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IoT In Farming Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Component (Hardware {Automation and Control Systems, Sensing and Monitoring Devices, RFID tags and readers, Drones, Navigation, Displays, Handheld Computers, LED Grow Lights, Others}, Software {On-Premise, Cloud-Based}, Services {Managed, Professional}), By Application (Precision Farming {Yield Monitoring, Field Mapping, Crop Scouting, Weather Tracking & Forecasting, Variable Rate Technology, Inventory Management, Financial Management, Others}, Smart Greenhouse {Ambient Environmental Monitoring, Yield Monitoring, Water & Nutrient Management}, Livestock Monitoring {Feeding Management, Breeding Management, Others}, Smart Irrigation, Others), By Region and Competition, 2019-2029F

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Abstracts

Global IoT In Farming Market was valued at USD 11.87 Billion in 2023 and is anticipated to project impressive growth in the forecast period with a CAGR of 8.40% through 2029. IoT, or Internet of Things in farming, refers to the use of connected devices and sensors to monitor agricultural operations, optimize processes, and

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increase yield. These devices can collect data on conditions like soil moisture, temperature, crop health, and more. This data is then transmitted to a central system or platform where it can be analyzed to help farmers make informed decisions. The adoption of IoT in farming can lead to improved productivity, reduced waste, and increased profitability, and is a key component of what's often referred to as 'precision agriculture'.

The Internet of Things (IoT) in farming, also referred to as Smart Farming or Precision Agriculture, involves the incorporation of modern web technologies into farming practices. It typically includes the use of sensors, drones, and other wireless devices that collect and analyze data in real time. This data-driven approach allows farmers to monitor and optimize their crops and livestock, thereby increasing efficiency and productivity. The IoT in farming market represents the commercial aspect of this transformative technology, encompassing both the providers of these innovative solutions and the farmers who utilize them to modernize their operations.

Key Market Drivers

Increased Demand for Agricultural Products

The global surge in demand for agricultural products is poised to significantly increase the adoption of Internet of Things (IoT) in farming. This rise in demand is driven by various factors including population growth, increased consumption per capita, and the need for sustainable production methods. IoT technology, with its ability to provide real-time data, enables farmers to optimize their operations, maximize crop yields, and reduce waste. Advanced sensors can monitor soil moisture, temperature, and nutrient levels, helping to conserve resources and mitigate environmental impact. Automated systems streamline farm management, reducing labor costs and enhancing productivity. Also, predictive analytics can forecast weather patterns and potential pest outbreaks, allowing for proactive decision-making and risk mitigation. This automation and precision, made possible by IoT, increases agricultural efficiency to meet the escalating demand. Plus, the potential for IoT solutions to make farming more environmentally friendly and resilient to climate change amplifies its appeal. Thus, the rising demand for agricultural products worldwide is expected to be a significant driver for increased adoption of IoT in farming.

Increasing Adoption of Cloud Computing in Smart Farming

The pervasive integration of Cloud Computing in Smart Farming is expected to

significantly enhance the global demand for Internet of Things (IoT) within the agricultural sector. Cloud computing, with its capability to store, analyze, and process large volumes of data, is transforming smart farming by enabling real-time monitoring and data-driven decision making. This evolution is empowering farmers to optimize their production and improve resource efficiency. IoT devices, such as sensors and drones, feed critical data to the cloud, including temperature, humidity, soil quality, and crop health, thus enabling precision farming. With the cloud's scalable storage and advanced analytics, farmers can interpret this data and make informed decisions that enhance productivity and sustainability. In addition, cloud computing allows for remote access, making farming data accessible from anywhere, anytime, thereby driving the adoption of IoT in farming. As more farmers recognize the benefits of cloud-enabled IoT solutions, the demand is expected to grow exponentially, fostering a global transformation of traditional farming methodologies into a more connected and intelligent agricultural ecosystem.

Increasing Adoption of Livestock Monitoring Disease Detection

The global farming sector is experiencing a significant surge in the adoption of Internet of Things (IoT) technologies, particularly in the areas of livestock monitoring and disease detection. This trend is driven by the increasing recognition of the transformative potential of IoT in revolutionizing farming practices. With the integration of IoT devices, farmers now have access to real-time information on various aspects of livestock health, movements, and environmental conditions. This enables them to take prompt and precise interventions, ensuring the well-being of their animals. For instance, these devices can alert farmers to early signs of disease, allowing for early treatment and minimizing the risk of widespread contagion, which could potentially result in substantial losses.

The use of IoT monitoring tools provides valuable data that can further enhance breeding efficiency, optimize feed usage, and improve overall livestock management. By leveraging this data, farmers can make informed decisions to maximize productivity and minimize waste, ultimately leading to more sustainable and efficient farming practices. In addition to reducing operational costs, the adoption of IoT in farming has the potential to significantly boost productivity and sustainability. These factors are crucial in meeting the ever-increasing global demand for food. As a result, the adoption of IoT in farming is expected to rise globally, as farmers recognize the numerous benefits and the pressing need for more efficient and sustainable agricultural practices.

Technological Developments in IoT Sensors In Agriculture

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Technological developments in IoT sensors in agriculture are expected to significantly increase the global demand for IoT in farming. The integration of IoT technology into farming practices has the potential to revolutionize the agriculture sector, making it more efficient and productive. IoT sensors can monitor a variety of critical parameters such as soil moisture, temperature, and nutrient levels, providing precise, real-time data that enables farmers to make informed decisions and optimize their resource usage. As a result, crop yields are maximized and waste is minimized, making farming more profitable and sustainable. These advanced sensors can enable predictive analytics, providing early warning for potential problems like pest infestations or disease outbreaks. This predictive capability can save farmers significant time and money, while also reducing the environmental impact of agriculture. The benefits these technologies offer are being recognized globally, leading to an increased demand for IoT in farming. With the world's population projected to reach 9.7 billion by 2050, the need for efficient and sustainable farming practices has never been greater. Thus, IoT technology, powered by sophisticated sensors, is poised to play a crucial role in meeting this demand, driving its uptake worldwide.

Key Market Challenges

High Costs of IoT Devices Technologies

The high costs associated with Internet of Things (IoT) devices and technologies have emerged as a significant barrier to their widespread adoption in the global farming industry. These costs can be prohibitive for many farmers, particularly those in developing nations who often operate on thin profit margins. The financial burden is not limited to the initial purchase of IoT devices, but extends to the ongoing expenses of data plans, maintenance, and potential upgrades. In addition, the technical complexity of these technologies necessitates investment in training and skilled labor. While the potential for increased efficiency and productivity is clear, the high upfront and ongoing costs may deter many farmers, thus leading to a decrease in the demand for IoT in farming globally. However, as technology evolves and becomes more prevalent, it is expected that the costs will gradually decrease, making it more accessible and appealing to farmers around the world. This scenario strengthens the importance of initiatives aimed at facilitating affordable access to IoT technologies in agriculture.

Lack of Technical Knowledge Among Farmers

A significant obstacle to the global adoption of Internet of Things (IoT) in farming is the

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lack of technical knowledge among farmers. In many regions, farming practices have been carried on for generations in traditional ways, with little exposure to digital technologies. For IoT solutions to be effective, they require not only installation of advanced devices but also ongoing management and interpretation of the data generated. This necessitates a certain level of digital literacy that many farmers do not possess. Likewise, there is often a lack of adequate training or support systems in place to upskill these farmers in IoT technologies. This can lead to skepticism and reluctance to invest in these technologies, thus decreasing the demand for IoT in farming. It should also be noted that the cost of implementing IoT systems might be prohibitive for small to medium-scale farmers, further discouraging them from adopting such technologies. Therefore, unless there are concerted efforts to bridge this knowledge gap and make IoT solutions more accessible and understandable, the lack of technical proficiency among farmers could significantly curtail the global expansion of IoT in farming.

Key Market Trends

Increasing Use of UAVs/drones in Agriculture for Crop Health Monitoring

The global farming industry is on the brink of a revolution powered by the Internet of Things (IoT) and Unmanned Aerial Vehicles (UAVs), commonly known as drones. As the agricultural sector increasingly adopts these technologies, demand for IoT solutions in farming is poised to surge worldwide. UAVs are particularly effective in monitoring crop health, offering a bird's eye view that can reveal issues invisible from the ground level. Drone-enabled aerial photography and infrared images enable farmers to closely track crop growth, detect diseases or pests, and assess drought or flooding impacts. This granular data not only aids in proactive and precise treatment of crops but also allows for efficient resource allocation, reducing wastage of water, fertilizers, and pesticides. IoT devices play a crucial role in this process, facilitating real-time data transmission, analysis, and action, thereby enabling smart, data-driven farming. The convergence of these technologies is expected to scale up productivity, reduce farming costs, and promote sustainable agriculture practices globally. As such, the rise in UAV usage for crop health monitoring is undeniably a significant driver propelling the global demand for IoT in farming.

Shift Of Farming Industry Towards Sustainable Farming Methods

The global farming industry is witnessing a paradigm shift towards sustainable farming methods, a move that is expected to significantly bolster the demand for Internet of Things (IoT) in farming. This transition is fueled by the growing awareness of

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environmental concerns and the necessity for resource conservation. IoT, with its network of physical devices that collect and share data, is becoming an essential tool in this transformative journey. It allows for real-time monitoring and management of farming operations, leading to optimal resource utilization, thereby supporting sustainable practices. IoT devices provide critical data on soil conditions, weather patterns, crop health, and livestock welfare, enabling farmers to make informed decisions and improve productivity while minimizing environmental impact. Also, advancements in IoT technology, such as the introduction of smart greenhouses or precision farming, have amplified its demand. These methodologies promote sustainable agriculture by reducing water waste, minimizing the use of chemical fertilizers, and ensuring higher crop yield. As more farmers globally recognize the role of technology in sustainable farming, the demand for IoT in farming is expected to surge. This trend not only signals a promising future for the IoT industry but also marks a significant step towards global agricultural sustainability.

Segmental Insights

Component Insights

Based on the Component, in the Global IoT in Farming Market, the Software segment stands out as the dominant force. This can be attributed to the widespread adoption of advanced software applications specifically designed for precision farming, real-time crop monitoring, and efficient livestock health management. The availability of such sophisticated software solutions has revolutionized the agricultural industry by enabling farmers to make data-driven decisions and optimize their operations for maximum productivity and sustainability.

While the Software segment takes the spotlight, it is important not to overlook the vital contributions of the Hardware and Services sectors. Hardware components, such as sensors, actuators, and connectivity devices, form the backbone of IoT systems in farming, facilitating the seamless collection and transmission of data. Besides, services like installation, maintenance, and support play a crucial role in ensuring the successful implementation and operation of IoT solutions on farms. As the Global IoT in Farming Market continues to grow and evolve, it is evident that a holistic approach, encompassing the Software, Hardware, and Services sectors, is necessary for its overall success and widespread adoption. Together, these segments create a synergistic ecosystem that empowers farmers with the tools and technologies needed to embrace the full potential of IoT in agriculture.

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Application Insights

Based on the Application, precision farming, an ever-expanding sector, is currently dominating the Global IoT in Farming Market. This industry has witnessed remarkable growth, fuelled by the increasing demand for optimized agriculture operations. By harnessing the power of IoT devices and technologies, Precision Farming revolutionizes farming practices with its precise and controlled application of inputs like water, fertilizers, and pesticides. Advanced data analytics and automation further empower farmers to make well-informed decisions and optimize resource utilization, culminating in enhanced crop yields and sustainable farming practices. With the integration of cutting-edge technologies, Precision Farming is reshaping the agricultural landscape and paving the way for a more efficient and environmentally friendly future in the field of farming. This transformative approach ensures that agriculture remains at the forefront of innovation, meeting the growing needs of a rapidly changing world.

Regional Insights

North America is currently dominating the Global IoT in Farming Market. The region's advanced technological infrastructure, including high-speed internet connectivity and robust data infrastructure, provides a solid foundation for the growth of IoT in farming. On top of that, North America boasts a substantial number of key players in the IoT and farming sectors, ranging from tech startups to established industry leaders, fostering innovation and collaboration. Also, the supportive government initiatives towards modernizing agriculture with smart farming solutions, such as incentivizing the adoption of IoT technologies and funding research and development projects, further contribute to the exponential growth of the IoT in Farming Market in North America. With its favorable ecosystem and conducive environment for innovation, North America continues to lead the way in leveraging IoT to revolutionize and optimize farming practices, ultimately driving sustainable and efficient agriculture.

Key Market Players

Deere Company

Trimble Inc.

Raven Industries Inc.

AKVA group

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DeLaval, Inc.

Topcon Positioning Systems Inc.

AgJunction Inc.

Allflex USA, Inc.

TeeJet Technologies Illinois, Inc.

Farmers Edge, Inc.

Report Scope:

In this report, the Global IoT In Farming Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

IoT In Farming Market,By Component:

oHardware

oSoftware

oServices

IoT In Farming Market,By Application:

oPrecision Farming

oSmart Greenhouse

oLivestock Monitoring

oSmart Irrigation

oOthers

IoT In Farming Market, By Region:

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oNorth America

United States

Canada

Mexico

oEurope

France

United Kingdom

Italy

Germany

Spain

oAsia-Pacific

China

India

Japan

Australia

South Korea

oSouth America

Brazil

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Argentina

Colombia

oMiddle East Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global IoT In Farming Market.

Available Customizations:

Global IoT In Farming marketreport with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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