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Understanding adoption of technology: An in-depth study of public extension programme

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Abstract

Technological changes have been the basis for increasing agricultural productivity and promoting agricultural development. Research impacts the productivity of farming system by generating new technologies which, if not appropriate to farmers' circumstances, will be rejected. Keeping this background in mind the present study was conducted with the objective to identify the adopter of the public extension programme. The present study was conducted at Haringhata block of Nadia district of west Bengal where a public extension programme was held. The district, block and villages were purposively selected for the study. Out of 920 beneficiaries under the public extension programme having land in same field (contagious plot), 92 respondents were selected randomly, out of this 82 respondents data was collected after three visit where the public extension programme in Kharif rice was implemented in Fatepur, South Dutta para, Baruni, Bhabanipur and Maliadanga. It is clear from the study the socio-economic condition of the adopters were far better than the parital or non-adopters.

Keywords: Adoption, public extension programme, socio-economic condition

Introduction

India's economic security is heavily dependent on agriculture. Agriculture is the primary source of livelihood for about 58% of India's Population. Although the Green Revolution increased production and productivity of food crops, improved food security and raised rural incomes, India still has a large poor (23.6% of the population living below the poverty line based on World Bank, 2011) ^[1] and malnourished population. "Expansion of farm incomes is still the most potent weapon for reducing poverty" (Planning Commission, 2011) ^[2].

In 2017-18, total food grain production was established at 275 million tones (MT). As the Indian economy has diversified and grown, agriculture's contribution to GDP has steadily declined from 1951 to 2011. While achieving food sufficiency in production, India still accounts for a quarter of the world's hungry people and home to over 190 million undernourished people.

Studies have shown that at least one third of the future growth in productivity should come through innovations in crop technologies. "Public sector technology generation often fails to take into account farmers' needs, perceptions and location-specific conditions for each crop, leading to significant gaps between the varieties released by public sector institutions and the number of varieties actually used by the farmers. Private sector research and the seed industry often focus on those crops and varieties which have adequate scale (massive markets) and scope (repeated sales). As a result, some crops/crop groups get little research attention" (Planning Commission, 2011) ^[3].

Coming to financial support for extension, a study by Balakrishnan *et al.*, (2008) ^[4] revealed that the public expenditure on extension and training as a share of agricultural GDP has been remaining stagnant from 1989 to 2006. It is interesting to note that this stagnation happened during the same period, where the public expenditure on research and education has been increasing.

Agricultural Extension programme faces challenging times in India. Though there is greater attention at the Central Government level on enhancing funding and promoting reforms in extension programme, a corresponding interest to invest more resources or experiment new models is not witnessed in many states. Extension reforms depend fully on the central assistance which is somewhat worrying. Though the private and the NGO sector are increasing their field presence and broadening their support to farmers, these are not that wide spread across different regions/districts or blocks.

It was also seen that technology transfer process of public extension programmes applied in heterogeneous population instated of homogeneous population, for that reason that particular programme did not meet the desire objectives. It is not only the waste of government money but also waste of valuable time of government programme. In many cases of public extension programme, forced adoption would be applied to the farmers which lead to discontinuance of technology in following years.

Study for understanding of the adoption of new technology of a public extension programme is showing the appropriate scenario whether the programme meets the desire objective or not. The main objective of the study is to identify the adopters of Public Extension Programme with respect of some variables. The area of investigation of this study is situated in the state of West Bengal located in the eastern part of India. The State of West Bengal in eastern India has a unique social, cultural and ecological background, which influence the living standard and behavioral patterns of the people in many ways. The area of investigation belongs to the Fatepur Panchayat of Haringhata block in Nadia district. The area of the study is comprised of villages namely Fatepur.

Review of Literature

S. J. Adebisi (2013) ^[5] revealed that farmers were old with mean age of 55 years, 54.7 percent have been into cocoa production for at least twenty five years, while 75.3 percent of the cocoa farms were established more than twenty five years ago. Correlation coefficient showed that farm size and years of farming experience were significant factors affecting adoption of cocoa farm rehabilitation techniques. Also, source of finance and availability of information were significant factors that determine the probability of adoption. Based on the above findings, efforts should be made by research institutes, relevant farmers' organizations and Non-governmental organization (NGOs) in providing effective training workshops, credit facilities and input delivery system to encourage adoption of proven technologies.

Machiadikwe N B Agbarevo (2013) ^[6] found that farmers were unanimous that extension delivery process was not very effective as the study found no significant difference between the population and sample means at 95% confidence level. The strongest links in the delivery process areas were found to be farmer visits, meetings between farmers and extension personnel, demonstration, while the weakest links were organization of Research-Extension-Farmer-Linkages, farmer training programmes and distribution of training materials.

M Akudugu (2012) ^[7] showed that farm size, expected benefits from technology adoption, access to credit and extension services are the factors that significantly influence technology adoption decisions of farm households in the study area. It is concluded that farm households' agricultural technology adoption decisions depends on their socio-economic circumstances and institutional effectiveness. We recommend that policies should be formulated to take advantage of the factors that positively influence farmers' adoption of modern agricultural production technologies and to mitigate the negative ones.

E Muange, S Schwarze (2014) ^[8] find that households with more female adults are more likely to adopt improved sorghum, while those with more male adults are more likely to adopt improved maize. Poor soil fertility negatively affects adoption of improved sorghum, while non-farm income activities and size of maize farm positively influence adoption

of maize varieties. Farmers mentioned seed availability followed by perceived susceptibility to pests as the most limiting factors to adoption. The importance of these reasons changes if they compare farmers without past adoption experience to those who have ever adopted.

Age is an important factor that influences the probability of adoption of new technologies because it is said to be a primary latent characteristic in adoption decisions. However, there is contention on the direction of the effect of age on adoption. Age was found to positively influence adoption of sorghum in Burkina Faso (Adesiina and Baidu-Forson, 1995) ^[9], IPM on peanuts in Georgia (McNamara *et al.*, 1991) ^[10], and chemical control of rice stink bug in Texas (Harper *et al.*, 1990) ^[11]. In contrast, age has been found to be either negatively correlated with adoption, or not significant in farmers' adoption decisions. In studies on adoption of land conservation practices in Niger (Baidu-Forson, 1999) ^[12], rice in Guinea (Adesiina and Baidu-Forson, 1995) ^[13], fertilizer in Malawi (Green and Ng'ong'ola, 1993) ^[14], IPM sweep nets in Texas (Harper *et al.*, 1990) ^[15], Hybrid Cocoa in Ghana (Boahene *et al.*, 1999) ^[16], age was either not significant or was negatively related to adoption.

Methodology

The present study was conducted at Haringhata block of Nadia (West Bengal) where a public extension programme was held (namely Bringing Green Revelation in Eastern India) in 2012-13. From the secondary data available in district level, block Haringhata was identified randomly where BGREI programme in kharif rice was implemented in Fatepur, South Duttapara, Baruni, Bhabanipur, and Maliadanga. Out of 920 beneficiaries under BGREI having land in same field (contiguous plots), 92 respondents were selected randomly, out of this 82 respondents data was collected after 3 visit.

Result and Discussion

To identify the adopters with some socio economic variables are used in this study:

1. Education
2. Land holding
3. Access to ADA office
4. Training
5. Family income
6. Experience
7. Contact with Gram Panchayet office

On the basis of the 2017-18 year 22 respondents followed the all the recommendations they were considered as adopters and rest were considered as partial adopters or non adopters or partial adopters.

Education: Education is one of the most critical variables in respect socio economic condition of certain area. In my study area (Haringhata block) there is huge educational difference between adopter and the partial adopters or non adopters respondents. Among the adopters (in 2017-18), 63% passed the Higher Secondary Education, 23% adopters are Graduate and only 14% passed Secondary Education. Among the 60 partial adopters or non adopters respondents (in 2017-18), only 5% are Graduate, 38% passed Secondary Education, only 22% passed Higher Secondary level and rest 35% have only Primary Education.

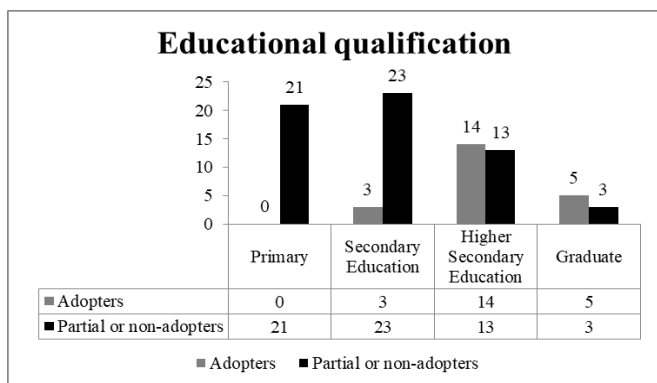


Fig 1: Distribution of adopters and partial or non-adopters according to their educational qualification (Total No of adopters=22 and total no of partial or non-adopters=60)

Size of Land Holding: Land holding of farmers denotes the farmers’ socio economic condition in a village. For this reason land holding status are included to identify the adopters. Among the 22 adopters (in 2017-18) major portion (68%) had 7 to 10 bigha farming land. 23% adopters had more the 10 bigha farming land. only 9% had 5 to 7 bigha farming land.

Among the Partial adopters and non-adopters major portion had 7 to 5 bigha farming land that is 65%. Then 28% had less than 5 bigha land holding. Only 7% Partial adopters and non adopters had 10 to 7 bigha land holding.

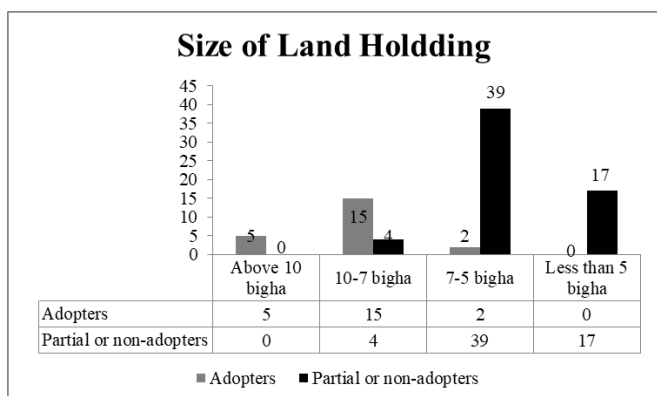


Fig 2: Distribution of Land Holding according to the adopters and partial or non-adopters (Total No of adopters=22 and total no of partial or non-adopters=60)

Access to ADA Office: In a public extension programme contact with agriculture block office is a very essential criterion. That’s why contact with the ADA office is critical criteria for this study. Farmers get information and training for any new technology regarding government extension programme from this office.

Among the 22 respondents who had been following the all recommendation in the next year of BGREI programme major portion (68%) maintained contact with ADA office once at a week. And other the rest means 32% maintained contact with ADA office once at two weeks that means they have very good connection with the ADA office.

Among the 60 respondents who did not follow the all recommendation in the next year of BGREI programme major portion(80%) seldom contacted with ADA office only 18% maintained contact with ADA office once at a month and other few(only 2%) maintained contact with ADA office once at two weeks. That means they have very poor connection with the ADA office.

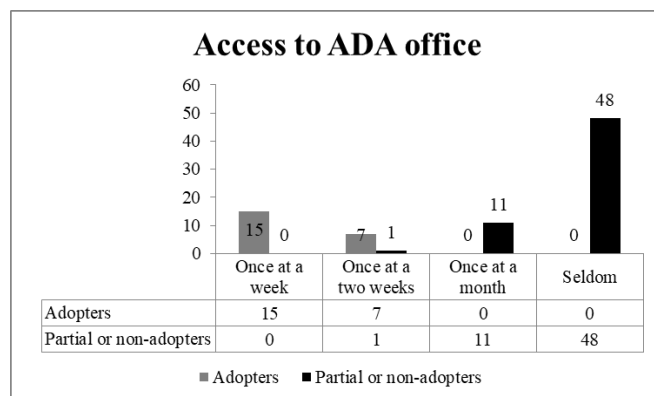


Fig 3: Distribution of adopters and partial or non-adopters according to the access to ADA office (Total No of adopters=22 and total no of partial or non-adopters=60)

Obtaining Training: Training is an essential criterion to learn and understand how to implement a new technology at a certain area within a certain period of time. This variable influences the rate of adoption of a new technology. The entire respondent who followed the all the recommendation in 2017-18 were obtained proper training which was given by the government. Among the partial adopters or no adopters on that particular year only 8% got the proper training. Rest 92% did not get any training.

Family Income: Family income of a farmer denotes the economic condition of a farmer. It is a critical variable in adaption and diffusion of a new technology. Among the 22 adopters in 2017-18, 82% belongs to high income group and the rest 18% belongs to the medium income group.

Among the Partial adopters and non adopters major portion belongs the low income group that is 42%, 41% belongs the medium income group and the rest 17% belong the high income group.

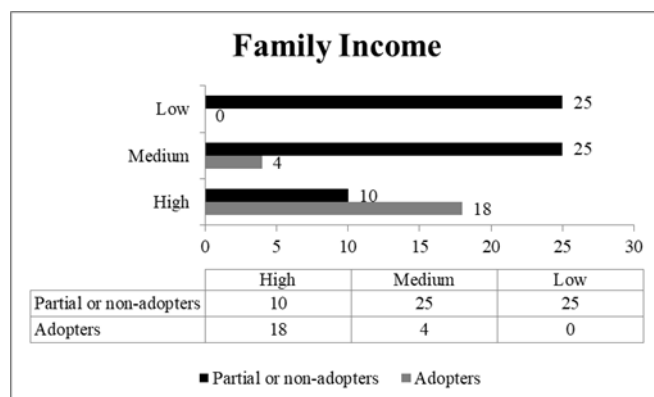


Fig 4: Distribution of adopters and non-adopters according to family income (Total No of adopters=22 and total no of partial or non-adopters=60)

Family Experience: Farming experience is that kind of variables which closely related with farmers cultural practices. It helps the farmers to understand the relative advantages of any new technology with respect of previous one. Among the 22 adopters of 2017-18 year only 14% of them highly experienced farmers, 27% is medium experienced farmers and the rest major portion that is 59% is low experienced farmers.

Among the Partial adopters and non adopters farmers major portion means 58% farmers are medium experienced, 30%

farmers highly experienced and the rest 12% are low experienced farmers.

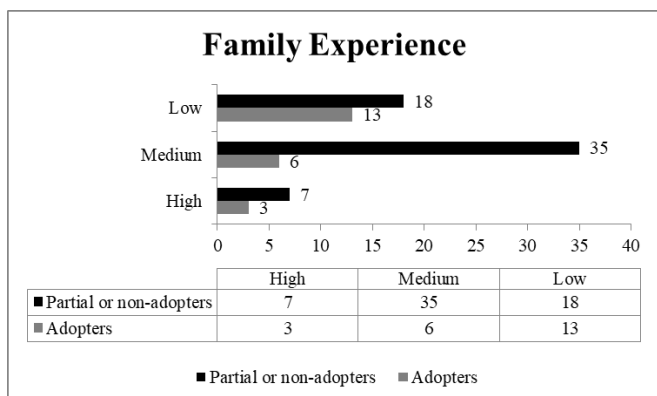


Fig 5: Distribution of adopters and partial or non-adopters according to family experience (Total No of adopters=22 and total no of partial or non-adopters=60)

Access to Gram Panchayet office: Gram panchayet office is the primary information centre for any government programme for the villagers. It gives the valuable information about any new technology to the farming community of the village. Among the adopters 54% contact with GP once at a week, 32% adopters contact with GP office once at two weeks, and the rest 14% contact with GP office once at a month.

Among the Partial adopters and non adopters in the year of 2017-18, 10% contact with GP office once at a week, 23% contact once at two weeks, major portion that means 39% contact once a month, and the rest 28% seldom contact with the GP office.

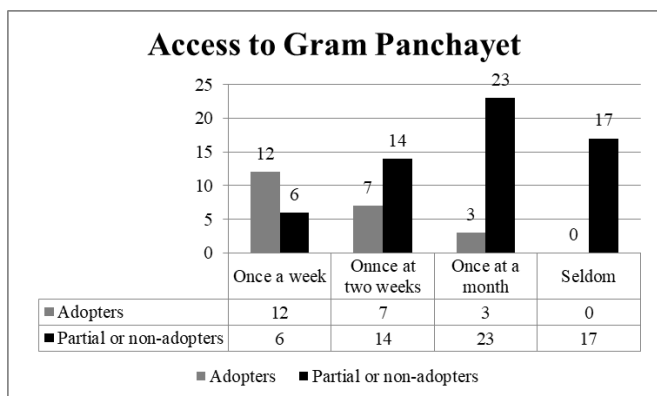


Fig 6: Distribution of the adopters and partial or non-adopters according to the access to Gram Panchayet (Total No of adopters=22 and total no of partial or non-adopters=60)

Conclusion

It is clear from the study the socio-economic condition of the adopters were far better than the partial or non-adopters. Training and proper information about the new technology were very much needed in adoption. It is also cleared from the study that training was needed to run the proper process for applying a new technology in field condition.

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