

## **DIGITIZATION OF AGRICULTURE: A SURVEY ON SMART FARMING THROUGH CLOUD COMPUTING**

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### **STUDIU ASUPRA UTILIZĂRII TEHNOLOGIILOR DE CLOUD COMPUTING ÎN AGRICULTURA INTELIGENTĂ**

#### **Background:**

Agriculture plays a vital role in the overall economic and social well-being of any nation. Agriculture is the main occupation in India especially in rural areas. India depends heavily on the agriculture sector, especially after the 1960 crisis in food sector. Since then, India has put a lot of effort for food production and this led India to the Green Revolution. Smart Farming refers to the application of ICT in agriculture. The challenges of the traditional agriculture are addressed and can be transformed by using information and communication technologies (ICT) tool such as cloud computing. The agricultural industry is relying on the power of cloud computing more than ever before. Cloud computing is an information technology paradigm through which users can access shared pools of configurable system resources over the internet. Such a sharing of resources enables coherence and economies of scale, which functions like a public utility, which can be quickly allotted by service providers to users with very little managerial effort. Cloud computing service providers typically work on a pay-as-you-go model. Apart from that, the user can also opt for options like *Software as a service* (SAAS), Platform as a service (PAAS) or Infrastructure as a service (IAAS). IAAS is one of the most commonly used services, as it helps organizations do away with infrastructure costs. In modern era of cloud computing technology very helpful for centralized the all-agricultural related data bank (Soil-related, weather, Research, Crop, Farmers, Agriculture marketing, fertilizers and pesticide information) in the cloud.

**Methods:** In this study a survey is performed on various research papers on applications of Cloud computing in the field of agriculture. A survey-based investigation is performed to understand problems in Agriculture and how Cloud computing technologies can be integrated to solve those problems. The research paper from 2009-2020 selected for study. In order to answer research questions a bibliographic analysis in the domain under study was performed. This paper reviews various applications of cloud computing in order to transform agriculture sector.

#### **Results.**

*Cloud computing can help with real-time computation, data access, and storage to users without having to know or worry about the physical location and configuration of the system that delivers the services.* Some of the applications of cloud computing in domain of agriculture are:

**Crop-related information:** It can capture information related to all crops grown in the recent past, and thus can help farmers make decisions on what to grow next.

**Weather information:** The cloud can store region-specific weather information and as well as the weather forecast for specific durations. Again, these help farmers make crop-related decisions.

**Soil Information:** Crop-related decision-making depends largely on soil information too. Apart from soil profile, it can also provide a trend of soil in the past, which will help in predicting the trend in future.

**Monitoring Growth:** The growth of various crops can be monitored in different regions; and at regular intervals. This enables growth patterns to be compared with past growth patterns.

**Farmers’ Data:** Region-wise farmer data can be captured, monitor and study the involvement of local farmers. This can help in the identification of core agricultural areas, which are helpful for policymakers while framing their strategies.

**24\*7 Expert Consultations:** It provides on demand expert consultation to the farmer related to their agriculture problems.

### **Conclusion.**

Agriculture is an important source in the economic development of India. To balance the demand and supply of food required to feed the Indian population, The Cloud computing is a game changing technology solutions in agriculture field. The applications of cloud computing technology in agriculture can solve the bottleneck problem of agricultural modernization. Cloud Computing provides computing infrastructure, IT resources and Services over internet as and when required to farmer for storage, maintenance and access of data that is not only impacting the way computing services are delivered but also the way in which farmers will use technologies in agriculture.

Farmers can use the cloud platform to access information related to weather conditions, soil related information, crops input, crop disease information, agricultural innovations and on demand consultation form agriculture scientist, pesticides, seeds, fertilizers, nutrients information to monitor the growth progress remotely through internet.