Chapter 7

Internet of Things in Tourism:
A Proposal of the Information System for Cappadocia Hot-Air Ballooning

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ABSTRACT

With the revolution of Industry 4.0, the technologies that enter our daily lives are based on smart devices, applications, and platforms with internet connection. A wide range of these technologies collected under one umbrella is known as IoT (internet of things). This chapter evaluates the stages of a touristic travel in smart tourism destinations by considering IoT architecture. The technologies used in these phases and their contributions to the tourism sector and tourists are examined. In the implementation section, an IoT-based information system is proposed for Cappadocia hot air balloon tours. The main purpose of the system is to determine whether the appropriate weather conditions are formed before the hot air balloon flights. The proposed system allows for the automation and evaluation of data already collected using traditional methods. With the implementation of the system; work and time savings can be achieved, and more accurate measurements will make safe flights.

INTRODUCTION

Three major industrial revolutions have emerged in the development of modern industry. Today, the fourth industrial revolution called Industry 4.0 has entered. Industry 4.0 is an ecosystem that links data, people, processes, services, systems (I-scoop, 2018). Industry 4.0 is also referred to as smart industry, smart factory or smart production industry. Smart production systems can be defined as fully integrated and co-operative production systems that respond in real time to meet changing customer needs and changing demands and conditions in factories and supply networks (Zheng, et al., 2018).

In the Industry 4.0 revolution, although production technologies constitute the main focus, it is possible to talk about a series of transformations affecting other interconnected sectors at the digital production
It is thought that digital transformation will be realized by using third party technologies. Third party technologies that constitute the source of digital transformation are Information Technology, Operational Technology, Internet of Things, IoT Devices, Sensors, Robotics, Data, Artificial Intelligence, Intelligent Decentralized Production, Self-optimizing systems (I-scoop, 2018; Sap, 2018).

Considering that the technologies used in the Industry 4.0 revolution are based on an IP address (Internet Protocol), applications consist of a wide range. IoT is used as the term Internet of Things.

This digital transformation, which was mentioned with the Industry 4.0 revolution, had a significant impact on the tourism sector. In this context, by using IoT technologies, the concepts of smart tourism, smart city, smart destinations were introduced (Boes, Buhalis, & Inversini, 2016; Buhalis & Amaranggana, 2013; Khan, et al., 2017). Smart tourism includes tourist activities supported by smart technology. Smart tourism is therefore defined as a tourism system that takes advantage of intelligent technology to create, manage and deliver intelligent tourist experiences (Buhalis & Amaranggana, 2013).

The concept of smart city is based on ICT (Information and Communication Technology) infrastructure, which includes the internet of objects, big data analysis and cloud computing. In a smart city, all urban activities must be connected. This structure can be established with the help of the internet of objects. Smart tourism, unlike the smart city, focuses not only on the local people but also on the tourist experiences, and the quality of life of the locals as well as the mobility, ease of access and sustainability of resources are also important (Gretzel, et al., 2015).

The smart destination is defined as an innovative tourist destination built on the latest technological infrastructure. In the literature, it is seen that the concepts of smart tourism and smart destinations are generally used in the same sense. (Blaser, 2019; Gretzel, et al., 2015; D. Wang, Li, & Li, 2013).

In this context, the study will consist of two parts. In the first part of the study, the stages of a touristic travel in smart tourism destinations are evaluated by considering IoT architecture. In the implementation section, an IoT-based information system is proposed for Cappadocia hot-air balloon tours. The main purpose of the system is to determine whether the appropriate weather conditions are formed before the flight in hot-air balloon flights. In the conclusion section, suggestions were made to the private sector, government and destination management office to practice the implementation.

**BACKGROUND**

In this part, IoT, smart tourism destinations, IoT architecture and design in smart tourism destinations, challenges and IoT, benefits of IoT in tourism are defined and explained.

**Internet of Things (IoT)**

The traditional internet connects machines to machines, server to machine or web pages to web pages. The IoT refers to the networked interconnection of everyday objects, tools, devices or computers (Chaouchi, 2013).

The IoT is described as a network that can connect any object with the internet based on a protocol intended for exchanging info and communication among numerous smart devices to be able to achieve monitoring, tracking, administration and location recognition objectives (C. Wang, et al., 2014).

The IoT concentrates on the recognition of 3 main ideas, namely things-oriented, internet-oriented and semantic-oriented (Saleem, et al., 2017). The things-oriented idea involves smart devices, such as RFID.
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