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Empowering Small Farmers Through Smart Farming: The Transformative Power of Agri-Tech in India

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Abstract
The Indian economy is an Agro-economy, which means its agriculture sector is heavily dependent on the cycles of production, distribution, and consumption. This sector is facing increasing pressure from factors such as climate change, resource depletion, and a growing global population. This study aimed to research the adoption of technology in small-scale farming to improve production quality, efficiency, and economic development. We examined the determinants of technology adoption among small farmers using both primary and secondary data. For primary data, we collected over 100 responses from farmers and research students. For secondary data, we analyzed various journals, articles, and research papers. Our data revealed that while most farmers are aware of Agri-tech farming through various advertisements, they do not adopt it due to a lack of knowledge and the high cost of technology. The analysis also showed that government funding programs play a vital role in supporting agricultural technology startups. These programs provide the necessary capital for developing new technologies and expanding operations. By reducing the financial risks for startups, these programs encourage innovation. The rapid advancement of precision agriculture and the rise of Agri-tech startups are transforming the global agricultural landscape, enhancing productivity, sustainability, and climate resilience.

Keywords: Smart farming, Agri-tech, Climate change, Agronomic

1. INTRODUCTION

Agriculture continues to be the major livelihood source for a large section of rural India and is thus the backbone of rural economies, helping in the reduction of poverty. The agricultural productivity of India is closely related to the food security of the nation. Stable and increased production of foodgrains is a guarantee by agriculture to feed the nutritional requirements of the growing population. The slogans "*Jai Jawan, Jai Kisan, and Jai Vigyan*" fit very aptly, corresponding with the fundamental pillars supporting modern India.

"*Jai Jawan*" honors the soldiers who protect the nation and also share a deep connection with agriculture, as many come from farming families. Their dedication supports both national and food security. "*Jai Kisan*" pays tribute to the hardworking farmers who are the backbone of India. Introduced by Prime Minister Lal Bahadur Shastri, the slogan highlights the importance of farmers in the nation's prosperity.

India's Green Revolution transformed it from a food-deficient to a food-surplus country. "*Jai Vigyan*" emphasizes the vital role of science and technology in advancing agriculture. Modern innovations like precision farming, digital tools, high-yield seeds, and climate-resilient crops have transformed Indian agriculture, making it more sustainable and efficient in the face of climate change and population growth. Agri-tech startups promote this change by offering smart solutions to farmers. Backed by initiatives such as '*Make in India*' and '*Digital India*', the sector has grown at a fast pace, from less than 50 startups in 2013 to more than 1,000 by 2020. The increasing access to the internet, awareness among farmers, and favorable government policies are adding immense strength to digital agriculture in India.

Agri-tech, including smart farming, involves a series of technologies that enable farmers to make better-informed decisions and use resources more efficiently; technologies used include the Internet of Things (IoT), Artificial Intelligence (AI), drones, and remote sensing. For small farmers, these can translate to increased crop production, reduced costs, and climate-resilient farming. Besides these, mobile apps and digital platforms are giving access to information, financial services, and markets to farmers, enabling them to connect directly with buyers and reducing their income disparities. This paper therefore highlights how Agri-tech will empower small farmers and transform traditional farming into a more productive, sustainable, and profitable system. Based on technology usage, economic growth, and sustainable agriculture, the study shall help explain how smart farming will alter the future of small holder farming.

1.1 Agriculture in India A snapshot of agriculture in India, which has grown by 40% in the last ten years, has achieved surplus capacity for exports. The production is continuing to rise steadily, as shown by the third advance estimates. The sector is also seeing increasing adoption of modern technologies. Tools like Block Chain, Artificial Intelligence (AI), Geographic Information System (GIS), drones and remote sensing are being leveraged efficiency and transparency. Alongside various e-farming applications to help farmers and Agri-business enhance productivity and market access.

Crop diversification and innovation too will have an crucial role to play in shaping the sector's outlook. Due to early-maturing seed varieties and higher minimum support price, India is poised to achieve self-sufficiency in pulses over the next few years. Increasing demand for food will press farmers to develop new ways of raising their output and efficiency; therefore, agricultural technology-also called Agri-tech has become a solution for farmers to tide over various operational challenges.

1.2 Agriculture in Odisha Odisha is predominantly an agrarian state, with agriculture serving as the pillars of its economy. The sector contributes approximately 20% to the Gross Domestic Product (GDP) and employs around 65% of the workforce. About 82% of Odisha's population resides in rural areas, reflecting the importance of agriculture in livelihoods and development. Cultivable land accounts for nearly 40% of the state's total geographical area. Odisha has achieved moderate success in expanding crop area, boosting production and productivity, improving irrigation facilities and enhancing food security, leading to an increase in farmers incomes. Agriculture also accounts for 30% of the Net State Domestic Product (NSDP).

2. LITERATURE REVIEW

The evolving landscape of smart farming solutions in India, focusing on how Agri-tech innovations can transform smallholder agriculture through enhanced productivity, sustainability, and profitability. The study highlights that smallholders play a crucial role in India's agricultural economy but face persistent challenges such as poor infrastructure, limited access to finance, and lack of digital literacy. Smart Agri-tech systems integrating tools like Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain

have the potential to address these issues by providing real-time data for better farm management and decision making [1]. The transformative role of Artificial Intelligence (AI) based, Smart Agro-Advisory Systems (SAAS) in addressing the persistent challenges faced by modern agriculture. The authors highlight that agriculture remains the backbone of many economies but continues to struggle with issues such as climate variability, pest outbreaks, inefficient resource use and limited access to market information. Traditional farming methods, which rely heavily on experience and intuition are increasingly inadequate in the face of these complex challenges. The paper emphasizes that the integration of AI, the Internet of Things (IoT) and satellite monitoring can provide real time data driven solutions to improve productivity, sustainability and profitability in the agricultural sector [2]. The transformative potential of the Internet of Things (IoT) in promoting sustainable agriculture, particularly within rural regions of India. The study emphasizes that India's agricultural sector despite employing over half of the nation's population, faces critical challenges such as low productivity, resource inefficiency, water scarcity and vulnerability to climate change. Traditional farming practices, often reliant on manual labour and intuition are increasingly inadequate for ensuring sustainable food production. To address these issues, IoT based smart farming systems are introduced as a viable solution, leveraging real-time data analytics, automation, and precision farming techniques to enhance productivity and resource management [3]. The role of Internet of Things (IoT) technologies in promoting sustainable agricultural practices and revolutionizing traditional farming systems. The study emphasizes that sustainable agriculture aims to balance productivity with environmental preservation by utilizing resources efficiently while minimizing ecological degradation. The authors outline how IoT, in conjunction with Artificial Intelligence (AI), cloud computing, and big data analytics, has ushered in the fourth agricultural revolution (Agriculture 4.0), enabling precision and automation in farm management [4]. It provides an in-depth review of the innovations and emerging opportunities in precision agriculture, emphasizing how digital technologies are reshaping modern farming practices. The authors explain that precision agriculture also referred to as smart farming uses advanced tools such as the Internet of Things (IoT), big data analytics, artificial intelligence (AI), robotics, drones, and machine learning (ML) to improve productivity, reduce waste, and promote environmental sustainability. This transformation represents the transition from traditional farming to "Agriculture 4.0," a system characterized by automation, data-driven decision-making, and efficient resource utilization [5]. The influence of Smart Farming Technology (SFT) on small-scale farmers in Telangana, India, focusing on its adoption, socio-economic impact, and potential for sustainable agricultural development. The authors define SFT as an advanced approach that uses digital tools, automation, and data analytics to optimize the use of agricultural resources, enhance productivity, and minimize environmental degradation. Their study emphasizes that although SFT has significant potential to transform smallholder farming, its adoption is often limited by factors such as low income, limited education, lack of awareness, and inadequate infrastructure [6]. The adoption of Climate-Smart Agriculture Technologies (CSAT) among small-scale farmers in Gujarat, India, focusing on awareness levels, influencing socio-psychological factors, and barriers to implementation. The authors emphasize that small and marginal farmers constitute nearly 78% of India's agricultural population but are highly vulnerable to the adverse impacts of climate change. To strengthen food security, the study investigates how these farmers perceive and utilize CSAT to enhance productivity, resource efficiency, and climate resilience [7].

3.OBJECTIVE OF THE STUDY

Research for the study mainly focuses on how Agri-tech helps small-scale farmers to increase their productivity by the use of various technologies and creates awareness among the people to using smart technologies to boost their production capacity. Some fundamental key objectives of the research study include

- To study farmers awareness and adoption of Agri-tech and smart farming.
- To analyze the effects of Agri-tech on farm increase in productivity, profit and efficiency.
- Identifying the challenges and barriers in adopting Agri-tech innovations.
- To know farmer opinion, what problem for taking in smart agriculture technology
- To assess the future potential of Agri-tech for empowering the next generation of farmers.

3.1 HYPOTHESES OF THE STUDY:

H_0: Agri-tech adoption does not significantly impact small farmers' productivity and sustainability.

H_1: Agri-tech adoption significantly impacts small farmers' productivity and sustainability.

This fits perfectly with your title, objectives, survey findings, and conclusion.

3.2 RESEARCH METHODOLOGY:

The study will adopt a descriptive research design since it is targeted at ascertaining the descriptive awareness, adoption and impact of Agri-tech (smart farming) practices among farmers and research students.

The present research is quantitative and qualitative in nature based on survey response collected from individuals engaged in associated with the agriculture sector.

- It analyzes the demographic and occupation profile or respondent engage in farming.
- It assesses major challenges faced by farmers in the implementation of Agri-tech.
- Identifies the level of awareness and adoption process, an Agri-tech as smart farming technologies.
- The survey helps in assessing the effect of Agri-tech on farm productivity.

3.3 DATA COLLECTION METHODS

Data collecting tools refers to the tools or devices used to gather data, such as a paper questionnaire or a system for computer assisted interviews. Tools used to gather data include case studies, checklists, interviews, occasionally observation, surveys, and questionnaires. Before conducting research, in any field, researcher must understand the different basic concepts used in the Research Methodology.

3.3.1 Primary data:

Primary data through a structured questionnaire (google form) was collected and distributed among the farmers, agricultural professionals, and students associated with farming. The questionnaire contains both closed-ended questions like multiple-choice questions, Likert scale, and open-ended questions meant to garner qualitative opinion.

For primary data collection, we gathered 103 responses from farmers, students and professional students in agriculture from different districts of Odisha. In this data collection, we mostly focused on farmers and other research students to view their personal opinion toward smart farming.

3.3.2 Secondary data:

The research is not completed through the only use of primary data to deeply analyze the current worldwide scenario with accurate data findings. As for secondary data sources we gathered numerous articles, journals, various research papers, and case studies from various websites.

3.3.3 Sampling design:

- **Sampling technique used:** Convenience sampling or non-probability sampling focused on the farmers and those into agriculture.
- **Sample size:** Response were collected from 103 participants across rural, semi-urban, and urban regions.
- **Sampling areas:** The respondents were mainly from rural and semi-urban areas where agriculture is the primary occupation.
- **Respondent profile:**
  1. **Age Group Majority:** (80%) between 18-25 years
  2. **Occupation:** 60% farmers, 40% students/ agricultural professionals
  3. **Location:** 53.9% rural, 17.67% urban, 28.4% semi urban.
  4. **Land holding:** 44% have less than 1 acre of farmland.
- **Research instrument:** A Google form questionnaire containing 15-20 questions used.

Question type included:

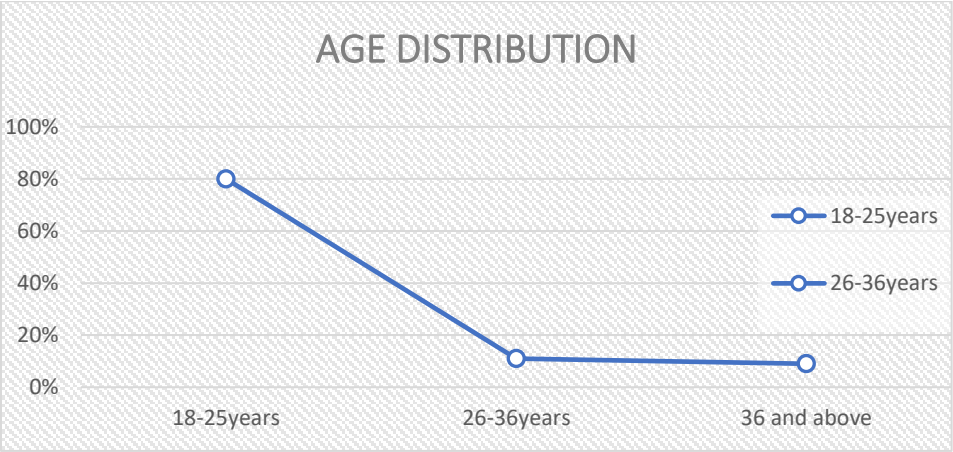
A. Multiple choice questions
B. Likert scale questions (1-5ratings)
C. Multi-choice boxes
D. One open-ended question for qualitative insights

The designed questionnaire was in both English and the regional language to ensure better understandings among respondents.

4. ANALYSIS AND INTERPRETATION OF DATA:

Data analysis is an integral part of any research paper, acting as the backbone that logically connects raw data to meaningful insights. It involves the systematic examination, cleaning, and interpretation of data to validate hypotheses and draw evidence-based conclusions by showing patterns. Effective data analysis in a research paper not only adds to the credibility of the study but also contributes significantly to the field of knowledge. This article explores the key steps involved in data analysis, from defining research objectives to reporting findings, offering practical examples and insights to ensure precision and impact in research papers.

Figure 4.1



4.1 Interpretation:

From the age distribution of respondents, it can be derived that the majority of participants lie in the 18–25 years bracket, depicting the involvement of younger people in agriculture and Agri-tech-related activities. Other respondents fall into the categories of 30 – 36 years, while very few of the respondents are above 36 years. This illustrates a trend of increasing interest in smart farming and technological innovations among the youth. This can be interpreted to mean that the future of Agri-tech is promising since the involvement of the younger generation means more learning curves and implementation of modern techniques to boost the efficiency and sustainability of farming.

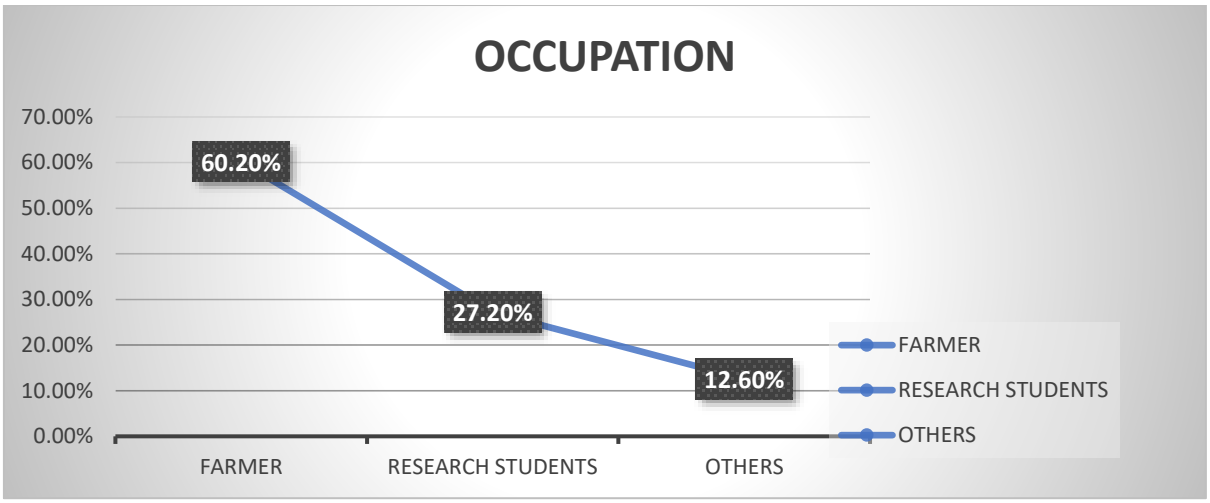
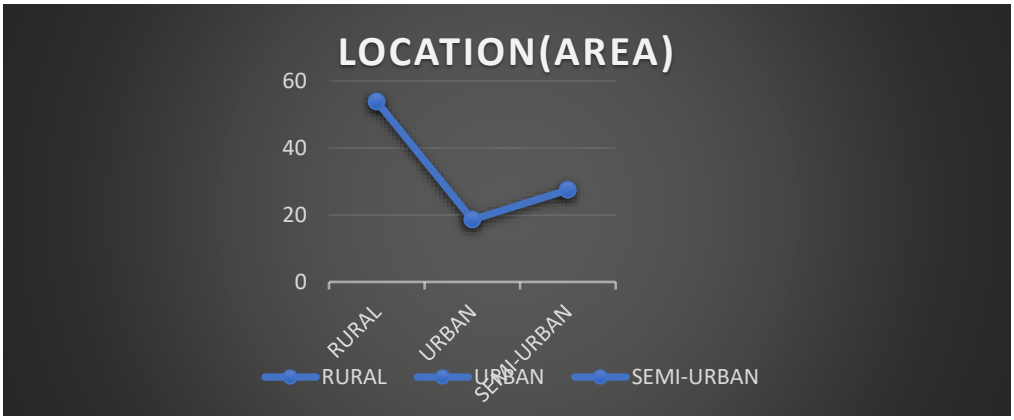


Figure 4.2

4.2 Interpretation:

The occupational distribution of the respondents shows that the majority, about 60% are farmers. This study represents, mainly views and experiences of those directly involved in agricultural activities. About 27% of participants are research students, reflecting the increasing academic interest and awareness towards Agri-tech in transforming traditional farming. The remaining, about 13% represent other groups of individuals from non-agricultural backgrounds who have indirect connections or interests in the field. The fact that there are both practical farming experiences and research-based insights provides strength for this study to learn how Agri-tech impacts small farmers and motivates them to practice smart farming.

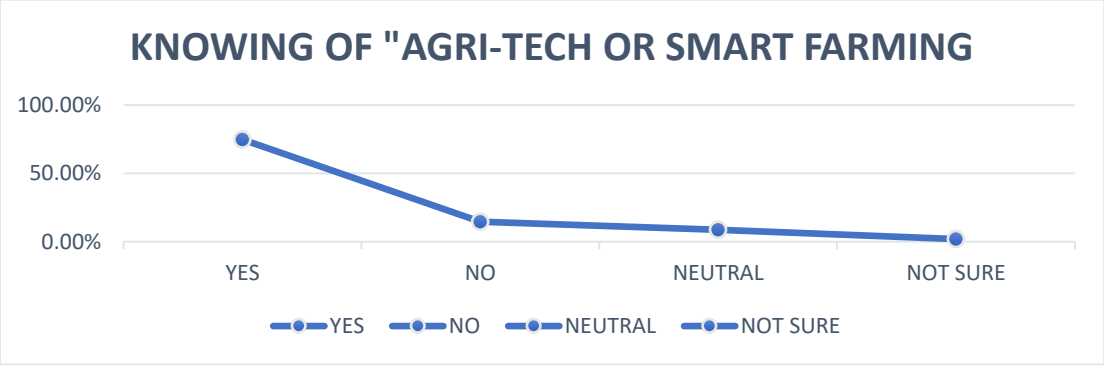
Figure 4.3



4.3 Interpretation:

The location-wise distribution of respondents indicates that the majority belong to rural areas, followed by a smaller portion from semi-urban regions and the least from urban areas. This pattern highlights that most participants are from rural backgrounds where agriculture remains the primary occupation and livelihood source. The dominance of rural respondents is significant as it reflects the real ground level perspective of small farmers who are directly involved in farming activities. Meanwhile, responses from semi-urban and urban participants suggest increasing awareness and interest in Agri-tech beyond traditional farming communities. This geographical diversity supports a comprehensive understanding of how smart farming technologies are perceived and adopted across different regions.

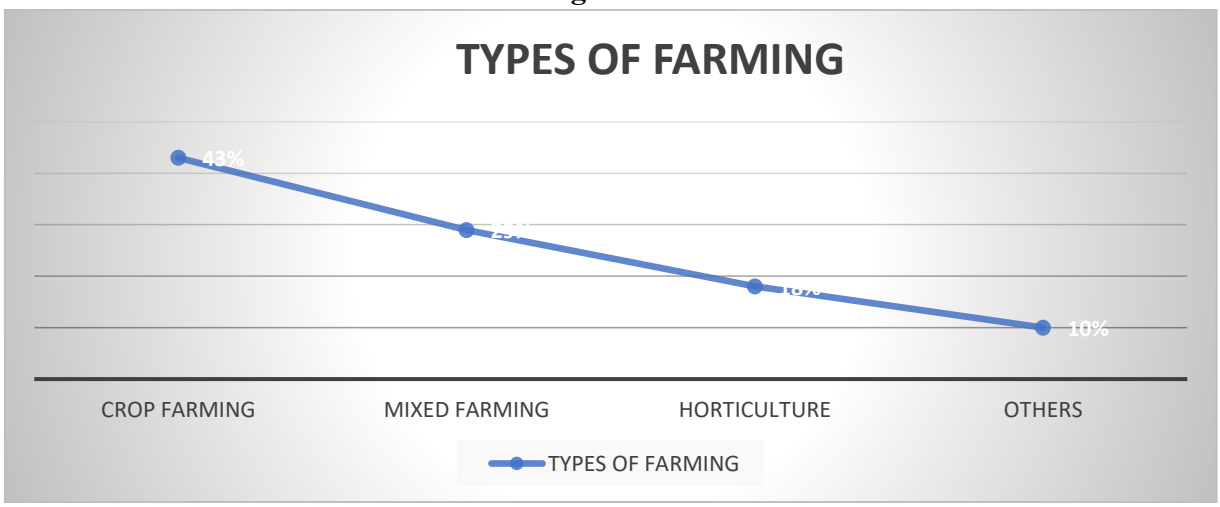
Figure 4.4



4.4 Interpretation:

Awareness data indeed indicates that the majority of respondents reported knowledge of Agri-tech or smart farming, while a small portion of the group reported no awareness and just a few remained neutral or did not know. This reflects reasonably good dissemination of awareness about modern agricultural technologies among farmers and agricultural communities. High familiarity with Agri-tech reflects increased exposure to digital tools, improved communication channels and raised interest in technology driven farming solutions. Yet, this small group that is either unaware or uncertain demonstrates the necessity for more targeted awareness programs and training to ensure that all farmers, especially those from remote areas, benefit from smart farming innovations.

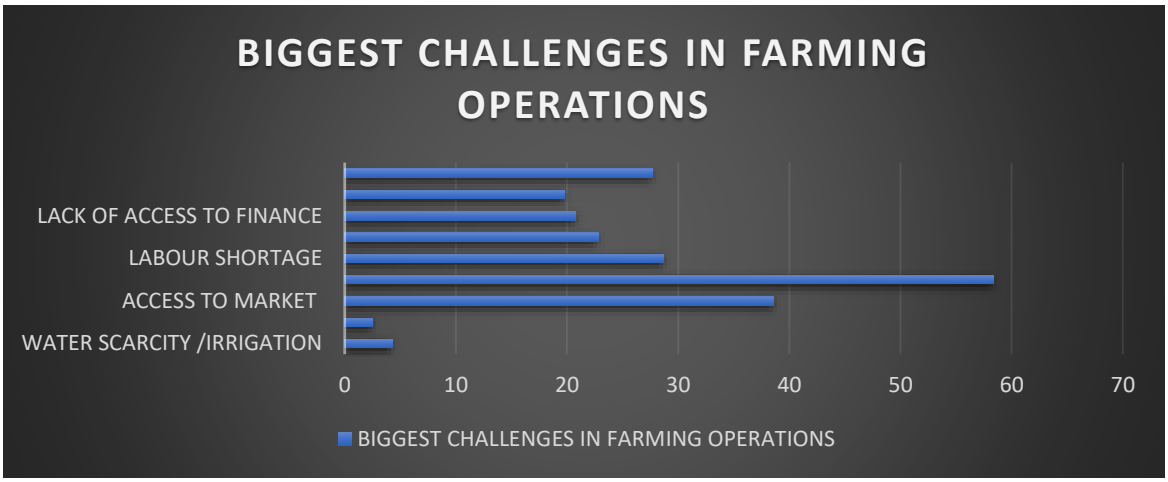
Figure 4.5



4.5 Interpretation:

The data indicates that 43% are engaged in crop farming, implying that traditional crop production remains the dominant agricultural activity among small farmers. Mixed farming follows, with 29%, showing that a significant section of farmers combines crop and livestock activities to diversify income and reduce risk. Horticulture also takes the third position with 18%, reflecting a growing involvement in the area of high-value crop and market-oriented farming. Fully 10% of the respondents engage in other forms of farming, which may involve aquaculture, poultry and other areas.

Figure 4.6

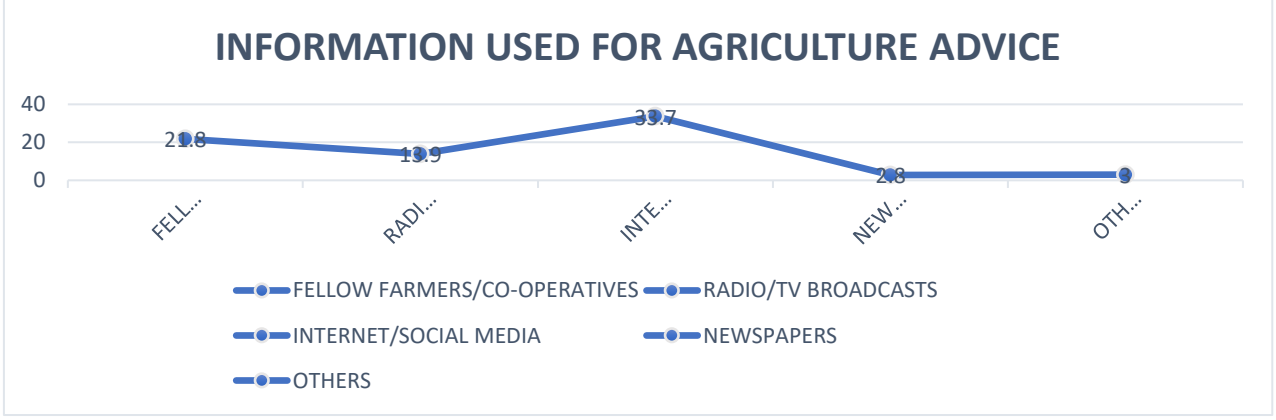


4.6 Interpretation:

The data underlines the major challenges faced by farmers in their operations. The most critical issue identified is a situation of limited access to quality inputs, closely followed by restricted market access. These are serious deterrents to productivity and income generation among the small farmers. Other major issues include shortages of labor, high production costs, and lack of access to finance, which mutually raise pressure on the small-scale farmer and limit opportunities to invest in modern technologies. Besides, environmental threats like water scarcity/irrigation problems and climate variability affect farming sustainability.

Overall, results highlight the need for immediate Agri-tech solutions and smart farming that tackle these challenges by improving accessibility of inputs, enhancing market linkages, optimizing resources and increasing resilience to climate change.

Figure 4.7

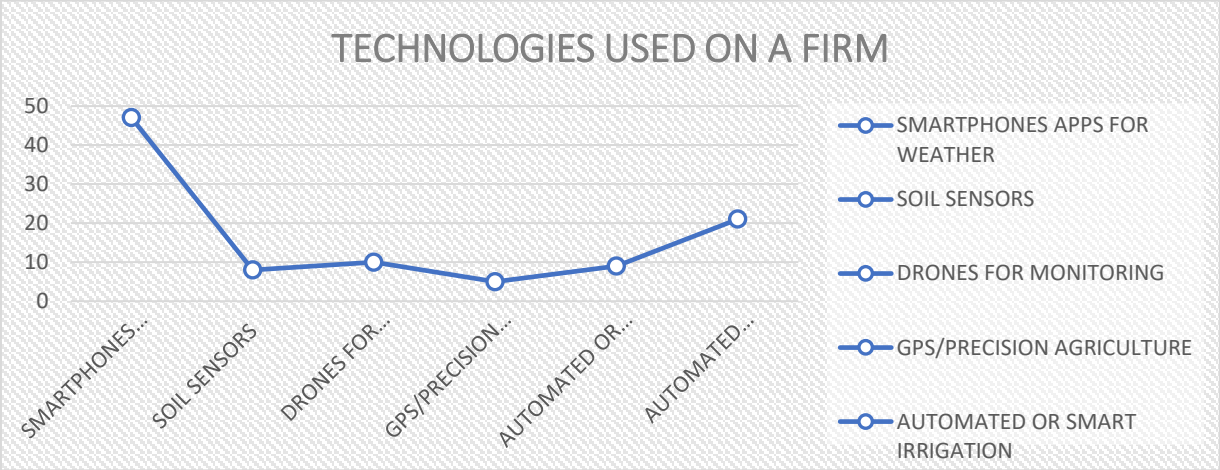


4.7 Interpretation:

Data represents the main sources through which the farmers get information on agriculture. The majority of farmers (45%) depend on the Internet and social media platforms, showing an upward tendency towards going digital and increased impact of Agri-tech in rural communication. Meanwhile, 29% of farmers depend on fellow farmers or co-operatives, showing the continued importance of community-based knowledge sharing. Traditional media, such as radio and TV broadcasts (18%), still play a notable role, especially in areas with limited digital access. However, newspapers (4%) and other sources (4%) contribute only a small portion to information dissemination.

Overall, these findings show a remarkable shift toward using digital and smart information channels, thus illustrating how innovations in Agri-tech are complementing the agency of small farmers with better access to timely and relevant agricultural advice, thereby creating more informed and efficient farming practices.

Figure 4.8

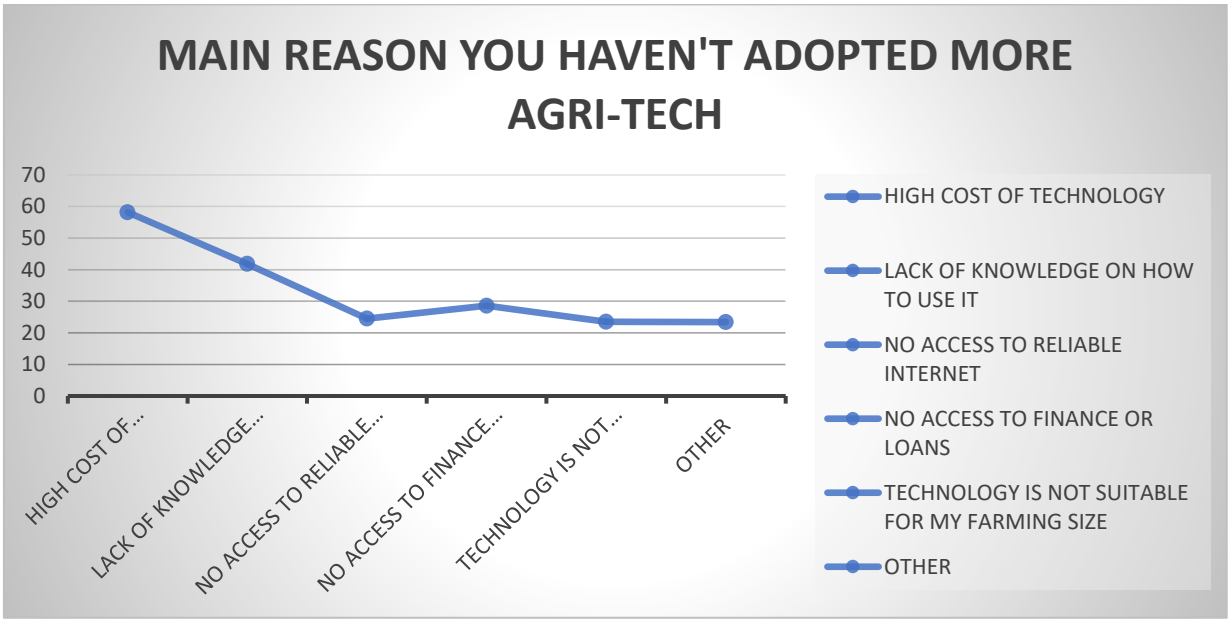


4.8 Interpretation:

The data reveals the adoption of various technologies that are being used on farms. Among these, the use of smartphone applications for weather updates stands out for its increasing rate of adoption and shows how easily accessible digital tools are changing smallholder decision-making and day to day farm planning. Other common technologies used include soil sensors, automated or smart irrigation systems and GPS-based precision agriculture that contribute to efficient resource management and higher productivity. Meanwhile, crop monitoring by drones and automated machinery are being slowly adopted, generally by more progressive or better-resourced farmers.

Overall, the data indicates that the adoption of mobile-based and easily adoptable technologies is leading the smart farming movement. These tools have the potential to empower small farmers with real-time information, optimize input use, and improve the sustainability of farming, therefore demonstrating the growing impact and potential of Agri-tech innovations in rural farming systems.

Figure 4.9



4.9 Interpretation:

The data reveals some important bottlenecks that restrain farmers from adopting advanced agricultural technology. The high cost of technology is the main constraint that makes it difficult for the small and marginal farmers to invest in modern tools and smart farming systems. Another key challenge is the lack of knowledge in the use of agri-tech, which also points to a great need for capacity building, awareness programs and digital literacy training. In addition, limited access to reliable internet further restricts the adoption of digital farming tools, especially in remote rural areas. Other factors that contribute to such low adoption include a lack of access to finance or loans and technology unsuitable for small farm sizes, which further emphasizes the structural and economic constraints faced by smallholders.

Overall, the findings present farmers who recognize the potential of Agri-tech but are also constrained by very high financial costs, gaps in technological awareness, and infrastructural limitations. This calls for affordable innovations, digital inclusion and policy support to empower small farmers and enable sustainable smart farming.

Figure 4.10

4.10 Interpretation:

The data shows strong optimism among the respondents on the role of agriculture in building Viksit Bharat or Developed India by 2047. An overwhelming majority of participants responded "Yes," indicating their belief that farming forms the backbone of India's economic and developmental journey. Only a small portion of the respondents were neutral or undecided, and very few disagreed, which evidences the fact that the agricultural community is quite aware of the transformative potential of the sector. This kind of perception calls for empowering small farmers, integrating smart farming technologies and improving agricultural productivity to ensure national development aspirations.

Overall, the findings suggest that agriculture, coupled with Agri-tech innovations and smart farming practices, has emerged as a crucial driver to realize Viksit Bharat @ 2047, ensuring food security, rural prosperity and sustainable growth for India's future.

5. FINDINGS

The study reveals that awareness regarding Agri-tech and smart farming is increasing among farmers, particularly among the younger generation aged 18–25 years. Most respondents belonged to rural areas and were directly engaged in farming activities, showing the relevance of Agri-tech at the grassroots level. The analysis indicates that digital platforms, smartphones, and social media have become important sources of agricultural information for farmers. Crop farming remains the dominant agricultural practice, while technologies such as weather applications, smart irrigation systems, and precision farming tools are gradually gaining acceptance. However, the adoption of advanced Agri-tech remains limited due to high technology costs, lack of technical knowledge, poor internet connectivity, and limited financial support. Farmers strongly believe that smart farming can contribute significantly toward sustainable agriculture and the vision of Viksit Bharat @2047. Overall, the findings highlight the growing potential of Agri-tech in improving productivity, profitability, and sustainability among small farmers.

6. SUGGESTION:

The suggestion based on the data analyzed, various suggestions come out to improve the adoption and impact of smart farming and Agri-tech among small farmers:

- **Improve Awareness and Training:** A large proportion of farmers, especially young people aged 18–25, know about Agri-tech but do not have in-depth knowledge of its practical use. Awareness programs, regular workshops, and field demonstrations should be arranged by government agencies, agricultural universities, and NGOs to educate farmers about using modern technologies and their benefits.
- **Improve Accessibility and Affordability of Technology:** The high cost of technology and lack of finance or loans remain major barriers. Subsidy schemes, easy loan facilities, and community-based equipment sharing models must be promoted to make technology adoption economically feasible for smallholders.
- **Strengthen Digital and Internet Infrastructure:** Many farmers face limited access to reliable internet, which restricts their ability to use online agri-tech tools or mobile applications. Strengthening rural connectivity and digital literacy can significantly improve smart farming practices and real-time decision-making.

- **Promote Farmer-Centric Technology Development:** Technologies need to be designed to suit small farm sizes and local conditions. Collaboration between technology developers, agricultural researchers, and local farmers will ensure that innovations are practical, scalable, and region-specific.
- **Utilize Digital Media for Agricultural Information:** The data reveals that 45 percent of farmers depend upon internet and social media for advice on agriculture. Therefore, digital extension services, mobile applications, and farmer networking platforms need to be scaled up to provide reliable, location-specific information in regional languages.
- **Support Market Linkages and Input Access:** Lack of access to quality inputs and markets remains one of the biggest operational challenges. Policies should connect farmers to digital marketplaces, ensure fair pricing, and facilitate transparent supply chains.
- **Encourage Sustainable Smart Practices:** In the face of growing weather variability and increasing shortage of water supply, priorities should include automated irrigation systems, soil sensors, and precision agriculture tools which would ensure resource efficiency and environmental sustainability.

7. LIMITATION OF THE STUDY:

- **Data availability and quality:** Main limitations occur regarding data availability and quality within the research. While comprehensive data collection is attempted, there are gaps in Agri-tech adoption records, crop production and farmer feedback. Some of the data sources depend on self-reported information, which might introduce bias.
- **Sampling Bais:** Associated with this is the sampling bias since the pools of the respondents were those farmers who had digital access and volunteered. Besides, there is a problem of proper representation of the diverse farming population of India in the sample.
- **Methodological limitations:** A number of methodological limitations are associated with the research methodology undertaken. The survey-based methods are based on self-reported data, and therefore, are susceptible to both recall bias and social desirability bias. The cross-sectional design captures a snapshot of Agri-tech adoption.
- **Limited scope:** The study's scope is limited to examining Agri-tech adoption and impact among farmers in India, focusing on specific technologies and regions. This narrow focus may overlook broader contextual factors, such as policy frameworks, market dynamics and socio-cultural influences, particularly in rural India.
- **Respondent bias:** Since this study is based on self-reported data from farmers, this may introduce a potential source of respondent bias into the findings. Farmers perceptions and attitudes on this subject might be socially desirable, biased by recall issues or incomplete knowledge, hence potentially distorting results.
- **Short time period:** The findings of the study rely on data collected during this quite short period and hence, it is bound to reflect the status regarding Agri-tech adoption and impacts in India. Such a short-term focus may also miss long-term dynamics. for example, on the behavior of farmers, technological advancements or a shift in market trends. Temporal factors such as seasonality, weather patterns etc.

8. CONCLUSION:

The research paper "Small Farmer, Smart Farming: The Power of Agri-tech" highlights the need for technological innovation in transforming Indian agriculture by making it relevant to small and marginal farmers, who constitute the backbone of India's rural economy. Key findings from this study indicate

substantial engagement on the part of the younger generation-in particular, those aged 18-25 years in farming activities and increasing awareness regarding smart farming. This portends well for the future of technology-driven agriculture in India. The majority of respondents belong to rural areas, reaffirming the relevance of Agri-tech for grassroots-level development. Research has indicated that whereas awareness of Agri-tech is high, the actual adoption remains low, due to some major obstacles like high technological costs, unavailability of training, weak access to finance, and ineffective internet connectivity in rural areas. Many farmers use digital platforms and smartphones to obtain information on agriculture, which indicates the rapid pace at which farmers are taking up digital engagements and are open to innovation. Traditional challenges facing growth include limited access to markets, input quality, and infrastructure.

This challenge can be overcome by increasing government support, capacity-building programs, access to technology models at affordable rates, and better digital infrastructure. Programs that address the farmers' financial needs through financing facilities, subsidies, and soft credit will help make these advanced technologies accessible for smallholders. This requires partnerships among technology developers, agricultural experts, and local farmers in the design of region-specific and user-friendly solutions.

In the end, smart farming is an important route toward sustainable agricultural transformation, enhancing productivity, profitability, and resilience against climate change. Agri-tech enables farmers through data-driven decision-making, precision in resource use, and better market access. It is only when such innovations are incorporated into mainstream agriculture that India will be assured of food security, rural empowerment and economic progress. These, in tune with the vision of Viksit Bharat @2047, will contribute toward a self-reliant, digitally empowered and environmentally sustainable nation, whereby small farmers will show the way to realizing a smarter and more prosperous future.

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