Chapter 31
The Use of Unmanned Aerial Vehicles:
A Comparison of Turkey and Croatia

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ABSTRACT

Unmanned aerial vehicles (UAVs) are present in our lives, and although they are mostly connected to military purposes, they are becoming more present in the commercial and civilian sector. Possible applications of UAVs in the commercial and civilian sector will open new possibilities for further research and development of UAVs. This movement can bring new investment and new jobs, but at the same time, it will influence the way some activities are being done now. The use of UAVs brings savings in the production cycles and improve current operations in various industrial sectors. The chapter gives a definition and explains different types and potential applications of unmanned aerial vehicles in the word as well as the potential economic impact of their development and use. In the second part, the chapter analyzes the application of drones in Turkey and Croatia. Although different in terms of their size and the number of inhabitants, both countries are at the same level in relation to UAV application. Applications in both countries are compared, and after that, a conclusion is drawn.

INTRODUCTION

Globalization has brought significant changes to the world and economy. Different innovations have created improvements in services and products in different industrial sectors. Improvement in the fields of technology and information and communications has enabled the use of many new different machines which will change our future significantly. One of those improvements is unmanned aerial vehicles

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(UAVs), commonly known as drones. Unmanned aerial vehicle systems, whose potential benefits were not visible, have spread rapidly since the early 2000s, while both their varieties and their abilities increased at the same time. Their use was from the start connected only to military purposes but in recent days they have been used in many industrial sectors.

In this research, unmanned aerial vehicles are examined; their development is explained beginning from their invention to their present form, and their types are listed. This research is trying to find answers to how the usage of UAVs has affected different industrial sectors since the drones were introduced, especially in two countries, Turkey and Croatia, which were subjects of our research.

In the first part of the chapter, we will present UAVs and give their definition, types and main application sectors. In the second part, we will show where the drones are used in Turkey and Croatia, and then we will compare their applications. Finally, we will draw conclusions and make suggestions for further research into this emerging topic.

BACKGROUND

Stipanović et al. (2004) defined an unmanned aerial vehicle (UAV) as a powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. In the last decades, special attention has been paid to UAVs due to the advantages of not placing human life at risk and the absence of a pilot that enables longer endurance, and consequently weight savings and costs. Unmanned aerial vehicles are referred to in many ways, from remotely piloted systems (RPAS) or aircrafts (RPA), unmanned aircraft systems (UAS), to pilotless aircraft (Erceg, Činčurak Erceg and Vasilj, 2017). UAVs are most often referred to as drones, which are defined as a flying robot or aircraft that does not carry human. These aircrafts can be controlled by humans or software by communicating onboard GPS (Eisenbeiss, 2005, Estampe, 2015). In recent years, UAVs have been most frequently associated with the military; however, drones are now also used in a wide range of civilian roles ranging from search and rescue, surveillance, traffic monitoring, weather monitoring and firefighting to personal drones and business drone-based photography, as well as videography, agriculture and even delivery services. Today, there are many more drones than ever before. Throughout the world, many competitions are held, and research and development activities are encouraged to be maintained to further develop the UAV technology (Koeniger *et al., 2005*). Based on current R&D activities, Gonzales-Aguilera and Rodriguez-Gonzalves (2017, p. 1) see the main advances of drones in: *(1) the emergence of new sensors that allow the improvement of the geometric and radiometric resolution, as well as the spectral range; (2) the evolution of new platforms that improve robustness and increase autonomy; (3) the development of software, from the navigation and communication with the platform to the processing and analysis of the images captured;* and *(4) new applications in emerging sectors: logistics, disaster assistance, security and surveillance, health and marine science*.

There are many reasons why drones are increasingly being used, mainly due to an increase in efficient technology and reductions in costs of their production. Finnegan (2015) predicts that the production of drones within the next ten years will reach 14 billion USD per year.