

A MINI PROJECT REPORT

ON

**“DIGITIZATION OF AGRICULTURAL SECTOR-
PROBLEMS AND PROSPECTS”**

MINI PROJECT SUBMITTED IN FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

FROM

BENGALURU CITY UNIVERSITY



SUBMITTED BY

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Reg No. MB206202

UNDER THE GUIDANCE OF

Prof. RAVISH B.A.

ASST. PROFESSOR, AIMS



AL-AMEEN INSTITUTE OF MANAGEMENT STUDIES

AFFILIATED TO BENGALURU CITY UNIVERSITY

(2021-2022)



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This is to certify that this Project entitled “**DIGITIZATION OF AGRICULTURAL SECTOR- PROBLEMS AND PROSPECTS**” has been successfully completed by **ABBASALIKHAN** of Reg. No. **MB206202** during the year **2021-22** and the report is submitted in partial fulfillment of the requirements for the award of the degree of “**Master of Business Administration**” as prescribed by the “**Bengaluru City University**” under the guidance of **Prof. RAVISH B.A.**

Place: Bangalore

Date:

Principal
Dr. BA Anuradha





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This is to certify that this Project entitled “**DIGITIZATION OF AGRICULTURAL SECTOR- PROBLEMS AND PROSPECTS**” Submitted by **ABBASALIKHAN** bearing Reg. No. **MB206202** is an original work of the student and is being submitted in partial fulfillment of the requirement for the award of the degree of “**Master of Business Administration**” of “**Bengaluru City University**” under the guidance of **Prof. RAVISH B.A.** This report has not submitted earlier either to this university/ institution for the fulfillment of the requirement of a course of study.

Place: Bangalore

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Guide's signature

Prof. RAVISH B.A.





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CERTIFICATE OF HEAD OF THE DEPARTMENT

This is to certify that this Mini Project Report is submitted by **ABBASALIKHAN** is an original work of students and is submitted in partial fulfillment of the requirements for the award of the degree of “**Master of Business Administration**” of “**Bengaluru City University**” under the guidance of **Prof. RAVISH B.A.** This report has not submitted earlier either to this university/institution for the fulfillment of the requirement of the course study.

Place: Bangalore

Date:

Prof. Deepak Singh MC

Associate Prof. and HOD





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Dr. BA Anuradh



STUDENT DECLARATION

I hereby declare that the Project Report entitled “**DIGITIZATION OF AGRICULTURAL SECTOR- PROBLEMS AND PROSPECTS**” has been prepared by me under the supervision and guidance of **Prof. RAVISH B.A**, during the year **2021-22** in a partial fulfillment of the university regulations for the award of the degree of “**Master of Business Administration**” by “**Bengaluru City University**”.

I further declare that this project is based on the original study undertaken by me and has not been submitted at any time to any university or institution for the award of any other degree or diploma.

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ACKNOWLEDGEMENT

This Project has been a great learning experience in valuable source of knowledge and information for me, which was only possible through the guidance and help of some eminent people, to whom I would like to, render my deepest appreciation and regards.

I like to thank the principal **Dr. B.A.Anuradha**, other faculty members and the institution itself without whom this experience would have been a distant reality.

I am really thankful to **Prof. Ravish B.A** faculty of management department, **Al-Ameen Institute of Management Studies**, for his valuable guidelines and suggestion which helped me to structure my Mini Project.

I am also thankful to **Bengaluru City University** for making this Mini Project a part of our curriculum. It has been a wonderful experience which has helped me gain knowledge and practical exposure in the process of the Mini Project.

Last but not the least I present my heartfelt thanks to my family, Friends and well-wishers for their help and support.

ABBASALIKHAN

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CHAPTER-1

INTRODUCTION



✓ **INTRODUCTION:**

In India high agriculture growth is needed for overall growth of the economy and also to provide employment and food security to majority population. Growth may be higher during the previous two decades, but inclusive growth in terms of focus on agriculture has been missing. If we want pro-poor growth and real development, high agricultural growth and rising incomes for farmers are essential and digitization is an important variable for fast growth in this sector.

In recent past, the growing use of latest technologies has been making profound impact in each and every field including agriculture and its related areas. To increase the agricultural productivity to the optimum level, acceleration of process of knowledge accessibility and bridging of knowledge gap among farming community is a must. Adoption of the digital technology can revolutionize Indian farming sector and can benefit all farmers, including small land holders, marginalized and poor farmers, etc.

✓ **Agriculture contributes to Indian economy in several ways:**

1. **Largest employment providing Sector**-1.21 billion population of the entire nation depends on agricultural outputs for the fulfillment of their food requirements. India produces a lot of food grains such as millets, cereals, pulses, etc. It provides occupation to most of the people resulting in improving the financial status of the citizens. Agricultural growth has a direct impact on poverty eradication.
2. **Feeds the expanding population**- A major portion of the foodstuffs produced is consumed within the country. Agriculture continues to play a dominant part in the overall economic scenario of India.
3. **Major role in GDP**- Indian Agriculture contributes to the country's GDP. The following Graph shows its Contribution in last few years.

✓ **Digitization in Agriculture:**



The convergence of agriculture and information and communication technology (ICT) is a new development in India which is intended to increase efficiency in every process of production, distribution and consumption. This system can be also described as an integrated agricultural system.

The main keys of the integrated agricultural system includes data processing and digital control machinery for digitization, data transmission, data collection, network and automation of agricultural activity. The current agriculture has converged with technologies such as information technology (IT), biotechnology (BT), environment technology (ET), and nano technology (NT).

And it mainly focuses on areas such as cost reduction during production level, reduction in labor burden, high quality and organic production, and quality management in facility. Second, it is important to meet consumers' needs at the production and distribution stages through building a system, which delivers food safety information. This means, IT applications need to be expanded in the agriculture farming automation system.

Furthermore, at the distribution and processing stages, advanced distribution technologies using IT need to be introduced including the convergence of distribution data. These are the very small portions of the digital agriculture system that is part of making big database of the whole agriculture system.

✓ **SCOPE FOR DIGITIZATION IN INDIA:**

To meet the challenges of climate change use of ICT in agriculture is necessary than optional and can prove to improve the conditions of small holder farmers. E-agriculture opens up opportunities for non- traditional players in the agriculture value chain. It provides reliable data for research and policy-making, and the fill the current information gap.

Better data will allow government as well as non-government organizations to design farmer-friendly policies and planned interventions. It also brings transparency in agricultural supply chains, removing the huge inequality that exists and guaranteeing adequate income to the farmers.

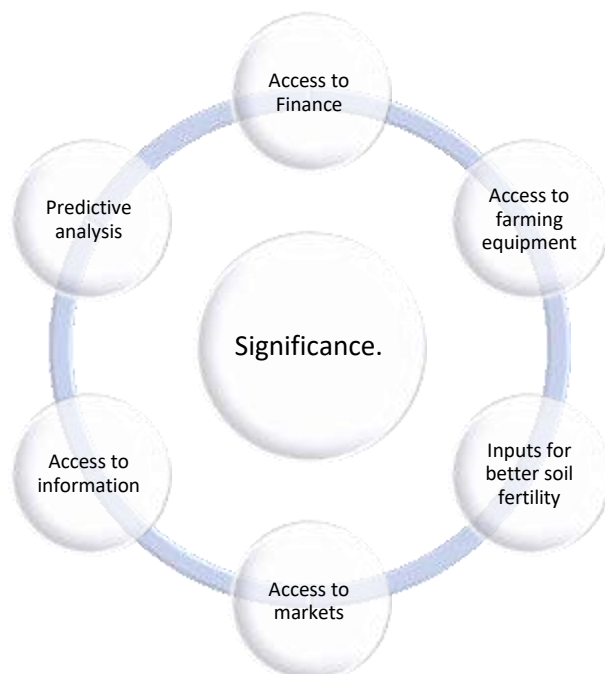
Digitization of agriculture or e-agriculture is seen as an emerging field focused on enhancing agricultural and rural development through improved information and communication processes. "E-agriculture is a multi-stakeholder process that involves bringing together many different ministries and departments as well as private sector players such as insurance, banking and mobile network operators.

Digital farming provides real time flow of data from the fields to the company office with regard to day to day farming operations. This enables to take care of entire value chain, right from

sowing to harvesting through agribusiness. With the help of digital system advice can be given to farmers and field staff attached to them can ensure best practices on their fields.

The digitization of agricultural practice provides traceability across the entire supply chain. It also helps farmers to connect with the buyers and initiate sale by availing online market place, it gives farmer more independence and option to choose a buyer.

✓ **Significance of Digital Transformation:**



A digital transformation will help the farmers in multiple ways; the following are the key needs from Digital transformation:

1. **Access to Finance:** The farmers in India today face acute shortage of money due to the various challenges highlighted earlier. Digital transformation helps the farmer in getting access to funds from various sources due to the exposure and awareness they get from being digital.
2. **Access to Farming Equipment and New Technology:** In many of the developed countries, Robotics play a bigger role in farming. India is yet to see this advancement and hence there is a crucial need for this transformation.
3. **Inputs for Better Soil Fertility and Soil Structure:** The farmer in India rarely does an investigation of the fertility of the soil and hence the kind of seed to grow. What has been done in the past generations is what the Indian farmer today develops. There is thus a need to have a more scientific approach to agriculture.

4. **Access to Markets:** The farmer, though he does all the hard work today, is not compensated fairly for the work he does. Due to middle-men involved in the buying and selling of the farmer's products, the actual farmer gets a pittance compared to the profits that the middle-men make.
5. **Access to Information:** The farmer today bases his produce based on his peers and what has culturally been grown in his land. What worked yesterday or for someone else, does not always mean a success for today or for ourselves. The farmer will have to try out new experiments based on the information available which will enable him/her to produce more and get the right financial backing. The digital transformation is expected to handle this appropriately.
6. **Predictive Analytics:** Using the latest technology available in the market, if the agriculture sector is ignited with this digital transformation, the amount of data that would be available will help the farmer in growing the right crops at the right time. Thus the standard of living for the Indian farmer would go up, which would in turn encourage others to get engaged in farming.

✓ **Digital India and Initiatives in Agriculture Sector:**

Digital India was launched by the Prime Minister Shri Narendra Modi on 2 July 2015. Under Digital India Programme some of the important technology Programmes initiated by Government directly connected to and benefiting farmers are as follows:

1. **National e-Governance Plan in Agriculture (NeGP-A)2 :** The Government of India is implementing National e-Governance Plan in Agriculture (NeGP-A) in the entire country aiming to provide information to farmers free of cost on seeds, fertilizers and pesticides, Government schemes, soil health, crop management, farm machinery, fishery inputs, irrigation infrastructure, weather and marketing of agriculture produces.
2. **Farmers' Portal:** Farmers' Portal is a one stop shop for farmers and covers information on four important pillars of agrarian economy namely, agriculture, horticulture, fisheries and animal husbandry. Farmers can get relevant information on a wide range of topics such as seeds, fertilizers, pesticides, credit, good practices, dealer network, availability of inputs, agro met advisory etc.
3. **mKisan Portal:** The mKisan Portal was launched on 16 July 2013. This Portal subsumes all mobile based initiatives in the field of agriculture and allied sectors. It brings together SMS (both push and pull), Interactive Voice Response System, and Unstructured Supplementary Service of Data (USSD). This Portal also enables all Central and State

Government Organizations in Agriculture and allied sectors to give information/advisories/services to farmers by SMS in their language.

4. **Kisan Call Centers (KCC):** Kisan Call Centers provide information to farming community through toll free phone number. The restructured KCCs are now more professional with the technological innovations like Voice/Media Gateways, Call Barging, Voice Mail System, etc.
5. **Kisan Suvidha App:** Kisan Suvidha App is launched to provide information on five important parameters- weather, input dealers, market price, plant protection and expert agro-advisories.
6. **Crop Insurance App:** Crop Insurance Portal launched in June 2015 aiming to provide insurance services to farmers faster than before.
7. **Agri Market App:** This App can be used to get the market price of crops in market within 50 Kms of the device location. This App automatically captures the location of persons using mobile GPS and very beneficial for farmers, traders, extension workers, researchers and policy makers.
8. **Soil Health Card (SHC) Portal:** The Portal aims to generate Soil Health Cards automatically based on either Soil Test-Crop Response (STCR) formulae developed by ICAR or General Fertilizer Recommendations provided by State Governments.
9. **Fertilizer Quality Control System (FQCS) Portal:** The FQCS portal is a web based and configurable workflow application developed for processing of fertilizer sample collection, testing and generation of analysis reports.
10. **Participatory Guarantee System- India (PGS) Portal:** The PGS-India Portal is a web based application that enables small and marginal farmers to have easy access to the organic certification system.

✓ **Digital Agriculture or NeGP-A 2.0:**

Agriculture 2.0 (Digital Agriculture) an extension of existing Agriculture NeGP 1.0 is launched to strengthen the earlier efforts. Some of the key components of Digital Agriculture 2.0 are its extension to animal husbandry, dairying, fisheries and also to Indian Council of Agricultural Research. Some of the key thrust areas identified under Digital Agriculture 2.0 are:

1. **Real Time Price Information:** Latest crop prices are already being made available to farmers and all other stakeholders through Agmark net Portal of the Ministry of Agriculture.
2. **Online ordering of inputs:** Feasibility of online ordering of inputs like seeds, fertilizers and pesticides by farmers and all other stakeholders will be studied for further implementation through both public and private outlets.
3. **Online cash, loan, relief payments with mobile banking:** These are also being covered under ongoing efforts on Direct Benefit Transfer (DBT) and financial inclusion by Digital Financial Services (DFS).

The project will benefit small farmers. It seeks to:

- Transform rural India into a digitally empowered knowledge economy.
- Provide universal phone connectivity and access to broadband in 250,000 villages.
- Extend timely services to farmers through information technology and its tools.
- Enhance efficiency in agricultural governance through digital literacy and electronic delivery of services. This article briefly highlights government's initiatives and suggests the need for harnessing potential of digital India for agricultural development.

Agriculture is getting more and more digital and its future lies in leveraging real time analytics and automated systems. In global economy in past few decades digital technologies have transformed virtually each sector including agriculture. New digital technologies accelerate agricultural growth. Both the Central and State Governments should adopt different steps to increase investment in agriculture research and to create an environment for promoting agriculture business through policy initiatives such as:

- The Government wants to promote virtual agricultural market by providing common electronic platforms to farmers for selling their produce to buyers all over country. National Agriculture Market online trade portal has been created.
- Rashtriya Krishi Vikas Yojna encourages states to allocate more funds to agriculture and allied sector by undertaking appropriate growth oriented projects.
- Direct Benefit Transfer system and unique identification number, Aadhar, to support the transfer of government subsidies to citizens; these platforms can also be used for government interventions with regard to soil health, Prime Minister Krishi Sinchai Yojna, national markets and weather indexed insurance.
- Modern equipment and improvised machines can enhance production and storage.
- Kisan call centers provide services to farmers where they can directly interact with the executives for their queries. They are provided information through mobile phones with

regard to suitable techniques needed to maintain the fertility of the soil to increase production is showing positive results.

In rural sector e-Agriculture focuses on agriculture by using information and communication technology for better conceptualization, design, development, evaluation and innovation. Critical data pertaining to agriculture can be generated, processed, transmitted, disseminated, sorted, archived and retrieved through mobile phones. Some apps are available and more can be developed to address farmers' specific needs. Mobile devices and the internet facility keep the farmers updated with relevant information related to farming. The Government has set up three portals such as farmer portal, Kisan call center and m-kisan portal to help farmers take informed decisions in various agro climate conditions for better farming.

NABARD has also designed agricultural portals for farmers. The entrepreneurs with startups are exploring opportunities in the field of automation, cloud integration and communication. This trend is a positive indication for government sector and private sector jointly working through digitization to revolutionize agriculture by transforming its structure and reshaping it with the modern equipment and techniques.

✓ **DIGITAL TECHNOLOGIES IN AGRICULTURE:**



✓ **Applications of Digital Agriculture**



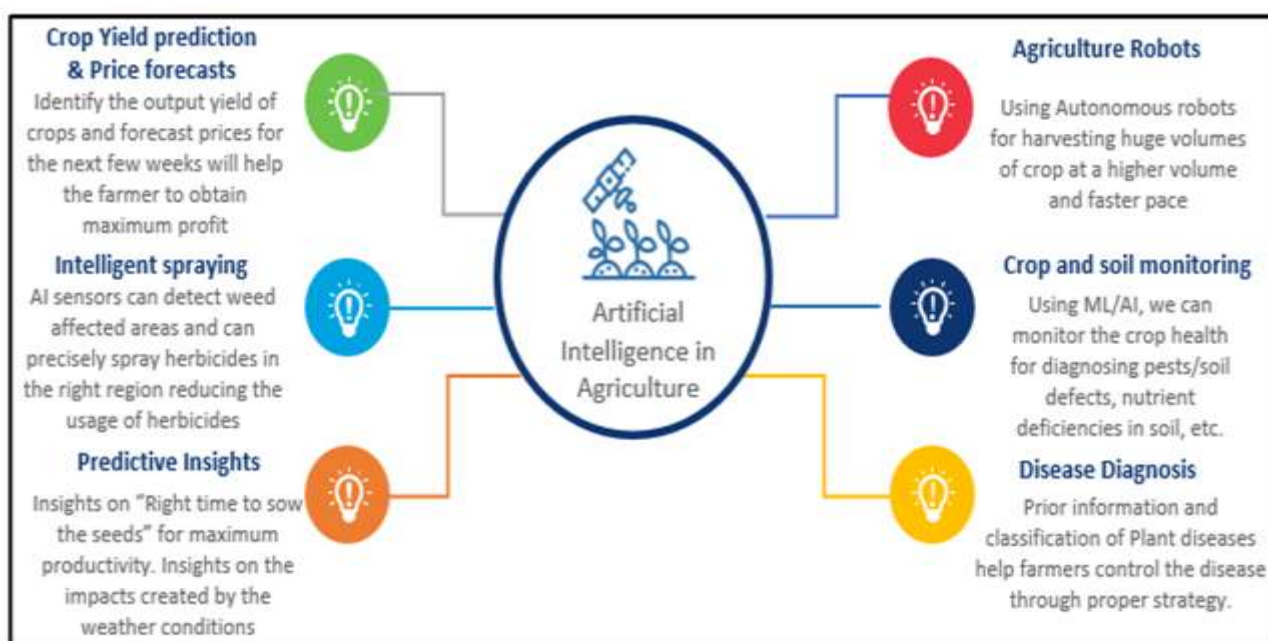
There are a wide variety of applications and use of digital technology in Agriculture. Some examples and possibilities are listed below.

1. **Agro Pad:** AI-powered technology helping farmers check soil and water health. AgroPad, developed by IBM, is a paper device about the size of a business card. The microfluidics chip inside the card performs on the spot a chemical analysis of the sample, providing results in less than 10 seconds. A drop of water or soil sample is placed on the Agro Pad and the set of circles on the back of the card provide colorimetric test results; the color of each circle represents the amount of a particular chemical in the sample. Using a smartphone, the farmer can then take a single snapshot of the Agro Pad by using a dedicated mobile application and immediately receive a chemical test result for a water or soil sample.
2. **Plantix and crop disease identification over Whatsapp:** Developed by PEAT, a German startup, Plantix11 is a mobile application, which is a massive database of pictures of plant disease that can be used for comparison. This helps in identification and subsequent diagnosis and treatment. PEAT aims to support farmers across the world to enhance their agricultural output through timely and informed disease treatment. The facility is now also available over Whatsapp where just an image of the infected leaf is required to be sent to the Plantix Whatsapp number and the diagnosis is messaged back to the sender via Whatsapp in real time and many farmers in India are using this service.
3. **Use of drones to fight locusts in India:** Locusts have been attacking and destroying large swathes of India's crops on a regular basis since the winter months of 2019 and the attack is continuing. The Agriculture Ministries both at the federal level and the state levels have been using drones for anti-locust spraying.
4. **Grain Bank Model of 'Ergos':** Ergos has one of the most unique models in the Agri-tech landscape. They have a "Grain Bank model" that is providing doorstep access to end-to-end post-harvest supply chain solutions to small and marginal farmers, i.e.

enabling farmers to convert their grains into tradable digital assets, avail credit against those assets through partner NBFCs and Banks, and get better prices for their produce.

5. **Digital tools for agriculture farm monitoring and risk management:** Yuktix Technologies is an Agritech startup based out of Bangalore that focuses on creating digital tools for agriculture farm monitoring and risk management. The solution helps growers make decisions and implement best practices that increase yield and cut losses.

AI (Artificial Intelligence) in Agriculture:



✓ **Government Initiatives for Digitization of Agricultural Sector:**

1. **Virtual Agricultural Market**-The Government wants to make a common electronic platform which will allow farmers to sell their produce to buyers, anywhere in the country. The Centre has set aside Rs. 200 crore for the creation of this National Agriculture Market online trading portal. The platform will be launched on April 14 and will tackle the problem of distress selling. It aims to connect 585 and is in the country.

2. **Rashtriya Krishi Vikas Yojna**- It is intended to encourage the states to allocate more funds and agriculture and allied sector and to incentivize the states to generate additional growth in agriculture and allied sectors by planning and undertaking appropriate growth-oriented projects.
 3. **Crop Insurance Scheme**-Government has approved the Pradhan Mantri Fasal Bima Yojana. In this scheme, a premium of 2% of the sum insured will be charged from farmers for all Kharif crops and 1.5% for all Rabi crops. The Government will cover the remaining insurance premium.
 4. **Prime Minister Krishi Sinchai Yojna**-The Government's also had plans to expand irrigation. In order to reduce dependence on the monsoon, the Government had approved a sum of Rs. 50,000 crore to be spent on setting up irrigation projects in rural areas. The major objective of the Pradhan Mantri Krishi Sinchai Yojana is to achieve convergence of investments in irrigation at the field level.
 5. **Institutions**: State government's department of agriculture, state agricultural universities, Krishi Vigyan Kendra's, regional research institutes, farmer- producers organizations, corporate/industrial/business houses and multinational companies engaged in manufacturing/production and distribution of farm inputs, farm equipment & machinery, rural financial institutions, insurance companies, among others, have a significant role and added responsibility to contribute their professional knowledge to develop digital ecosystem for agriculture and make available to farmers.
 6. **Mobile Apps and internet facility to farmers**- the Mobile phone is the preferred delivery medium under Digital India with a focus on m-governance and m-services. The greatest need is to deliver targeted and timely information to farmers based on their needs. The empowerment that comes from providing farmers with informed option is transformational. Mobile devices and the internet facility keep the farmers updated with all the relevant information related to farming. The call centers are also opened to help with the queries of the farmers instantly for the entire year.
- ✓ **The main objectives of digital India program and farming are listed below:**
1. To create a virtual agriculture market.
 2. To ensure more farmers get access to crop insurance scheme.
 3. To encourage use of modern technology and equipment.
 4. To increase reach of Soil Health Card Scheme.
 5. To set up irrigation projects in rural areas.

6. Early Harvest Programmes.

✓ **The Future of Indian Agriculture:**



The future is going to be more challenging with the rise of population and the growing demand for food. Mr. Rajesh Agarwal, MD, Insecticides India Ltd in his report on “Future of Agriculture in India: Is the nation ready” emphasized that, on the basis of the several researches on the rising food price and the cascading effects on the economy has evidently proved that the dream of India to see two digit growth rate unless the rural economy is freed and speeded up.

With a considerable budget allocation of Rs 35,984 crore, along with the Digital India Scheme the govt. has already taken few steps ahead to see the overall development of the agricultural Sector. With these developments, India is expected to compete with the world in IT interface with e-Governance and eservices getting maximum exposure. It would take the agricultural Sector to the peak of growth by transforming its structure and reshaping it with the modern equipment and techniques. Driven by such digital engagement, Indian firms are expected to make a major contribution in empowering the backbone of the country i.e.-agriculture with their IT expertise. It is again not free from the challenges such as:

1. Development and Up-gradation of agricultural content from time to time.
2. Ownership issues of public and Government generated Data.
3. Inadequate use of Public-private partnership.
4. Making the farmers of every remote place aware regarding the modern technology and training them to use them for their purpose.
5. Monitoring of the farmers regarding the instructions provided.

6. The expenses to adapt and maintain the automated systems, robotics, and other modern equipment.
7. The expertise to use the modernized machines.

➤ **NEED FOR THE STUDY:**

1. To study about the digitalization of agriculture in India.
2. To identify the problems existing in digital agriculture.
3. To study the future impact digitization of agriculture.

➤ **STATEMENT OF THE PROBLEM:**

An important step in the journey towards digitizing Indian agriculture is to identify and define problem statements and gaps that exist in the value chains. By looking at each step in the farming cycle, we can map different data types and source, match them digital and physical data together, and find relevant tools available for that phase. We find that lower cost of technology, easy to use portable hardware, pay per use renting models, policy support and harnessing the power of farmer collectives are essential for the success of Digital Agriculture in India. Unless the network performances and bandwidth speeds are significantly improved, implementation of digital farming will remain problematic. The farmers lack knowledge and education regarding the new technologies and few people refuse to adapt these ideas because of fear of fraud and loss.

CHAPTER-2

RESEARCH METHODOLOGY



➤ **LITERATURE REVIEW:**

Krishna Reddy. P and R. Ankaiah (2005) in a survey stated that the Indian farming community is facing multitude problems to maximize crop productivity. One of them is that expert/scientific advice regarding crop cultivation is not reaching the farming community in a timely manner.

Annemie Maertens, Christopher B Barrett (2012) in a study referred that technological improvements, perhaps especially in agriculture, drive sustainable advances in labour productivity, incomes, food security and general economic growth.

Robert Chambers (1987) discussed the transfer-of-technology (TOT) model of agriculture research in which scientists largely determine research priorities, develop technologies in controlled conditions, and hand them over to agricultural extension to transfer to farmers.

Tanvi Deshpande (2017) highlights about the agriculture output becoming volatile. Findings of the study shows that 86% of the landholdings are less than 2 hectares and informal sources of credit constitutes 40% of loans.

State of Indian agriculture (2015-16), talks about Indian agriculture, performance, challenges and way forward. It explains the growth of the agricultural sector, regional variations in agricultural growth, capital formation in agriculture, production performance, performance of the horticulture sector, correcting land use pattern, rejuvenating soil health, drought proofing and water use efficiency, agriculture to climate change, managing agricultural inputs better etc.

Agricultural situation in India (2017), gives farm sector news, general survey of agriculture, articles on agro economic research, commodity reviews and trends in agriculture.

NITI Aayog, Government of India (2015), states about raising agricultural productivity and making farming remunerative to the Indian farmers. The paper offers ideas on how these problems can be addressed so as to accelerate agricultural growth and bring remunerative prices to farmers. International Crop Research Institute for the Semi Arid Tropics talks about the digital agriculture, pathway to prosperity. This study aims to make agriculture profitable, improve farmer livelihood and reduce poverty.

❖ **TITLE OF THE STUDY:**

“Digitalization Of Agricultural Sector- Problems and Prospects”

❖ **OBJECTIVE OF THE STUDY:**

1. To analyze the impact of Digitization on Agriculture.
2. To study the present scenario of agricultural sector after digitization.
3. To study the digital Initiatives by the government to address farmers problem.

❖ **RESEARCH METHODOLOGY:**

SOURCES OF DATA COLLECTION: The data is collected through the secondary data.

SECONDARY DATA: The secondary data collected are

- Through Internet
- Journals
- Newspapers
- Articles
- Magazines
- Research papers

❖ **DISCUSSION:**

The secondary data will be collected, analyzed and compared with each other in order to get the required necessary information about the report so the related answers are found and put into observations to formulate necessary results. The report will be completely based on the readily available data by the respondents before.

❖ **LIMITATIONS OF THE STUDY:**

1. The study is based on the primary and secondary data previously collected.
2. The data may not be more accurate as the respondents would have shown less interest.
3. Time constraint.

❖ **CHAPTER SCHEME:**

➤ **CHAPTER: 1- INTRODUCTION**

This chapter includes Introduction on agriculture and digitization, impacts of digitization of agriculture and its future, government initiatives taken for the farmers to promote digital agriculture and problems and prospects of digitization on agriculture.

➤ **CHAPTER: 2- RESEARCH METHODOLOGY**

This chapter includes background of the study, statement of the problem, need, importance, and objectives of the study, plan of analysis, limitation of the study.

➤ **CHAPTER: 3- SWOC ANALYSIS.**

Deals with the Primary objective of SWOC Analysis to help know about the problems and prospects of the agricultural sector after digitalization.

CHAPTER: 4- OUTCOME IN STUDY

It deals with the analysis and interpretation of data with the help of charts, diagrams, tables and graphs.

➤ **CHAPTER: 5- LEARNING EXPERIENCE AND CONCLUSION**

It deals with the summary of findings, conclusion and suggestion.

CHAPTER-3

SWOC ANALYSIS



➤ **STRENGTHS:**

1. **Expedite communication**- Automated workflows are very helpful for agriculture teams. Using paper forms, data need to be manually collected, delivered and processed. With mobile forms and automations, agriculture data can be easily collected in the field and instantly sent to the central office and customers.
2. **Effective monitoring**- Technology can allow farmers to better assess the general health of your crops. Tools such as drones can be used to predict soil quality and planning seed planting patterns. Today, animations can show the development of a crop enabling a better management. This also helps farmers monitor pest populations and weed activity on their land.
3. **You can connect your forms with other apps and databases**- Using paper forms, agriculture data must be manually gathered, delivered and shared with a variety of systems. This method might result in delays and human errors. By deploying mobile forms, you can push and pull their data between their forms and other platforms. Attachments can even be uploaded to digital records apace with form PDFs.
4. **Informed decisions**- Farmers will be able to quantify and understand the performance of each decision in a way we've never been able to do before. Digital technology has changed the way managers take decisions, as well as the methods and practices to achieve goals. Farmers will benefit from digital transformation in agriculture because they will get a better crop and new methods to manage them.
5. Governance and Institutional Reforms through banks and various governmental bodies.
6. Simple and Farmer Friendly.
7. Fixing of Accountability and strengthening of local body system of governance.
8. Simple and Farmer Friendly Governmental Regulatory Measures.
9. Provides opportunities for better resource management and so could reduce wastage.
10. Non-uniform fields can be sub-divided into smaller plots according to their specific requirements.

➤ **WEAKNESS:**

1. Initial capital costs may be high and so it should be seen as a long-term investment.
2. It may take several years before you have sufficient data to fully implement the system.
3. Extremely demanding work particularly collecting and then analysing the data.
4. The excessive use of chemicals by the help of machines reduces the fertility of the land.
5. Lack of practical knowledge the farmers cant handle the machines properly.
6. The robotic machine could not change their culture, we have to set their programme manually.
7. Most of the farmers are illiterates so they are unable to use the modern machines.
8. Overuse of machines may lead to environmental damage.
9. The cost of maintenance is very high.
10. It is efficient but has many side effects and drawbacks.

➤ **OPPORTUNITIES:**

1. Timely information on weather forecasts and calamities.
2. Better and spontaneous agricultural practices.
3. Better marketing exposure and pricing.
4. Reduction of agricultural risks and enhanced incomes.
5. Better awareness and information.
6. Improved networking and communication.
7. Facility of online trading and e-commerce.

➤ **CHALLENGES:**

1. Insufficient agricultural infrastructure and support facilities and lack of planning.
2. Insufficient institutional will power and capacity to deliver farmers specific services.
3. Lack of awareness regarding suitable agricultural methods among the farmers.
4. Insufficient use of ICT for agricultural purposes, etc.
5. Lack of education and learning.
6. By 2050 the world will have additional 2 billion and India has to feed 750 million.
7. India is currently using resources 50% faster than world can sustain.
8. Current farming technology costs far more than most farmers can afford.

CHAPTER-4

OUTCOMES OF THE STUDY



➤ **OUTCOMES:**

- ✓ Digitization will improve rural connectivity and will be key in providing low cost data and access to information and will empower rural youth to realize their full potential, farmers to increase their profitability by accessing equitable markets and rural businesses to offer value added services.
- ✓ This enables rich and dynamic data ecosystem providing advanced analytics to inform farmers regarding best economic options to maximize profitability and minimize risk.
- ✓ Remote sensing provides large data resource to support the development of derived weather products (radar), improved hydrology and watershed management, soil health, crop coverage and crop health estimates among other application.
- ✓ It can be helpful in bringing farmers in touch with profitable customers and help in building sustainable partnership to improve farming productivity.
- ✓ It is also evidently clear from the analysis that the more the educated members the more the knowledge of technology prevailed in framers families.
- ✓ It is found out that the farmers with younger age strongly agree that future is safe with usage of technology. The younger generations have more information and awareness on the usage of technology in farming.
- ✓ Most of the farmers stated the non-requirement of technology in farming. This strongly indicates that there is lack of knowledge among the farmers with regard to digital India.
- ✓ There is a lack of knowledge and awareness in the farmers regarding the digitalization of agriculture.
- ✓ The availability of affordable devices and the price of data is a key constraints for many smallholder farmers.
- ✓ With few options, smallholder farmers have had to adopt digital tools to access much-needed information or inputs, get paid or find buyers for their products. Smallholder

farmers have found that access to digital tools has made them more resilient to the pandemic than those who do not use these tools.

SUGGESTIONS:

- ✓ Engage with governments and donors leading digital agriculture projects worldwide.
- ✓ Seek partnerships with organizations that have complementary assets.
- ✓ Prioritize digital agriculture advisory tools over third-party platforms like Whatsapp and Facebook Groups.
- ✓ Digital agriculture solutions should solve a range of challenges facing stakeholders in agricultural value chains rather than one specific problem.
- ✓ Local agents are to be appointed by the government exclusively to monitor the Digital India assistance to all the marginal, small and big farmers.
- ✓ Easy access to the tutorials in local languages can be coordinated to bring impact on the services, vernacular e-mail services will help the Indian farmers to connect and communicate better.
- ✓ More could be done with effective planning and execution for the betterment of farmers lives in India.
- ✓ The Digital India initiative of the Government of India can be successfully implemented with the proactive approach and practical approach of the farmers, NGO's and government authorities working together.
- ✓ There are certain other challenges that are encountered by the authorities and farmers. They are cyber-crimes like phishing, spoofing, internet fraud, identity theft, and credit card account theft and so on. Proper guidance and awareness should be created to the farmers at all levels.

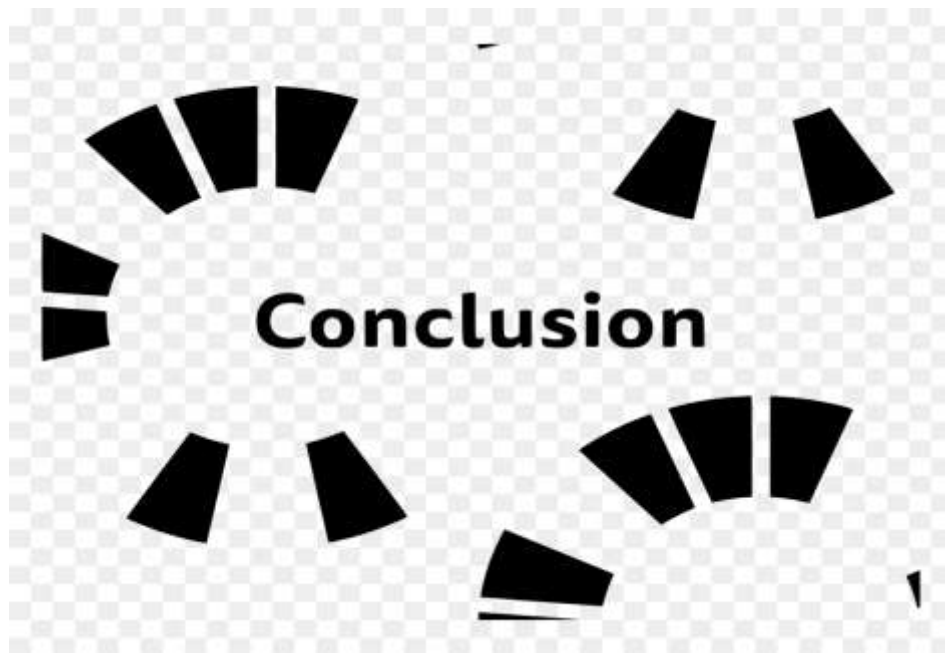
- ✓ Apart from creating a well-designed web portal, accessibility of technology and resourceful personnel always should be the criteria for the successful implementation of Digital India Program.

➤ **THE FUTURE OF INDIAN AGRICULTURE:**

The future is going to be more challenging with the rise of population and the growing demand for food. Mr. Rajesh Agarwal, MD, Insecticides India Ltd in his report on “Future of Agriculture in India: Is the nation ready” emphasized that, on the basis of the several researches on the rising food price and the cascading effects on the economy has evidently proved that the dream of India to see two digit growth rate unless the rural economy is freed and speeded up. With a considerable budget allocation of Rs 35,984 crore, along with the Digital India Scheme the govt. has already taken few steps ahead to see the overall development of the agricultural Sector. With these developments, India is expected to compete with the world in IT interface with e-Governance and eservices getting maximum exposure. It would take the agricultural Sector to the peak of growth by transforming its structure and reshaping it with the modern equipment and techniques. Driven by such digital engagement, Indian firms are expected to make a major contribution in empowering the backbone of the country i.e.-agriculture with their IT expertise.

CHAPTER-5

LEARNINGS AND CONCLUSION



➤ **CONCLUSION:**

Hence it can be concluded that the technology platform will bring the desired outcomes in agricultural sector like reduced costs, improved productivity and quality, improved prices, reduced risks and ultimately sustainable ecosystem.

Many software companies (including Microsoft) have entered into agreements with various State Governments in India to help build this digital transformation. This has already seen much progress in Hyderabad, Assam, Karnataka to name a few.

Policies need to adapt to this changing Digital world to ensure that the challenges mentioned above are overcome and lead to increased efficiency in the production, distribution and consumption of agriculture produce.

Digital transformation will provide access to finance through exposure and awareness due to digitization, forecasts on climate change enables right decisions, accessibility of farm equipment and new technology, inputs for better soil fertility and soil structure, access to markets, access to information, small holdings utilization and enables predictive analysis.

This technology platform will reduce costs, improve productivity and quality, improve prices, reduce risks and create sustainable ecosystem.

Digital technologies offer the potential to achieve the necessary conditions for scale, with distributed low cost and customized delivery, creating a unique opportunity for private enterprise and innovation to thrive. High and inclusive growth can be well promoted with digitization.

For India, at a time when national, regional and international research institutes have already developed technologies, farmers need motivation and encouragement to adopt these proven yield-enhancing, cost-efficient and environment-friendly technologies. Finally digitization will change the scene of Indian agriculture in future and guarantee higher income to farmers and reduce distress.

Although agricultural technologies are fast evolving in India and a mix of business models are driving the ecosystem, there is a need to design the pathway to successful commercialization and to scale it up by utilizing the right incentives and policy support.

Technology will continue to play an important role while the dynamics of the agriculture sector changes and produces new challenges. With the private sector playing an increasingly important role in investments, operations, and expertise, agriculture will gain immensely as the public sector catalyses these efforts.

Indian farmer has been a backbone to the development of the nation. Digital India is more for the poor and underprivileged, which aims to bridge the gap between the digital haves and have-nots by using technology for citizen. Farmer should be of priority for the progressive growth of Indian economy. Hence, the present status leaves a hope that Digital Platforms help the Indian farmers' dreams become true.

As the Indian Agriculture and Allied sector is on the verge of adopting modern technologies, such as IoT, AI/ML and agri-drones for unmanned aerial surveying, Indian and foreign agritech players can play a vital role in supplying these advanced technologies to farmers.

Currently, there are few players in the market, but catering to ~267 million farmers in a country exhibits a huge opportunity for private and foreign entities to expand their footprint in the country. However, influential factors that will define the success of digital agriculture in India are technology affordability, ease of access and operations, easy maintenance of systems and supportive government policies.

Therefore, it can be concluded that in the upcoming years Indian Farmers would feel the compulsion of improving food and nutritional security along with keeping in mind the all the other aspects discussed earlier. 'Digital India' is all set to transform the interface of the country's socio-economic dynamics. It is deemed to bring systems and infrastructure up to speed and leverage the country's workforce, establishing a firm foundation towards sustainable practices and eventually progress.

CHAPTER-6

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DATE OF SPOKE WITH GUIDE	TOPICS DISCUSSED	SIGNATURE OF GUIDE
15-Nov-2021	Discussion of title of the study, objectives of the study, statement of the problem, and need of the study.	
24-Nov-2021	Discussion of research methodology, tools for data collection and limitations of the study.	
26-Nov-2020	Discussion of digitization in agriculture and SWOC Analysis.	
05-Dec-2021	Discussion of outcomes of the study, learning experiences and conclusion.	