

9 Big data analytics and database marketing

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Introduction

A data explosion has occurred worldwide with the connection of phones, computers, tablets, refrigerators, washing machines, watches, glasses, and many more devices to the internet (Mariani *et al.*, 2018: 3515). It has become almost meaningless to explain the level of usage of information technologies by consumers in the world. Since machines can even generate data on their own and users can use more than one technology simultaneously, it is impossible to determine the number of users accurately. Continuous knowledge flow has become an indispensable component in people's lives. Hence, technology that will support constant data flow, and business models that will store, analyze, and monetize data have been developed.

The change and development of work and life with technology have significantly affected consumer preferences. Adopting a more individualist, independent, and consumption-oriented approach, rather than focusing on production, has shaped postmodern consumers and their preferences. Thus, it is necessary to switch to personalized and unique applications rather than mass promotional activities to the new generation of consumers, who are more experienced, independent, and irrational (Inanc-Demir & Kozak, 2019: 220). Postmodern consumers' typical behaviors can be easily observed in the tourism activities they engage with and how they prefer to pursue these activities. Especially with the technology overuse and the emergence of postmodern tourist behavior, super-smart tourists (tourist 5.0) have started to become a topic of interest. Super-smart tourists are known for taking advantage of modern technology in many ways, to adapt to unexpected changes in tourism activities quickly. They utilize technology thoroughly at every step of their journey, from the very early

stages of planning to the feedback after the trip. Therefore, super-smart tourists leave electronic traces and personal information on airline booking systems, hotel reservation systems, and restaurants, in addition to their traces on social media networks. The knowledge that can be derived from this provides businesses with a dynamic ability to integrate with internal and external communities (Fuchs *et al.*, 2014: 2).

The activities of tourists are recorded through various channels, and databases are created by tourism establishments. Database marketing is an approach used by tourist establishments to anticipate the need of current and potential customers to prepare products and services accordingly. Additionally, tourism establishments use websites, social media, and many other online platforms to investigate tourist behavior and their anticipation and satisfaction levels.

The collected data is further analyzed to improve the services and act when required. Tourism establishments use database marketing approaches intensively to increase efficiency and productivity, to create cross-selling opportunities, to make tourist segmentation and positioning, to predict tourist behavior, to develop products/services according to tourist expectations, and to reduce costs in their marketing activities.

To supply the smart product that the tourism industry needs, it is necessary to analyze the data produced on many devices. Activities of tourists are recorded through various channels and databases created by tourism establishments. The data produced by many devices contribute to the formation of a common communication terminology in the world (Wise & Heidari, 2019: 23). These resources, derived from database communication, reveal which hotel tourists prefer, what they eat and drink, where they want to visit, and whether they are delighted or not. The quality of data, reliability of the source, interaction, and accessibility is crucial for tourism products and services to decide on suitable strategies. The quality of the data produced at any moment increases the potential of creating big data.

Big data is defined as adding value by processing all the structured and unstructured data collected from various places, such as social media posts, blogs, photographs, videos, and log files. Big data affects all sectors, and it should not be considered separately from the tourism industry, since it contains an enormous amount of data. Indeed, big data is a critical tool in database marketing. The data collected through the internet provides convenience in many areas of tourism, such as marketing, operations, human resources, and communication. Increasing travel organizations, online

experience ratings, clicks on the like button on blog sites, social media complaints, and call-center conversations require big data analytics to understand the customer's travel experience.

Big data analytics enables the emergence of meaningful and valuable information for establishments by analyzing large volumes of data. It also helps reveal consumer patterns and connections that are normally seen. Big data is used as a great tactical force in marketing to measure people's travel demands and greatly increases the sales capabilities of tourism establishments. Within the scope of big data analytics, data warehouse, data mining, data search, predictive analysis, deep learning, real-time monitoring, artificial intelligence, web crawler, internet robots, visualization, statistical process control, etc. approaches are adopted and evaluated.

This study will focus on how database marketing and big data analytics are used in the tourism industry, according to postmodern consumer anticipation. In this context, it aims to examine big data analysis and database marketing approaches in detail. The definition of database marketing and big data analysis, benefits, and challenges for tourism establishments will be evaluated. The approaches within the scope of big data analysis, which is an important strategic tool in database marketing, will be discussed, examples in the tourism industry will be revealed.

Literature review

Nowadays, the value of establishments is mostly limited by the knowledge it contains. Therefore, it is necessary to protect and increase knowledge-based resources in order to be sustainable and maintain a competitive advantage (Fuchs *et al.*, 2014: 2). The knowledge use, which has become one of the primary marketing tools, is not one-sided. Also, it is one of the most important weapons of both the producer and the consumer. Knowledge technologies are no longer used only for businesses to accomplish their strategic goals. Consumers can now create their own content and market their own ideas (Dinis *et al.*, 2019: 4). The ability of the consumer to produce data according to her own wishes has caused a change in the market structure. For this reason, it is possible to talk about a global market based on knowledge obtained from real data.

Since the raw data is not meaningful by itself, it can only be made meaningful when processed and structured. The knowledge management hierarchy points to four stages: data, information, knowledge, and wisdom. Each of these stages is more important than the previous.

First, the raw *data* is obtained and then transformed into *information* by structuring. *Wisdom* starts with planning how to use that *knowledge* subsequent to all of these processes. The stores where the data protected are called databases. In the broadest sense, a database is a repository where non-repetitive data and data related to each other are collected to provide multi-functional use (Uyar, 2016: 1691). Database marketing is an approach used by tourist establishments to anticipate current and potential customers' needs to prepare products and services accordingly. Establishments have become progressively dependent on online platforms in order to develop new products and services, gain a competitive advantage, and above all, keep up with the latest innovations. These platforms possess an important mediation role between establishments and consumers (Ferreira, 2019: 76).

Establishments can easily access knowledge about tourists' physical location thanks to technologies that they carry with them, such as smartphones, tablets, and computers. This opportunity offers various marketing advantages to establishments and stakeholders (Vassakis et al., 2019: 106). There are three crucial stages that establishments must adopt to have effective database marketing (Uyar, 2016: 1691), and these stages are:

1. **Data collection:** This stage is about collecting relevant raw data for establishments to realize their strategic activities and gain insight into the market.
2. **Transforming data into knowledge:** Effective marketing is required for a successful establishment's activities. This stage refers to converting the raw data by the establishments into knowledge from which they can obtain value.
3. **Developing and transforming business strategies:** The knowledge obtained at this stage should be used to accomplish strategic goals. As a result of the process, customer information can be divided into categories and used for strategic purposes such as market segmentation.

Additionally, tourism establishments use websites, social media, and many other online platforms to investigate tourist behavior and their anticipation and satisfaction levels. The collected data is further analyzed to improve the services and act when required. Tourism establishments use database marketing approaches intensively to increase efficiency and productivity, create cross-selling opportunities, make tourist segmentation and positioning, predict tourist behavior, develop products/services according to tourist expectations, and reduce costs in their marketing activities. When