- Coordinated and holistic process needed to meet a range of stakeholders' requirements
- Synergetic approach to emerge
- Compliance of sharing data
- Modelling data sharing and integration need to grow





### Discussion / Implications

Outputs	Discussion / Implications
Ability to have evidence-based decision-making via BD from a variety of sources	Al and machine learning form a powerful technical basis for analysing and predicting consumers' behavioural patterns, forecasting travel and tourism trends, understanding tourists' needs proactively,
Interconnectivity of all tourism ecosystem partners is essential for enhancing its competitiveness	To design and implement effective marketing strategies as well as enhance the competitiveness of the entire business ecosystem
Responding successfully to market volatility requires an in-depth insight and better interoperability of the constituent elements within a dynamic business framework.	Allow for personalization and aid design to support the marketing of authentic customized service solutions, matching them with consumers' detailed profiles

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# Thank you for your attention!



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Any questions?

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