

DIGITAL INDIA INITIATIVE: BRIDGING THE GAP BETWEEN TECHNOLOGY AND FARMERS

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Abstract :

The Government of India launched the Digital India Programme on 1st July 2015 with the aim of extending high-speed Internet connectivity to rural areas and enhancing digital literacy among citizens. This initiative envisions inclusive growth across electronic services, manufacturing, and employment, and is structured around three core pillars: Digital Infrastructure as a utility for every citizen, Governance & services on demand, and digital empowerment of citizens. This research has been conducted in the Hazaribag district to investigate the opportunities and limitations of farmers in adopting Digital India initiatives. The findings reveal persistent barriers such as limited education, lack of reliable market information, low awareness, and dependence on external support. Farmers in Hazaribag district also face challenges including inadequate technical assistance from government agencies, delayed access to financial services, poor availability of quality seeds & pest control measures, insufficient insurance coverage, weak price support mechanisms, and inefficient subsidy distribution. These constraints highlight the structural and institutional gaps that hinder the effective integration of technology into agriculture. The study emphasizes that coordinated efforts among farmers, government authorities and non-governmental organizations are essential to overcome these barriers.

Keywords : Agriculture, Farmers, Digital India Initiative, Technical assistance, Hazaribag

Introduction :

Agriculture continues to play a central role in the Indian economy, with more than 70 percent of rural households dependent on farming. The sector contributes approximately 17 percent to the national GDP and provides employment to over 60 percent of the population. In this context, sustainable agriculture and the integration of technology for socio-economic development are critical. Knowledge sharing among small and marginal farmers has become increasingly important for improving productivity and community well-being. The Digital India program was developed to expand Internet access and improve digital skills across the country. The government focuses on nine main areas: building broadband highways, making mobile connectivity available everywhere, opening public internet centers, using technology to enhance e-governance, delivering services electronically, spreading information to all, boosting electronics manufacturing, creating IT-related jobs, and launching quick-win projects called “Early Harvest Programme”.

Alongside these, new services like Digital Locker (to store important documents



online), e-Education, e-Health, e-Sign, and the National Scholarship Portal have been introduced. These services include both what citizens directly use (front-end services) and the behind-the-scenes digitization that makes them work. The overall vision of Digital India is to ensure inclusive growth—helping every citizen benefit from digital infrastructure, easy access to government services, and empowerment through technology.

How Digital India Transforms Farming :

The Digital India program was launched to give citizens easier online access to government services and livelihood support. It is built on three main pillars: digital infrastructure, digital services, and digital literacy. Mobile phones are the main way these services reach people, with a focus on mobile governance and mobile-based services. For farmers, initiatives like *m-Agriculture* and *m-Gram Bazar* are especially important because they provide crop-related information and online marketplaces to sell produce. These initiatives ensure more farmers to access crop insurance, encourages the use of modern tools and equipment, expands the Soil Health Card scheme to check soil quality, and sets up irrigation projects in rural areas. Through initiatives like agriculture consultations, digital platforms, and online markets, farmers can trade across the country without heavy paperwork. By connecting farmers and buyers on a two-way platform, farmers gain more options to sell their produce, reach wider markets, and enjoy tax benefits. Selling online also removes middlemen, which increases farmers' profits and benefits customers with fairer prices. The system is free of cost, boosting farmers' income, and government agencies provide support to ensure smooth online trading and proper transportation after-sales. Through these efforts, the government is actively working to strengthen farming activities and help farmers benefit from modern technology and digital tools.

Review of literature :

1. Krishna Reddy and Ankaiah (2005) highlighted that Indian farmers face multiple challenges in improving crop productivity. A major issue is the delay in transferring expert or scientific advice to the farming community, which creates a significant gap between agricultural research and its practical application in the fields.
2. Maertens and Barrett (2012) emphasized that technological advancements, particularly in agriculture, contribute to sustainable improvements in labor productivity, income levels, food security, and overall economic growth. Their study underscores the importance of innovation in driving long-term agricultural development.
3. Ruikar (2022) analyzed how Digital India has revolutionized agriculture by enhancing farmers' access to information, financial services, and market linkages. The study noted that digital platforms reduce dependence on intermediaries, allowing farmers to sell produce directly and secure better prices. This strengthens both farmer incomes and consumer access to affordable food.
4. Maheswari and Devi (2025) emphasized that agriculture remains the backbone of India's economy, contributing nearly 18% to GDP. Their study found that initiatives under the Digital India program—such as online markets, crop insurance, and digital literacy—are designed to strengthen agricultural productivity and support farmers in



overcoming challenges like climate change and market instability.

Objective of the study :

1. To assess the influence of demographic factors such as gender, age, education, and income level on farmers' awareness of the Digital India program.
2. To examine the relationship between farmers' satisfaction levels and the approach taken by government authorities in implementing the Digital India program.

Methodology :

Stratified random sampling technique was used to collect data from farmers in the Hazaribag district. To ensure fair representation, the sample was divided across three selected areas. From each area, 100 farmers were chosen, making the total sample size 300.

Profile of Respondents:

Table 4.2 Profile of Respondents

Demographics		Frequency	%
Gender	Male	100	55
	Female	90	45
	Total	200	100
Age	Below 30 years	80	40
	Between 30-50 years	70	35
	Above 50 years	50	25
	Total	200	100
Education Level	Primary level	70	35
	Secondary level	80	40
	Intermediate	50	25
	Total	200	100
Educated member in family	Only 1 person	80	40
	Two persons	80	40
	Three or more	40	20
	Total	200	100

The above table 4.2 shows detailed information about gender, age, education level, and educated member in a family. This study includes 200 people. Out of them, men were slightly more 55% than women 45%. Most of the people were young, with 40% being below



30 years of age. About 35% were between 30 and 50 years old, while 25% were above 50 years. When it comes to education, most respondents had studied up to the secondary level 40%. About 35% had primary education and 25% studied up to the intermediate level. In the families of the respondents, most had either one or two educated member 40% each while only 205 had three or more educated members.

The data of above Table 4.2 is shown graphically as under through Fig 4.2(a) to Fig 4.2(d)

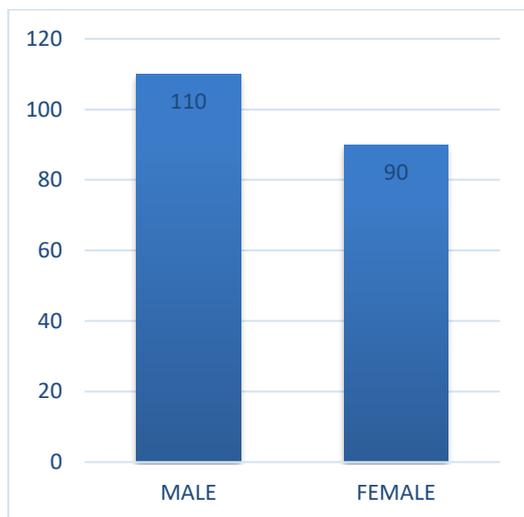


Fig 4.2(a) Gender

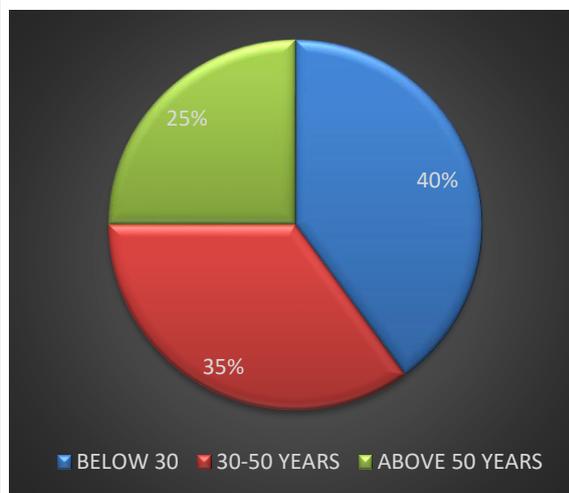


Fig 4.2(b) Age group

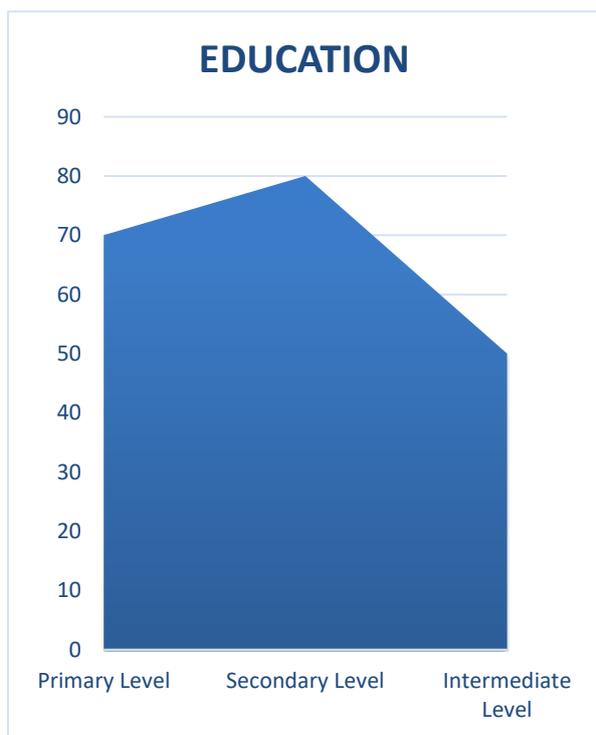


Fig 4.2(c) Education family

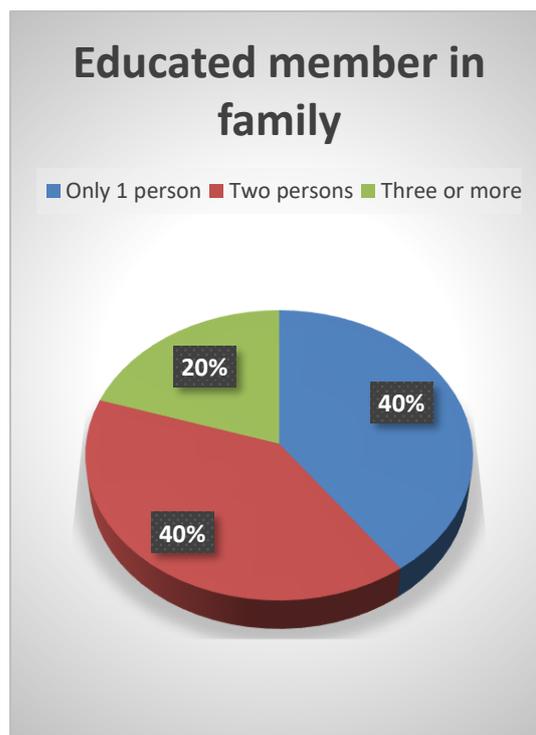


Fig 4.2 (d) Educated members in family

Data Collected :

Farmer Awareness about Digital India program by gender :

In India, gender plays an important role in shaping people’s opinions, as men and women often experience different social, economic, physical, and emotional realities. For this reason, the study examines how gender influences farmers’ awareness of the Digital India program. The analysis focuses on whether male and female farmers differ in their understanding and engagement with digital initiatives in agriculture.

Table 4.3: Farmers awareness about digital India by gender

Gender	Highly Aware	Moderate aware	Moderate unaware	Highly unaware
Male	18	48	7	17
Female	18	35	10	17

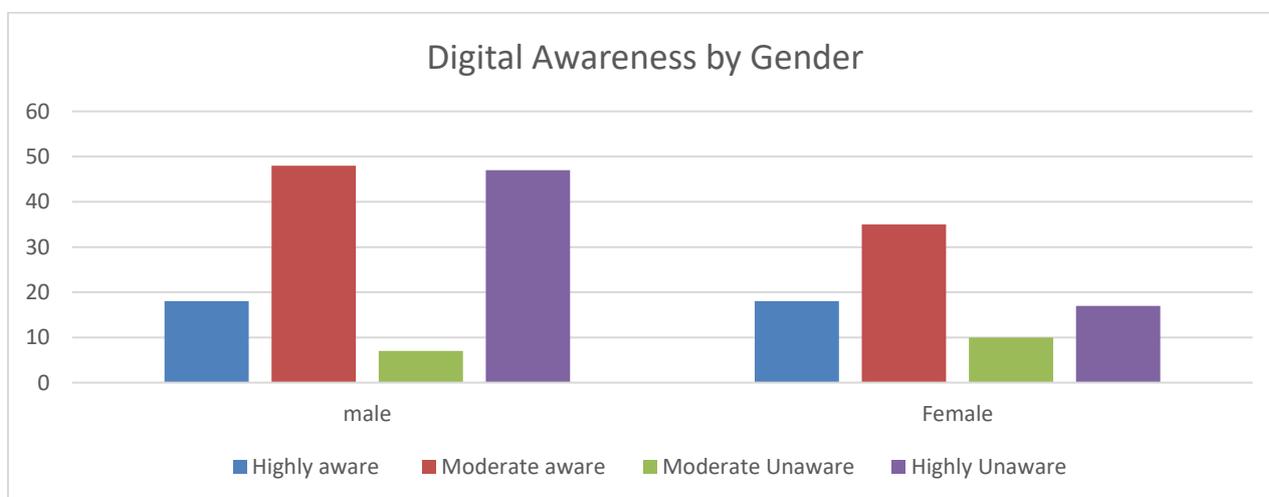


Fig 4.3 Farmer awareness about digital India by gender

The data in Table 4.3 shows that gender does not play a significant role in farmers’ awareness of Digital India. In fact, both groups display similar levels of awareness male farmers and female farmers fall into the “moderately aware” category. **This suggests that awareness of Digital India is fairly balanced across genders.**

Farmer awareness about digital India by age :

The table 4.4 shows farmers’ awareness of digital India by age below 30 years.



Table 4.4 Farmer awareness about digital India by age

Age	Highly aware	Moderate aware	Moderate unaware	Highly unaware
Below 30	10	22	8	12
30 -50 years	16	28	6	16
More than 50	14	34	10	24

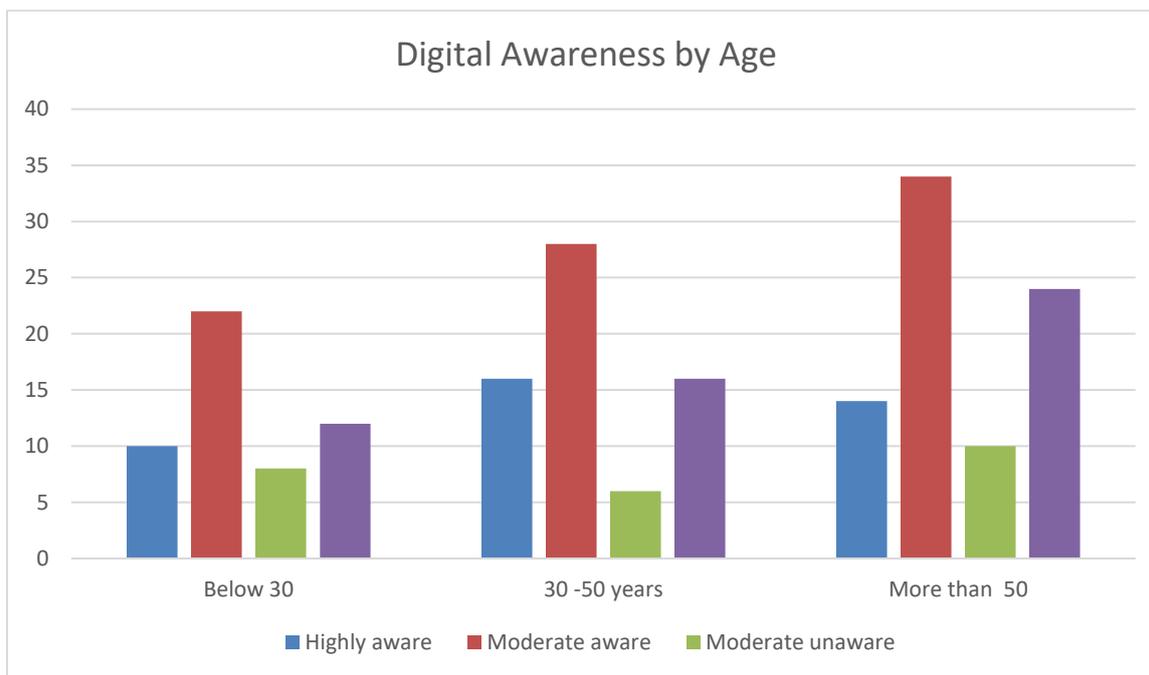


Fig 4.4 Farmer awareness about digital India by age

From the above table 4.4 we find that a total of 6 farmers are highly aware. Whereas between 30-50 years 16 farmers are highly aware and more than 50 years almost 14 farmers are highly aware about the digital India program. This distribution suggests that moderate awareness is the most common across all age groups, while a considerable number of farmers remain highly unaware, and only a smaller portion are highly aware of Digital India initiatives.

Farmers Awareness on Digital India by family educational status :

The table 4.5 shows farmers Awareness on Digital India by family educational status.

Table 4.5 Farmers Awareness on Digital India by family educational status

Family educated status	Highly aware	Moderate aware	Moderate unaware	Highly unaware
Only one person	18	36	10	30
Two persons	8	32	12	26
Three and more	20	4	24	2
Total	46	72	46	58

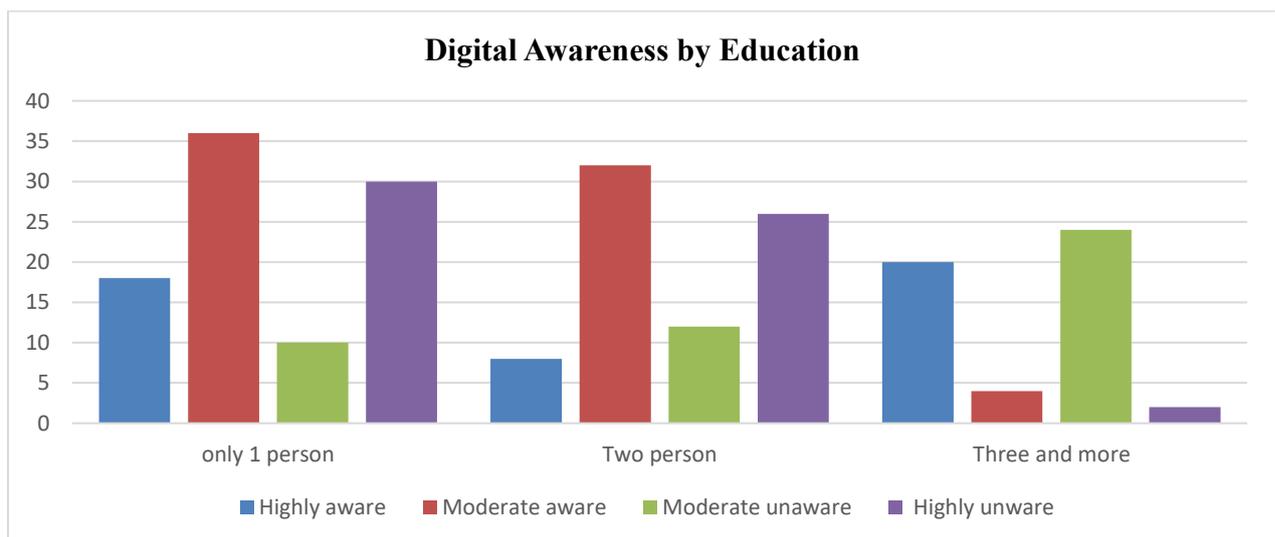


Fig.4.5 Farmers Awareness on Digital India by family educational status

From table 4.5 we find that in case of families with only one educated member, 18 farmers are highly aware, 36 are moderately aware, 10 are moderately unaware, and 30 are highly unaware. In households with two educated members, 8 farmers are highly aware, 32 are moderately aware, 12 are moderately unaware, and 26 are highly unaware. Families with three or more educated members show the strongest awareness, with 20 highly aware, 4 moderately aware, 24 moderately unaware, and only 2 highly unaware. Overall, out of 200 farmers, 46 are highly aware, 72 are moderately aware, 46 are moderately unaware, and 58 are highly unaware. This distribution suggests that the presence of more educated family members significantly improves farmers’ awareness of Digital India initiatives.

Farmers’ satisfaction with government support by gender :

Table 4.6 shows farmers’ satisfaction with government support by gender



Table 4.6 Farmers’ satisfaction with government support by gender

Gender	Highly Dissatisfied	Dissatisfied	Satisfied	Highly satisfied
Male	50	48	18	4
Female	28	34	12	6
Total	78	82	30	10

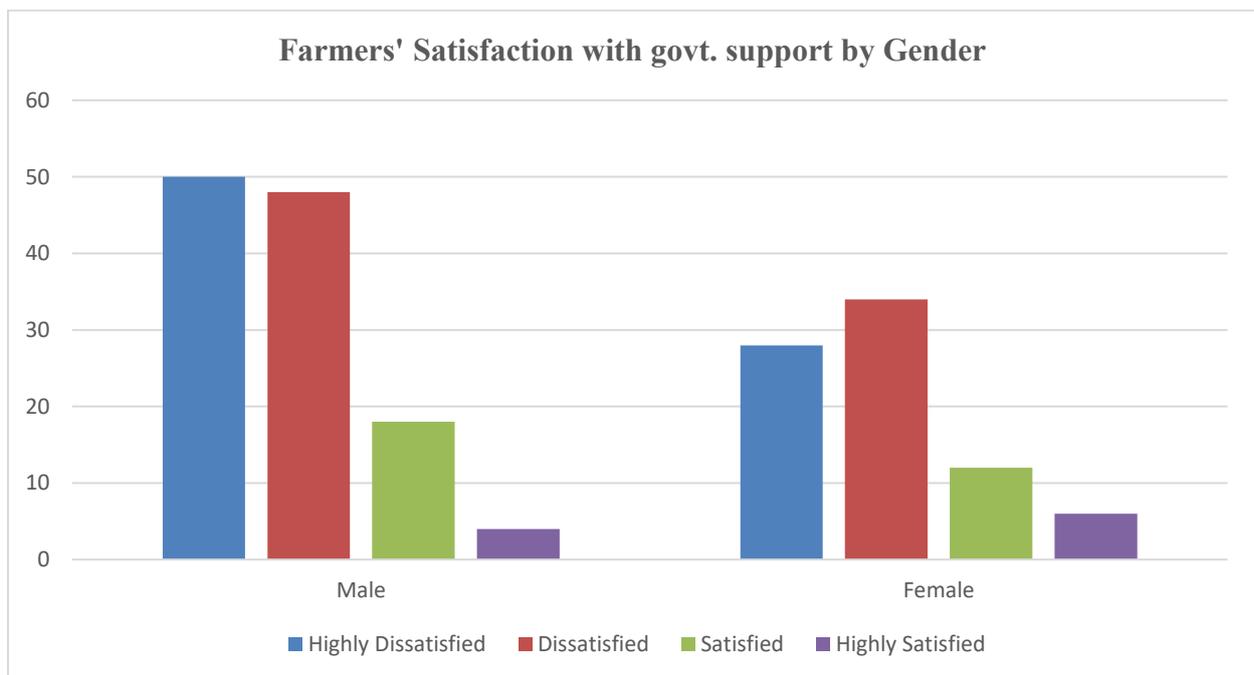


Fig 4.6.Farmers’ satisfaction with government support by gender

From Table 4.6 we find that among male farmers 50 reported being highly dissatisfied, 48 dissatisfied, 18 satisfied, and 4 highly satisfied. Female farmers showed a slightly more positive outlook, with 28 highly dissatisfied, 34 dissatisfied, 12 satisfied, and 6 highly satisfied. Overall, across the 200 farmers surveyed, 78 were highly dissatisfied, 82 dissatisfied, 30 satisfied, and 10 highly satisfied. This distribution suggests that a large portion of farmers is satisfied with the government support.

Farmers’ satisfaction with government support by age :

Table 4.7.shows how farmers of different age groups feel about the support they receive from government authorities.

Table.4.7.Farmers’ satisfaction with government support by age

Age	Highly Dissatisfied	Dissatisfied	Satisfied	Highly Satisfied
Below 30 years	16	24	8	4
30-50 years	28	26	8	4
More than 50 years	34	36	10	2
Total	78	86	26	10

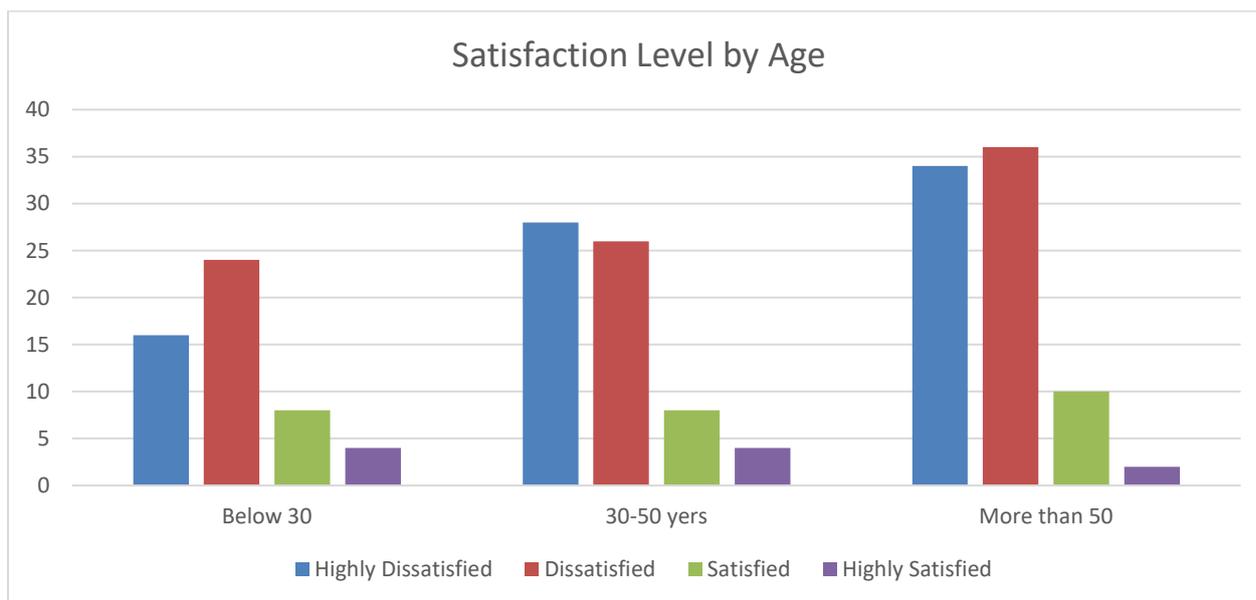


Fig.4.7.Farmers’ satisfaction with government support by age

From table 4.7 we find that among those less than 30 years old, 8 farmers were satisfied with the assistance provided by the government. The same number of farmers in the 30–50 age group also expressed satisfaction. For farmers over 50 years of age, 10 reported being satisfied with the authorities’ help. This indicates that satisfaction levels are similar across age groups, with only a slight increase among older farmers.

Farmers’ satisfaction with government support by farming experience :

The table shows farmers satisfaction with government support by farming experience.



Table 4.8. Farmers’ satisfaction with government support by farming experience

Farming experience	Highly Dissatisfied	Dissatisfied	Satisfied	Highly Satisfied
Below 30 years	10	15	25	10
30-50 years	15	20	40	15
More than 50 years	10	15	14	10
Total	35	50	79	35

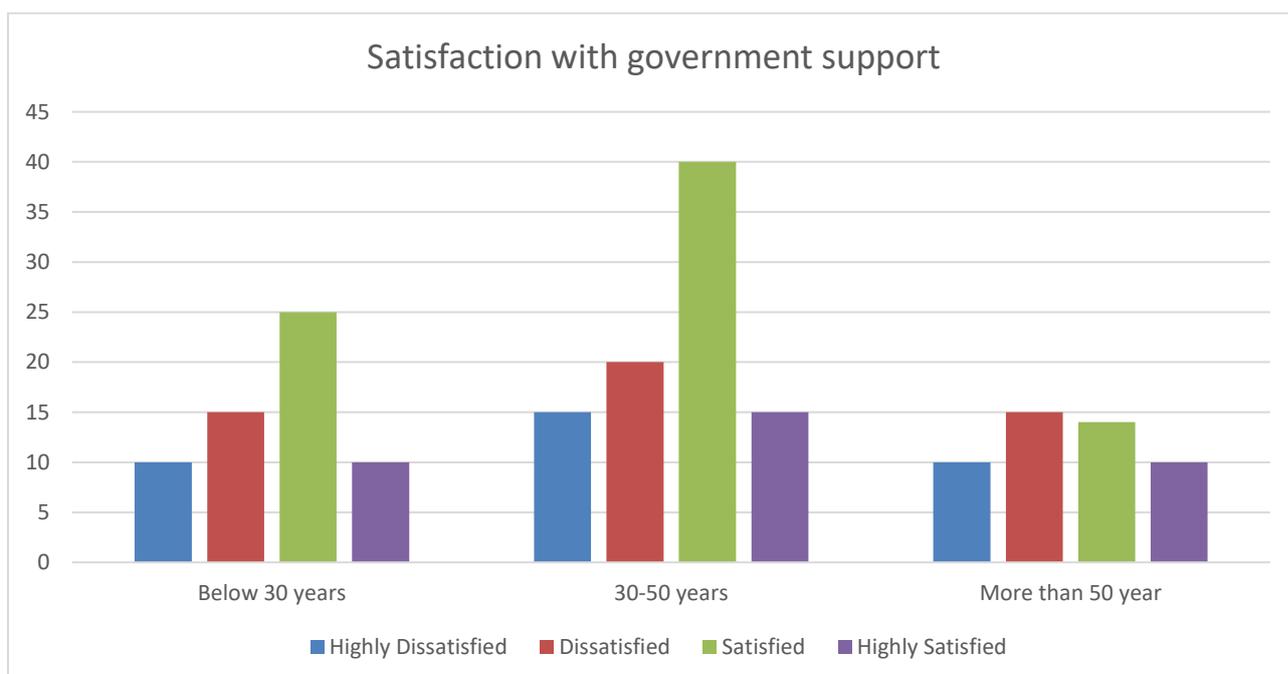


Fig 4.8. Farmers’ satisfaction with government support by farming experience

We observe from table 4.8 that farmers with 11–30 years of experience show the highest satisfaction, with many reporting positive support. Those with below 10 years are moderately satisfied but still express notable dissatisfaction. Farmers with above 30 years have mixed views, evenly spread across satisfaction and dissatisfaction. Overall, mid-career farmers trust government support more, while younger and older groups remain divided.

Findings :

- 1) Persistent Barriers to Adoption :** Farmers face challenges such as limited education, lack of reliable market information, low awareness, and dependence on external support, inadequate technical assistance, delayed financial services, poor seed/pest control availability, insufficient insurance, weak price support, and inefficient subsidy distribution.
- 2) Demographic Influence on Awareness :** Awareness of digital India is fairly balanced



between male and female and Moderate awareness is most common across all age groups, but younger farmers (<30) show slightly lower awareness compared to middle-aged farmers. Households with more educated members demonstrate significantly higher awareness, reducing the proportion of highly unaware farmers.

3) Satisfaction with Government Support :

- **By Gender** : Both male and female farmers report high dissatisfaction, though female farmers show perceptions that are slightly more positive.
- **By Age** : Dissatisfaction dominates across all age groups, with only modest satisfaction levels (8–10 farmers per group).
- **By Farming Experience** : Mid-career farmers (11–30 years) show the highest satisfaction, while younger (<10 years) and older (>30 years) farmers remain divided.

4) Opportunities of Digital India for Farmers :

- Creation of virtual marketplaces, access to crop insurance, issue of soil health cards in large numbers, and irrigation projects.
- Online trading reduces middlemen, increases profit margins, and expands market reach.
- Mobile-based services (m-Agriculture, m-Gram Bazar) directly support agricultural extension and marketing.

5) Role of Education and Literacy :

- Digital literacy and family education levels are critical determinants of awareness and adoption.
- Farmers with better educational backgrounds are more confident and willing to engage with digital platforms.

Recommendations :

1. **Strengthen Digital Literacy** : Expand training programs in local languages to help farmers understand and use digital tools effectively.
2. **Enhance Technical Support** : Deploy agricultural extension officers and digital facilitators to provide timely guidance on crop management and technology use.
3. **Improve Financial Access** : Simplify procedures for loans, insurance, and subsidies to ensure farmers receive timely financial assistance.
4. **Reliable Market Information** : Establish transparent, real-time digital platforms for price updates, demand forecasts, and market linkages to reduce dependence on intermediaries.
5. **Inclusive Policy Implementation** : Tailor government schemes to address the needs of farmers especially small and marginal ones, ensuring equitable access across gender, age, and education levels.



6. **Public–Private Partnerships** : Encourage collaboration between government agencies, NGOs, and private enterprises to expand infrastructure and provide innovative solutions for rural farmers.

Conclusion :

The study on the **Digital India Initiative in the Hazaribag region** highlights both the transformative potential and the persistent challenges of integrating technology into agriculture. While the program has created opportunities for farmers through digital marketplaces, crop insurance, and access to information, barriers such as limited education, poor technical support, delayed financial services, and weak institutional mechanisms continue to hinder full adoption. Awareness levels vary across demographic groups, with family education playing a significant role in shaping farmers' understanding of digital initiatives. Overall, the findings emphasize that although Digital India has begun bridging the gap between technology and farming, coordinated efforts are still required to ensure equitable benefits for all farmers.

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