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Use of Unmanned Aerial Vehicles in Agricultural Sector and Its Effect on Productivity: Firm Evaluation

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ABSTRACT

The share of agriculture in national income is of great importance in most countries. 37% of the world's workforce works in the agricultural sector. 70% of water resources are used in agriculture. Threats such as climate changes, natural disasters, newly encountered viruses, adverse weather conditions, decrease in natural resources, population growth and increasing food demand have led to the emergence of new alternatives in agriculture. The widespread use of Unmanned Aerial Vehicles (UAVs) in the agricultural sector is a substantial example that explains this issue. In agriculture, Unmanned Aerial Vehicles (UAVs) can be used in areas such as aerial imaging, soil monitoring, monitoring and counting herd movements, monitoring irrigation and spraying. Advantages such as safety in use, high efficiency, environmental protection, waste reduction, resource saving, ease of use and maintenance increase the importance of UAVs. In this study, the effects of the use of UAVs in agriculture on productivity and therefore on the economy were investigated and the advantages and disadvantages of UAV use were evaluated. Some private companies that carry out agricultural spraying using UAVs in the Sakarya region were examined and data on companies' barley, sunflower, wheat and corn production costs were analyzed. In case of using UAV instead of tractor in agricultural spraying; it has been concluded that product loss resulting from spraying can be reduced to zero levels. Moreover, the cost of spraying can be reduced by up to 30% compared to the cost of spraying with a tractor. It was also discussed that manpowering and time can be saved in agriculture by using UAVs in other areas.

KEYWORDS UAV; Digital Agriculture; Agricultural Spraying

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