
Assessment of The Demographic Profile and Current Status of Gender Mainstreaming in Agricultural Extension Services in Uttar Pradesh

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ABSTRACT

This study examines the implementation and effectiveness of gender mainstreaming strategies in agricultural extension services across four districts of Uttar Pradesh, India. Using a descriptive research design, the study surveyed 60 extension personnel across Hamirpur, Unnao, Amethi, and Agra districts. The research findings reveals significant gender disparities within extension services, with women comprising only 21.67 percent of the extension personnel and 93.33 percent of the organisations reporting merely 0-20.00 percent female field officers. Despite these imbalances, 70.00 percent of the extension personnel actively implement gender-inclusive strategies, including minimum participation quotas, collaboration with women's groups, and schedule adapted to accommodate women's needs. The study finds that 81.67 percent of the personnel consistently collected sex-disaggregated data, though implementation challenges persist, including insufficient fund, cultural constraints, and logistic barriers. Critical gender mainstreaming activities include gender sensitivity training, partnerships with Anganwadi workers, establishment of women's Self-Help Groups, mobile-based advisory services, and technical workshops. The research study highlights the need for increased recruitment of female extension officers, enhanced monitoring systems, and dedicated funding for gender-focused programs to address persistent gaps in agricultural extension services. These findings contribute to understanding the current state of gender mainstreaming in agricultural extension and provide actionable recommendations for improving gender equality in agricultural development.

Keywords: Gender Mainstreaming, Agricultural Extension Services, Women Farmers, Rural Development, Gender Equality.

Introduction

Gender mainstreaming in agricultural extension services has emerged as a

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critical strategy for promoting equitable and sustainable rural development worldwide. This approach seeks to integrate gender perspectives into the planning, implementation, and evaluation of agricultural support programs, ensuring that both men and women have equal access to resources, training, and opportunities in the agriculture sector. Despite women constituting a significant portion of the agricultural workforce globally, they often face disproportionate challenges in accessing essential services and resources (Hassan et al., 2014; Njenga et al., 2011).

Globally, women comprise an average of 43.0 percent of the agricultural labour force in developing countries, with participation rates rising to 50.0 percent or more in some parts of Africa and Asia (Diaz, 2017). However, access to agricultural resources and services shows stark disparities, with women often owning less than 20.0 percent of agricultural land and receiving only a fraction of available extension services (Ragasa et al., 2013). These disparities limit productivity and economic opportunities, affecting food security and rural development (Ofuoku, 2012); (Tsige et al., 2020).

Gender mainstreaming was globally recognised during the United Nations Fourth World Conference on Women in Beijing in 1995 and has since been integrated into strategies across sectors (Ransom & Bain, 2011). Organisations like FAO and World Bank emphasise the importance of gender-responsive agricultural policies and programs, with evidence suggesting that closing the gender gap in agriculture could boost yields on women-managed farms by up to 30.0 percent and reduce global undernourishment by 1217.0 percent (Quaye et al., 2019).

In India, agriculture accounts for approximately 17.0 percent of the GDP, employing almost half of the workforce, with rural women representing a critical share of this sector (Geethakutty, 2020). However, women's contributions are undervalued, with limited access to resources like land ownership, which remains at 12.8 percent, despite women comprising nearly 33.0 percent of the cultivators (Chete, 2019).

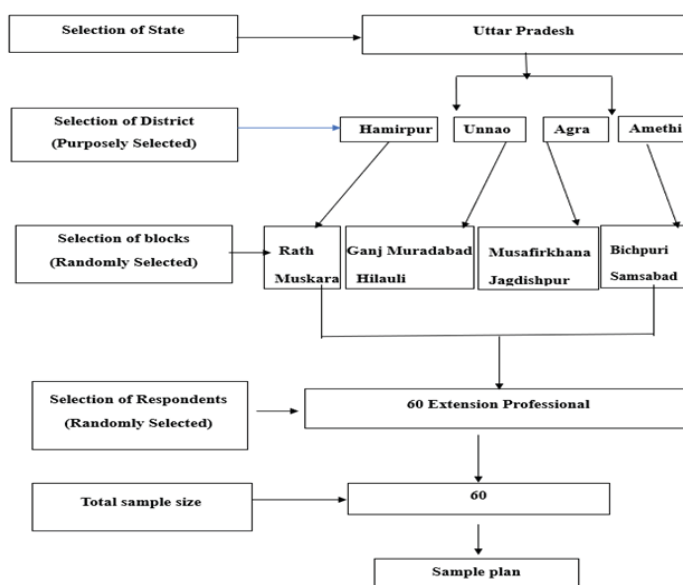
The gender gap in extension services is notable in India, where only 5.2 percent of the women farmers receive such support compared to 5.7 percent of men, underscoring broader inequalities in resource distribution (Bhuyan & Ponnusamy, 2017). Addressing this gap is crucial for enabling women farmers to reach their productivity potential and contribute meaningfully to agricultural growth (Nosheen et al., 2010). Uttar Pradesh mirrors these broader challenges. Programs like Mahila Kisan Sashaktikaran Pariyojana aim to empower women farmers by improving their access to resources and training; however, implementation at the grassroots level remains a challenge, especially in reaching the marginalised women (Buchy & Basaznew, 2005).

This study on gender mainstreaming in agricultural extension in Uttar Pradesh highlights the need for gender-sensitive policies that enable women to access resources equitably, unlocking their potential to improve food security, livelihoods, and rural resilience.

Methodology

The study employed a descriptive research design across four purposively selected districts of Uttar Pradesh, India: Hamirpur, Unnao, Amethi, and Agra, selected based on accessibility, communication ease, and transport infrastructure. Two blocks were randomly selected from each district: Rath and Muskara (Hamirpur), Ganj Muradabad and Hilauli (Unnao), Musafirkhana and Jagdishpur (Amethi), and Bichpuri and Samsabad (Agra). The study sample comprised of 60 extension personnel. These districts represent diverse geographical and agricultural contexts, with Hamirpur experiencing an average annual rainfall of 800-900mm and situated between 25°27' to 26°12' N latitude, Unnao spanning 4,558 square kilometres with temperatures ranging from 5°C to 45°C, Amethi receiving approximately 1,000mm annual rainfall, and Agra characterised by a semi-arid climate with around 650mm annual rainfall. Data collection involved systematic sampling and measurement procedures, with subsequent analysis conducted using statistical tools, including Percentage, Mean, and Standard Deviation, facilitated by nVivo and SPSS software for robust data processing and interpretation.

Sample Plan



1. Gender

As presented in Table 1, the gender distribution among the extension personnel shows a considerable male majority, with 78.33 percent male and only 21.67 percent female participants. This disparity in gender representation reflects the gender imbalance often observed within agricultural extension services, where men predominantly occupy these roles. The low representation of female personnel suggests a need to prioritise gender balance in extension staffing, as female extension officers can play a critical role in connecting with and empowering female farmers, fostering inclusive information dissemination and adoption of agricultural practices.

Table 1:

Sl. No.	Gender	Frequency (f)	Percentage (%)
1	Male	47	78.33
2	Female	13	21.67
3	Other	0	0

2. Age

Table 2. categorises the age distribution of the extension personnel into three age groups: young (upto 38), middle (39–52), and senior (53 & above). The data revealed that the middle age group (39–52 years) comprised the majority (65.0%) of the extension personnel, followed by the young age group (18.33%) and the senior age group (16.67%). This predominance of the personnel in the middle age group indicates that majority of them are in the middle of their career, with accumulated experience and expertise beneficial for practical extension work. However, relatively less percentage of the younger extension personnel may suggest challenges in attracting fresh, younger professionals into the field job. A small percentage of senior extension personnel could imply either retirement transitions or limited career longevity in this sector.

Table 2:

Sl. No.	Age Group	Frequency (f)	Percentage (%)
1	Young (up to 38)	11	18.33
2	Middle (39-52)	39	65.00
3	Senior (53 & above)	10	16.67

3. Education Level

Table 3 illustrates the educational qualifications of the extension personnel, revealing that the majority of them hold a Bachelor's degree (38.33%), followed

by a Master's (31.67%), and an almost equal percentage of a Doctoral degree (30.00%). The high educational attainment among the extension personnel highlights well-qualified field functionaries capable of providing informed and advanced agricultural support. The distribution of educational level of the respondents underscores the expertise accessible to farmers through them, fostering an environment where evidence-based practices and innovative agricultural techniques can be effectively communicated and implemented.

The presence of the extension personnel with postgraduate qualifications could also indicate enhanced research capabilities within the extension services, potentially contributing to localised problem-solving, accelerating technology adoption, and promotion of sustainable agricultural practices.

Table 3:

Sl. No.	Education Level	Frequency (f)	Percentage (%)
1	B.Sc.	23	38.33
2	M.Sc.	19	31.67
3	Ph.D.	18	30.00

4. Job Roles in Agricultural Extension Services

As shown in Table 4, the job roles of the extension personnel vary significantly, with the largest group comprising of Assistant Technology Managers (ATMs) at 41.67 percent, followed by Scientists/Subject Matter Specialists (SMS) at 36.67 percent. Directors or Deputy Directors accounted for a small percentage (5.0 %), reflecting a structure where the majority of the extension personnel are engaged in direct technical support or field operations rather than administrative roles. This distribution aligns with the need for a more field-oriented workforce to address farmers' immediate and technical needs.

Table 4:

Sl. No.	Designation	Frequency (f)	Percentage (%)
1	Directors/Deputy Directors	3	5.0
2	Scientists/SMSs	22	36.67
3	ATMs	25	41.67
4	BTMs	5	8.33
5	Others	5	8.33

5. Years of Experience in Agricultural Extension Services

Table 5 categorises the extension personnel based on their years of experience in job. The data revealed that 35.0 percent of the respondents had over 15 years of experience, followed by 30.0 percent with 1-5 years, 21.67 percent with 10-15 years, and 13.33 percent with 5-10 years of experience. Notably, there was none with less than 1 year of experience. The distribution suggests a relatively experienced workforce, with a significant percentage of them well-versed in field challenges and able to provide seasoned insights to the farmers.

Table 5:

Sl. No.	Experience Range	Frequency (f)	Percentage (%)
1	1-5 years	18	30.0
2	5-10 years	8	13.33
3	10-15 years	13	21.67
4	More than 15 years	21	35.0

6. Ensure significant participation from male and female farmers in extension activities

Almost 70.0 percent of the respondents affirmed efforts to ensure participation of male and female farmers in extension activities, while 30.0 percent reported no such efforts (Table 6). This positive response rate suggests a growing recognition of the importance of inclusivity in agricultural extension services. Efforts to enhance female farmer participation is crucial, given the gender gap, often observed in rural agricultural settings.

Majority of the extension personnel are working hard to ensure that both male and female farmers participate in extension activities. They implement various strategies for gender inclusivity in agriculture such as, inclusion of at least 33.0 percent of the female participants; working with women's groups and local leaders to encourage female farmers to attend; organizing events at a time that aligns with their household responsibilities and organizing separate training sessions to make women farmers feel more comfortable. Additionally, they provide extra training to help women build their skills and confidence. By involving both male and female staff, they create a welcoming atmosphere for all the participants, and the training materials are designed that is relevant and valuable for both men and women farmers.

The study also explored the issues faced by 30.0 percent of the extension personnel towards adopting gender inclusive approach in extension activities. Some of the major problems include insufficient funding or staff to support programs aimed at women. Cultural beliefs also make it challenging to encourage women

to participate in farming activities. Some people think that men and women already have equal access to programs, so they do not see the need for special efforts to include women. Additionally, gender-focused programs often get overlooked in areas with fewer women farmers. Resistance from staff and community members can also prevent changes that would help include women. Lastly, practical issues like transportation, timing of events, and locations make it hard for women, especially those with household responsibilities, to attend. These challenges show that a more targeted efforts and resources are needed to better gender inclusion in agricultural extension services.

Table 6:

Sl. No.	Response	Frequency (f)	Percentage (%)
1	Yes	42	70.0
2	No	18	30.0

7. Collection of Sex disaggregated data

Table 7, indicates a strong commitment among agricultural extension personnel to collect sex-disaggregated data, with 81.67 percent of the respondents stating that they always collect sex disaggregated data, while 18.33 percent reported doing it sometimes. Notably, none of the respondents indicated that they do not collect sex-disaggregated data. This demonstrates an understanding of the importance of gender-specific information in addressing male and female farmers' unique needs, which is essential for effective agricultural extension services.

Table 7:

Sl. No.	Frequency of Data Collection	Frequency (f)	Percentage (%)
1	Always	49	81.67
2	Sometimes	11	18.33

7 (a). If always:

Sl. No.	Statement
1	It is part of our routine work and is required in our regular reports.
2	Data is essential for studying how men and women use new farming technologies.
3	It helps us better advise both male and female farmers, meeting their specific needs.

4	Our forms have already been set up to collect information on men and women separately.
5	This data is needed to prepare reports and get funds for gender-specific programs.
6	It helps us see how many women farmers participate in government schemes and programs.
7	By having this data, we can create better policies that include both male and female farmers.

Respondents who consistently collected sex-disaggregated data mentioned the above listed points in Table 7(a). The data in Table 7 (a) is integral to their routine work and is required for regular reporting. It plays a crucial role in analysing how both men and women utilise new farming technologies, enabling extension personnel to offer tailored advice that meets the specific needs of male and female farmers. Furthermore, their data collection forms are designed to capture information separately for men and women, which is essential for preparing reports and securing fund for gender-specific programs. The data also allows for tracking women’s participation in government schemes, ultimately facilitating in development of more inclusive policies that benefit all farmers.

7. (b) If sometimes:

Sl. No.	Statement
1	We collect it for specific projects focusing on gender, but it is unnecessary for all activities.
2	In quick surveys or initial studies, we do not always have time to split the data by gender.
3	Collecting gender-specific data from everyone at times is challenging.
4	Collecting detailed data during busy farming seasons is challenging because of heavy workloads.
5	Some old data collection methods do not ask for gender-specific information.
6	When we have extensive programs or fairs, time is limited for collecting detailed gender data.

Among those who sometimes collect sex-disaggregated data, several challenges were expressed by them that affects regular data collection practices. Many indicated that sex-disaggregated data is gathered only for specific gender-focused projects rather than across all activities. Time constraint often limits their ability to segregate data by gender, particularly during quick surveys or initial studies. Additionally, collecting gender-specific information during

important/major events can be challenging, e.g. during peak farming seasons when workload is heavy. Some respondents mentioned that conventional data collection methods do not include gender-specific inquiries, and there is often insufficient time to collect detailed gender data during extensive programs or fairs.

8. Total female field officers in the respondent's organisation

Sl. No.	Range (%)	Frequency (f)	Percentage (%)
1	0-20.0	56	93.33
2	20.1-40.0	4	6.67

Table 8. reveals that majority (93.33%) of the respondent's organization had up to 20.0 percent female field level officers recruited in their organisation, while only 6.67 percent reported representation between 20.1-40.0 percent. Notably, none of the surveyed organization reported more than 40.0 percent female field-level officers. This is a clear evidence that highlights a substantial gender disparity in the workforce at the field level, suggesting increased effort to recruit and retain more female extension officers, to promote gender equality in agricultural practices.

9. Activities being carried out for gender mainstreaming

Sl. No.	Activities
1	Training for staff on gender sensitization.
2	Establishing and promoting women's groups viz. SHGs, for joint farming activities.
3	Workshops to train women on farm mechanization.
4	Mobile advisory services, specifically for women farmers.
5	Working with Anganwadi workers to reach out to women in rural areas.
6	Exposure visit for women farmers to learn new techniques.
7	Specialized training for women on kitchen gardening, post-harvest management, financial management, marketing skills, organic farming, vermicomposting, organic waste management.
8	Connecting women farmers with local markets to sell their produce.
9	Arranging child care facilities during training, to facilitate mothers to attend.
10	Establishment of demonstration plots, managed by women farmers, to encourage learning by doing.
11	Formation of women-led farmer-producer organizations (FPOs).

12	Training for women on safe pesticide usage and storage.
13	Facilitate access to farm loans and subsidies for women farmers.
14	Workshops on value-added products for women in agriculture.
15	Training on livestock management for women.
16	Information to women on crop diversification and market trends.
17	Collaboration with local NGOs to provide technical support to women's farmers.
18	Workshops on soil health management for women farmers.
19	Food processing and preservation training.
20	Training to women on water conservation techniques such as rainwater harvesting.
21	Workshops on goat rearing and poultry farming.
22	Encouraging women farmers to participate in government agriculture schemes.
23	Educating women about legal rights and entitlements in farming.
24	Organising health and nutrition workshops for women farmers to ensure their well-being.

Top 5 Activities carried out are:

Sl. No.	Activities	Rank
1	Training for staff on gender sensitization	I
2	Working with Anganwadi workers to reach out to women in rural areas	II
3	Establishing and Promoting women's Self-Help Groups (SHGs) for joint farming activities	III
4	Mobile advisory services, specifically for women farmers	IV
5	Workshops to train women on farm mechanization	V

The activities aimed at gender mainstreaming reflect a comprehensive approach to empower women in agriculture. Key initiatives include sensitizing male staff on gender issues, promoting women's Self-Help Groups (SHGs), and offering specialised workshops to enhance women's skills in farm mechanization and managing finances. Other significant activities carried out included mobile advisory services for women farmers, visits to successful farms, and conducting training on various agricultural practices. The organisation aims to enhance women's participation and representation in farming by implementing these activities, thereby fostering gender equity within agricultural sector.

10. Measurement of the indicators of gender mainstreaming initiatives, at farmer's level

Sl. No.	Category	Frequency (f)	Percentage (%)
1	Regular Survey of Farmers	28	46.67
2	Monitoring Participation Rates	30	50.00
3	Tracking Adoption of Recommended Practices	26	43.33
4	Assessing Changes in Income Levels	25	41.67
5	Evaluating Changes in Decision Making Roles	28	46.67
6	We Do not Currently Measure the Effectiveness	5	8.33

Sl. No.	Others
1	No. of women selling their produce directly in the markets.
2	No. of women farmers holding bank accounts in their name can get farm loans quickly?
	No. of women farmers accessing farm loans
3	The change in confidence level and expression level of women attending village farming meetings.
4	No. of women using modern farm tools and machines to reduce their drudgery.
5	No. of women farmers shifting to new crops
	No. of women farmers adopting improved farming methods.
6	No. of women joined farming groups and doing collective farming?
7	Tracking whether women are getting fair prices for their crops through self- negotiation.
8	No. of women started value-added products enterprises.
9	No. of spouse and/or families supporting women in attending farm training programs.
10	Whether women farmers supporting other women farmers in new farming practices.
11	No. of women who started their small agri-ventures?
12	No. of women who participate in decision making on agricultural activities.

13	No. of women using smart phones to get agricultural information, market prices etc.?
14	No. of women participating in agricultural fairs and demonstrations.
15	No. of women farmers connected through online platforms or local markets, for marketing of their produce.

Table 10. Describes the indicators of gender mainstreaming initiatives at the farmer's level. It highlights several initiatives undertaken by field level functionaries to understand the level of gender sensitization created among the farming community and indicators to measure them. Almost 50.0 percent of the respondents indicated that monitoring the participation rate is one of the key indicators, while 46.67 percent conducts regular survey of farmers to assess the outcomes. Tracking the adoption of recommended practices was reported by 43.33 percent, and observing change in decision-making roles was also reported by 46.67 percent of the respondents. Additionally, 41.67 percent of the respondents assess change in income level as an indicator, to measure gender sensitization created among the farming community. However, 8.33 percent of them stated that they do not measure effectiveness, to assess gender sensitization created.

“Other” methods further emphasise the comprehensive approach to measurement, with suggestions ranging from counting the number of women directly selling their produce in markets; to assessing their participation in agricultural training and community decision-making activities. This diverse range of measurement indicators reflects a commitment to understand and enhance the impact of gender mainstreaming initiatives on farmers' lives.

Conclusion

This study provides valuable insights into gender mainstreaming within agricultural extension services, highlighting progress and persistent challenges in achieving gender equality in agricultural sector. The findings brings forth the varied concerns that warrant attention from policymakers, extension organisations, and stakeholders involved in agricultural development.

The demographic analysis of extension personnel reveals significant gender disparities, with male employees comprising 78.33 percent of the workforce and female only 21.67 percent. This imbalance is further emphasised by the fact that 93.33 percent of the organisations reported having only upto 20.0 percent female field officers. Such stark under-representation of women in extension services potentially limits the reach and effectiveness of agricultural support for female farmers, given the documented importance of female extension officers in engaging women farmers effectively. The educational qualifications

of extension personnel are notably high, with cent percent of them holding at least a bachelor's degree and a substantial percentage (61.67%) possessing postgraduate degree. This high level of education, combined with the finding that 35.0 percent of the personnel have over 15 years of experience, suggests a well-qualified workforce capable of implementing sophisticated gender mainstreaming strategies. Encouragingly, 70.0 percent of the extension personnel reported actively working to ensure gender-inclusive participation in their activities, implementing various strategies such as setting minimum quotas for women's participation, collaborating with women's groups, and adapting program timing to accommodate women's schedules. The high rate (81.67%) of consistent sex-disaggregated data collection further demonstrates a growing recognition of the importance of gender-sensitive approaches in agricultural extension. However, several challenges persist. The 30.0 percent of the respondents who do not implement gender-inclusive strategies cited several barriers: insufficient fund, cultural constraints, and logistical challenges. These obstacles and the low representation of female extension officers suggest that achieving genuine gender mainstreaming requires more systematic and sustained efforts.

The study identified numerous activities for gender mainstreaming, with the top five including gender sensitivity training for male staff, collaboration with Anganwadi workers, establishment of women's Self-Help Groups, mobile-based advisory services, and workshops on farm mechanization. The variety and comprehensiveness of these activities indicate a multifaceted approach to address gender inequalities in agricultural extension. Indicators to measure effectiveness primarily focus on participation rates (50.0%), regular surveys (46.67%), and tracking the adoption of recommended practices (43.33%). However, considering the fact that 8.33% of the respondents do not measure effectiveness suggests a need for a more robust monitoring and evaluation systems.

Recommendations

Based on the findings, several recommendations have been proposed to strengthen gender mainstreaming in agricultural extension services. Firstly, there is a need to increase the recruitment and retention of female extension officers through targeted policies and incentives to address the prevailing gender imbalance in the workforce. Secondly, successful gender mainstreaming activities should be expanded and institutionalised, particularly those that have proven effective in reaching and supporting women farmers. Thirdly, monitoring and evaluation systems must be strengthened to better track the impact of gender mainstreaming initiatives, with all extension services ensuring

the collection and utilisation of sex-disaggregated data. Additionally, resource constraints should be addressed by advocating for dedicated funding for gender-focused programs and by building partnerships with women's organisations and local institutions. Lastly, comprehensive training programs should be developed for extension personnel on gender-sensitive approaches so that both male and female staff can effectively engage with and support women farmers.

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