DATA SCIENCE APPLICATION IN AGRICULTURE MARKETING

Prof. Pallavi Awate

(MSc.Comp.Sci), SIES College of Arts, Science, Commerce, Nerul (E)

ABSTRACT

In Indian Economy Agriculture plays vital role. India produces fruits & vegetables in huge percentage comparing to other countries. Though it is largest sector, suffers from calamities such as sudden climate change, floods, less water supply, monsoons, etc. Now Its time to apply data science tool in agricultural sector to promote farmers to use digital apps for best crop cultivation, make farmers more aware about their farms. Farmers always prefer traditional ways of farming from selecting seeds to till produce vegetables. Sometimes they misuse the fertilizers because they don't know the right fertilizer for their soil. Data science is just one step ahead to assist farmers. Using Data science tool now farmers can cultivate crops successfully. Now its time to assist farmers using Data science tools for product selling. Despite of successful crop cultivation farmers faced many problems in product selling market because they didn't receive correct values for their products, this situation leads to loss in farming or simply unsuccessfull farming. Now lets see how Data science applicable to break this long intermediatory agent chain for product supply.

Keywords – *agriculture, farming, marketing, digital app.*

INTRODUCTION

Data science is applied in all fields such as medicine, business, health care, the military, and science. It is now time for helping voices of farmers in the agricultural domain. Agriculture is the most significant sector of the Indian economy. Data science is applicable in the agricultural field in the following ways:

1) Mapping of digital soil and weather

2) Mapping of water resources and soil types

3) Optimise the pattern of crops traditionally taken.

4) Digital study of soil type and water resource. This combined study suggests some new crops   belonging to the same category.

Farmers can now successfully cultivate a variety of crops by utilising the data science tool. However, once this new marketing issue is resolved, they will receives profit in farming. Despite the crop's successful cultivation, farmers still suffer by farming issues leads to unsuccessful farming. What's the reason behind this? The reason for this is the long intermediator agent-product-supply chain. Let's take a look at this marketing strategy in detail. Consider the following example. Farmer A produces tuberose blooms throughout the year, and it has clustered spikes which are rich in fragrance. This flower is well-known for its strong fragrance, and its essential oil is used in perfumes and attars. It belongs to the family Amaryllidaceae and is native to Mexico.

Case A]

Farmer Side View.

Farmer A now produces tuberose flowers approximately 20 kg per day. It has daily farm operations costs around Rs. 1,000 per day . Because of the farmer's lack of knowledge about a proper buyer, he looks for the same in his village or near area . The buyer acts as an agent between the farmer and the marketplace. Now deal placed among farmer A and middleman at very first stage The farmer who sold 20 kilogrammes of tuberoses for Rs 120 per kilogramme now received Rs 2400 because 20 x 120 = 2400

Finally, for the farmer, profit equals selling price minus daily farm operational cost. 2400-1000 = 1400 Daily.

Disadvantage of Farmer

Now this direct marketing and un sufficient knowledge of buyers and market place. Dispite of farmers did lots of hard work but finally didn't got the actual money what he deserv for his product. In Indian agriculture field farmer not allowed to decide selling price for their own products. They always dependent on selling values decided by others. Farmers spent huge amount of money for crop cultivation with large valuable time.

Agricultural products have a limited shelf life so farmer's sell their products for low cost. now this is time to overcome such problems require investing in storage facilities and redesigning processes to ensure the freshness of products. while solving these challenges in marketing may leads to unsuccessfull farming.

Indirect Loss of Indian Economy.
Farmers suicides are desperation driven due to inability to face more problems occurred in farming from planting seeds to till marketing. Some issues as larger

loan, payoff a previous one. Sometimes situation is very critical if a crop fails due to climate change or low marketing. Now famers not willing to do farming, they moving towads small bussiness or other source of income . If nobody willing to do farming then how the food requirements of all population will be fulfilled.

This is the time , government have to look into agriculture field deeply. Government must assist to voice of farmers. if farmers receives good earning only then they are satisfied, and this encourage leads to successful farming. Government have to break intermediatory suppyer chain, launch digital apps for farming and marketing. Make some legal rules for selling products. Finally farmers are real hero of Indian economy. We have pride on our farmers.

Case B]

On the Middle Man's or Sellers Side.
Middleman first buy product from farmers at lower cost from diect. Here they take indirect advantages of farmers because of their unsufficient knowledge about marketing. let see Middle mans Role. He buys tuberose flower from A at 120 rs per kg.

The middleman spends around Rs. 2,500 on transportation and other expenses, and the agent sells tuberose flower for Rs. 800 per kg. He received Rs. 16,000 for 20 x 800. Profit = 16000 - 2500 rupees, or Rs. 13,500 on a daily basis per single customer. Per day middleman buys different agriculture products from various farmers by using same strategy. It is now time to observe what is happening to every farmer on a daily basis. This is a real situation for Indian farmers. digital science applications are now providing them with their well-deserved profits. Farmers in India are the unsung heroes of the Indian economy. Let's look at how data science can help farmers with marketing, advertising, and reaching out to the right buyers.The app EFarmers market by using Digital Apps Efarmer_A

The farmer's name, address, current crop, and contact information.

Buyer's name, address, contact information, crop name, and price per kilogramme

By using a digital science tool, farmers can reach the correct buyer or market. Farmers can find other farmers who grow the same crop and form their own group, arrange their own transportation, and collaborate. Obviously, they will receive the profit they deserve.

RESEARCH METHODOLOGY
1) Collecting data. - farmers details data can be collected through digital apps like E_farmer.

Farmer name	Address	Current Crop	Crop duration	Productivity per acre	Problem faced during cultivation	Water resource type	Suggestions
A	RAHURI	Jowar	4 months	1200 kg	Less water suppy	borewell	ProvideBuyer details
B	NAGAR	Soyabean	4 months	2000 kg	Sudden climate	Ground	Provide

					change	water	similar crop sugg.
C	ALE	Soyabean	4 months	4000 kg	Use of wrong fertilizer	River flow	Provide proper fertilizers
D	RAHURI	tuberose	1 year	1825 kg	Climate change	borewell	Buyers details, market places

As per above app ,we can make similar apps for collection of detail information as per our need. Software engineers create such apps as per analysis requirement.

CONCLUSION

1) Less chain of intermediate supplier.

2) An organised marketing system with proper transport facilities.

3) Increased awareness of marketing among farmers trough digital apps.

4) Data Science applied in farming to receive Enormous output. Farmers exactly know which   crop is suitable for the land: Which fertilizer suitable for the soil. Other than farmer get prior notifications about cyclones rains, Monsoons.

5) Data Science make aware, How Advises to farmers for about Appropriate use of fertilizers, pest control & management, A digital or Efarming where farmer is able to study about cultivation & take every decision on crop cultivation in the farming.

6) Farmers increase their crop productivity with by using digital APPS. Farmers actually be attracted to words 'soil testing' in Lab.

7) They can receives percentage of Nitrogen, phosphorus & potassium of their soil. If they study which is suitable for tested soil. where we use some fertilizers what will be the resulted percentage Now We can cultivate another new type of crop. Successfully.

SUGGESTIONS

1) Encourage all farmers to start using data science digital application tools for farming.

2) Use the correct fertilizers for the crop.

3) For successful farming, always use electronic farming tools. Test the soil in a lab for potassium, nitrogen, and phosphorous percentages.

4) Farmers must be educated so that they can easily learn about data science tools in the agriculture domain.In urban areas, education is much better than in rural areas.

5) The government has overlooked the need for the same in rural areas. This is the reason why farmers remain unaware of several government-provided schemes and their benefits.

6) Create an app that connects smallholder farmers with each other and to agronomists, offering free agronomic information about all main crops, including their pests and diseases**.** These app can taken off to be one of the leading digital tech solutions in India with more users. With the sufficient digital knowledge and technological access intent on keeping their app and platform completely free for farmers, so they have devised another way to make money.

REFERENCES

1.   Pallavi, S., Mallapur, J. D., & Bendigeri, K. Y. (2017, December). Remote sensing and controlling of greenhouse agriculture parameters based on IoT. In 2017 International conference on big data, IoT and data science (BID) (pp. 44-48). IEEE.

2. Umachandran, Krishnan. (2014). DATA SCIENCE and BIG DATA in AGRICULTURE.

3. Aravatagimath, A., Sutagundar, A. V., & Yalavigi, V. (2021, December). Agriculture Product Marketing Data Analysis using Machine Learning. In 2021 International Conference on Forensics, Analytics, Big Data, Security (FABS) (Vol. 1, pp. 1-6). IEE

4. Vadivelu, A., & Kiran, B. R. (2013). Problems and prospects of agricultural marketing in India: An overview. International journal of agricultural and food science, 3(3), 108-118.

5. Dhivyaa, K., Malarvizhi, M., & Malleswari, M. AGRICULTURE MARKETING RECOMMENDATION SYSTEM.

6. Bodkhe, J. E., & Dhepe, Y. V. (2018). Advance Agriculture Using Web and Mobile Technologies. International Journal of Electronics, Communication and Soft Computing Science & Engineering (IJECSCSE), 101-107.

7. Agrawal, S., Shinde, M., Rengade, K., Ghundre, P., & Shidore, M. (2022). Farmeist-Online Agriculture System (No. 7469). EasyChair.

8. Tao, W., Zhao, L., Wang, G., & Liang, R. (2021). Review of the internet of things communication technologies in smart agriculture and challenges. Computers and Electronics in Agriculture, 189, 106352.