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***Assessment of AeFDS (Aadhaar enabled  
Fertilizer Distribution System) Pilot***

## Assessment of AeFDS (Aadhaar enabled Fertilizer Distribution System) Pilot

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Published by:

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## Abbreviations

AeFDS	<i>Aadhaar</i> enabled Fertilizer Distribution System
ATL	Above The Line
ATM	Automated Teller Machine
BAPU	Biometrically Authenticated Physical Uptake
BM	Bank Mitra
BTL	Below The Line
CSC	Common Service Centre
DBT	Direct Benefit Transfer
FPS	Fair Price Shop
GRM	Grievance Redress Mechanism
IFFCO	Indian Farmers Fertiliser Cooperative Limited
LFS	Lead Fertiliser Supplier
LPG	Liquefied Petroleum Gas
MDR	Merchant Discount Rate
MFMS	Mobile Fertilizer Management System
MRP	Maximum Retail Price
NEFT	National Electronic Funds transfer
NITI	National Institute for Transforming India
NPK	Nitrogen, Phosphorus, and Potash
OTP	One Time Password
PACS	Primary Agriculture Credit Society
PoA	Points of Authentication
PoS	Point of Sale
SIM	Subscriber Identification Module
SMS	Short Message Service
TAT	Turn Around Time
TPDS	Targeted Public Distribution System



## Executive Summary



Fertiliser subsidy is the second largest subsidy, after food, provided by the Government of India with a budget of INR 70,000 crore ((USD 10896.638 million) in FY 17-18<sup>1</sup>. In the Union Budget 2016-17, the Indian government proposed to bring fertiliser subsidy under the ambit of Direct Benefit Transfer (DBT) programme to streamline its distribution.

The government announced pilots for *Aadhaar* enabled Fertilizer Distribution System (AeFDS) on (28<sup>th</sup> March, 2016) in 16 districts<sup>2</sup> (three additional districts were included in pilot phase on 27<sup>th</sup> January, 2017) across India. AeFDS is a modified subsidy payment system under DBT scheme, where fertiliser companies will be paid subsidy only after retailers have sold

fertiliser to farmers/buyers through successful *Aadhaar* authentication via Point of Sale (PoS) machines.

On a request from *National Institute for Transforming India (NITI) Aayog*<sup>3</sup>, *MicroSave* conducted a dipstick evaluation in six districts (Rangareddy, Pali, Una, Hoshangabad, Krishna, and West Godavari) where AeFDS pilot was running live<sup>4</sup>. *MicroSave* assessed the aggregate responses from 1,734 farmers and 200 retailers across six districts and also conducted in-depth interactions with the concerned government officials and district consultants.

<sup>1</sup><http://indiabudget.nic.in/>

<sup>2</sup> 19 districts are: Una (Himachal Pradesh), Kishanganj and Begusarai (Bihar), Hoshangabad (Madhya Pradesh), Karnal and Kurukshetra (Haryana), Thrissur (Kerala), Gorakhpur (Uttar Pradesh), Nasik and Raigarh (Maharashtra), Tumkur (Karnataka), Rangareddy (Telangana), Krishna and West Godavari (Andhra Pradesh), Maldah and South 24 Paraganas (West Bengal), Narmada (Gujarat), Pali (Rajasthan), and Dhanbad (Jharkhand)

<sup>3</sup><http://niti.gov.in/>

<sup>4</sup> At the time of research, AeFDS live districts were those six districts where subsidy payment to fertiliser companies was paid on actual sales realised through PoS machines. Other 10 districts were dry run districts where subsidy payment to fertiliser companies was yet not linked to actual sales via PoS.

## Key Objectives



The key objectives of the assessment were to:

1. Identify issues and challenges pertaining to the pilot implementation in six districts and present it to the government and other stakeholders
2. Provide actionable solutions to improve implementation and identify best practices
3. Provide the government with evidences, of what is working and what is not, that can aid policy level decision making
4. Improve preparedness for the national roll-out

The report elaborates key findings of the study on three major aspects –Farmer Readiness, Retailer Readiness, and Transaction Status. It also explains best practices being followed by districts based on indigenous wisdom, and captures lessons learnt from these interactions.

The report also explains the Targeted Public Distribution System (TPDS), which works on a similar principle of “benefits in kind” and has a higher success rate in terms of its operational performance as compared to DBT in fertilisers. Apart from this, the report provides actionable solutions for smooth implementation of AeFDS initiative. The report concludes with district-wise briefings encapsulating qualitative insights from the ground.

## Key Findings



*Series of recent fertiliser reforms including Neem coating of Urea, and stronger operational control through Mobile Fertilizer Management System (MFMS) application has reduced leakages*

1. Series of recent fertiliser reforms such as Neem coating of Urea, stronger operational control through Mobile Fertilizer Management System (MFMS) application<sup>5</sup>, and the recently launched AeFDS have strengthened fertiliser distribution system and improved its availability in the market. Retailers and farmers in all six districts reported no instances of Urea shortage in the last two years. However, we need to discount the reduced fertiliser demand due to drought scenario in these two years.
2. MFMS application and AeFDS has increased accountability of stakeholders including fertiliser manufacturers, wholesalers, and retailers. It has also enhanced transparency with improved tracking of physical movement of fertiliser from manufacturers to farmers. These steps have helped in reducing diversion of fertiliser for other purposes. 31 retailers in Pali, 51 retailers in Hoshangabad, 1 retailer in Rangareddy, 131 retailers in Krishna, 35 retailers in Una, and 50 retailers in West Godavari did not board the MFMS system and also did not renew their licenses post
3. On the supply side, the groundwork to implement AeFDS across six districts has been commendable. Almost all the retailers (97 percent) received training and operational support to efficiently operate PoS machines. Network connectivity measured in terms of signal strength visible in PoS machines was observed as “very good (3-4 bars)” at 92 percent of retailer locations. Current form of grievance redressal (through informal methods *WhatsApp* group) is quick and responsive; however, national roll-out of AeFDS requires a robust formal grievance redress mechanism to track and analyse operational and technical issues.
4. On the demand side, farmer awareness about the new fertiliser distribution system, process and requirements was low and calls for better communication – 88 percent of the farmers were unaware of producing *Aadhaar* at the retailer outlet to purchase fertiliser. They were also confused about the amount of subsidy mentioned in the receipt. Grapevine was rife that this amount would be credited to the bank account of farmers.

<sup>5</sup> The objective of the MFMS is to monitor the movement of the fertiliser from the manufacturer to warehouse to wholesalers and from wholesalers to retailers. The proposed system helps in monitoring the movement of fertiliser’s consignments and its stock position at various warehouses, wholesaler, and retailer. The system also acts as a tool for government bodies to track and ensure the timely distribution of fertilisers to the farmers” - <http://mfms.nic.in/>



5. Approximately 10 percent of the total transactions are estimated to be “adjusted transactions” i.e. someone else authenticated using his/her Aadhaar, either during the sale or later for reconciliation, instead of the buyer. Retailers cite unavailability of Aadhaar with farmers while purchasing fertiliser, biometric authentication errors, and connectivity/server problems as major reasons for conducting adjusted transactions.
6. Average AeFDS transaction time has significantly improved to 5 minutes from 10.5 minutes in the initial pre-pilot phase in Andhra Pradesh. Successful biometric authentication for AeFDS transactions in first, second, and third attempts are 35 percent, 39 percent, and 19 percent, respectively.
7. Fertiliser retailers are worried that transactions authenticated through PoS may not be feasible during upcoming peak “Kharif” season due to high transaction time. Assuming 5 minutes of per transaction time and 10 hours of operation; retailers can only handle 120 transactions in a day, which is insufficient to handle rush of 300-500 farmers per day during peak periods. It is likely that retailers would resort to higher “adjusted transactions” to handle peak load.

## Key Recommendations

*Average AeFDS transaction time has significantly improved to 5 minutes from 10.5 minutes in the initial pre-pilot phase in Andhra Pradesh.*

### **Early Checkout System**

Although the average transaction time has reduced to 5 minutes, retailers can manage only 120 transactions in 10 hours of operation per day – without any break for lunch or server problems. Hence, we recommend an “*early check out*” system, where farmers can pre-authenticate themselves at designated Points of Authentication (PoA) a few days before they purchase fertiliser.

There can be multiple PoA counters already existing in villages such as Common Service Centres (CSC), Post Offices, Bank Mitrs (BMs), Fair Price Shops (FPS) etc., where farmers can pre-authenticate the transaction using *Aadhaar* and book the fertiliser; thus, reducing the transaction time on the final purchase day.

### **Centralised Grievance Redress Mechanism (GRM) and After Sale Service**

There is a strong need for a central GRM to record and resolve operational issues. A robust and

centralised GRM would allow tracking and analysis of most frequent issues and structured approach to resolve them. PoS vendors also need to provide adequate number of on-site service engineers to deal with issues as they arise. The payment of PoS vendors must be linked to maintenance of PoS machines in the field. Though current Whatsapp based system provides quick fixes but doesn't ensure tracking, monitoring and resolving common issues.

### **Stronger Communication**

It was observed that most of the farmers were not aware of the new fertiliser delivery system where they will require *Aadhaar* to authenticate transaction and purchase fertiliser. Low level of communication among farmers leads to malpractices such as overcharging by retailers and confusion (such as the rumour of the subsidy indicated on receipt being credited into the bank account of farmers). Strong communication campaign in vernacular language needs to be designed to increase awareness among the beneficiaries.



## Background



*Although the transaction time has significantly reduced to 5 minutes per customer, peak load management during upcoming Kharif season would still be a daunting task for the retailers*

Fertiliser subsidy in India has consistently increased in the post-reforms era, from INR 4,389 crore ((USD 683 million) in 1990-91 to INR 70,000 crore ((USD 10896.638 million) in 2017-18, representing an increase of over 17 times.<sup>6</sup>

Economic Survey 2015-16 reports that fertiliser subsidy is fraught with leakages and 65 percent of the subsidy does not reach the intended beneficiaries<sup>7</sup>. The recent policy announcements of the government to bring fertiliser subsidy distribution under the ambit of DBT programme aims to reduce such leakages. DBT in fertiliser subsidy is more complex than DBT in other schemes such as food subsidy and Liquefied Petroleum Gas (LPG) due to the following reasons:

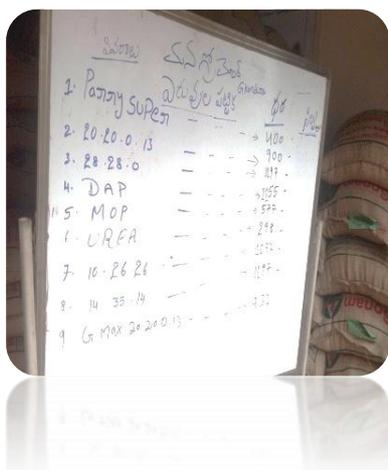
1. Undefined beneficiary database: Presently anyone is allowed to purchase subsidised fertiliser.
2. Undefined beneficiary entitlement: There is no restriction on the quantity of

fertilisers that can be bought by a customer.

3. High amount of subsidy that may burden farmers if asked to pay upfront. While the actual selling price of a bag of Urea hovers between INR 950-INR 1100 (USD 14.78-USD 17.12), a farmer pays INR 295-INR 325 ((USD 4.59-USD 5.06) for the same bag. Hence, a farmer might find it difficult to pay INR 1100 (USD 17.12) per bag before the harvest season begins.
4. Varying degree of subsidy for multiple products and multiple fertiliser plants. There are more than 75 different products under fertilisers with different amount of subsidies. Managing sales of all these products uniformly under a single platform makes DBT in fertilisers a more complex proposition than subsidy in cooking fuel, or food, among others.

<sup>6</sup><http://www.faidelhi.org/general/Central%20subsidy%20on%20fertilisers.pdf>

<sup>7</sup>[Economic Survey 2015-16](#)



Therefore, DBT model in fertiliser aims to build an efficient and replicable fertiliser subsidy distribution model with the following objectives:

1. To identify the actual beneficiaries of fertiliser subsidy.
2. To digitalise the sale of fertiliser through e-POS.
3. To study fertiliser consumption at farmer level and bring in rationalisation via soil health card recommendation.
4. To track and mitigate over-use of fertiliser based on sale data.
5. To rationalise the subsidy payouts to the manufacturers and thereby reduce fertiliser subsidy burden on the exchequer.
6. To understand land holding details, cropping and cultivation patterns for better planning of fertiliser demand estimations.

The government in the first phase announced AeFDS pre-pilot for Urea (that accounts for 71 percent of total fertiliser subsidies<sup>8</sup>) distribution in Krishna and Godavari districts of Andhra Pradesh. In the second phase, the government expanded AeFDS to 17 more districts in pilot mode including the two districts of pre-pilot. The findings in the report pertain to phase II of AeFDS i.e. the scaled - pilot.

The project in its nascent stage is aimed at integrating farmers' land record, soil health information and Aadhaar database to distribute fertiliser to farmers using biometric authentication. The conceptual framework of

AeFDS is based on "Biometrically Authenticated Physical Uptake (BAPU)" where the farmer has to authenticate his/her identity through Aadhaar at the retail outlet. This means, that each fertiliser retailer would have an Aadhaar enabled PoS device to authenticate the farmer.

Under the pre-pilot model in Krishna and West Godavari districts, the PoS machines, provided to the fertiliser retailers, fetched land record details and corresponding soil health information using farmer's Aadhaar number. Though the recommended fertiliser quantity, basis soil health and land holding was displayed on PoS machine, the farmer was free to buy whatever quantity he/she desired. Additionally, the pre-pilot was designed on "no denial policy" where farmers were not denied sale of fertiliser either due to failure to produce Aadhaar card or due to failure of Aadhaar authentication.

The pre-pilot funder's consortium appointed MicroSave as the nodal agency to assess the outcome of this pre-pilot and we found several challenges affecting smooth implementation of AeFDS. These primarily included inadequate training of field functionaries, high transaction time, delayed deployment of PoS devices, technology and connectivity issues, and database (Aadhaar, land records and soil health card) integration challenges. MicroSave's policy and operational level recommendations were incorporated in the phase II of AeFDS i.e. pilot that started from

<sup>8</sup><http://www.faidelhi.org/general/Subsidy%20allocation%202017-18.pdf>

first week of October, 2016, across 17 more districts of the country.

One of the significant modifications in AeFDS pilot framework was to simplify the process by delinking the soil health card and land record databases and use only *Aadhaar* database for authenticating transactions. This modification was introduced basis our pre-pilot learnings of a) high transaction time due to coordination with three different kind of databases (land record, soil health card, and *Aadhaar*) at the same time and b) incomplete digitisation of land and soil health card databases. DBT in fertilisers from its early days in Krishna and West Godavari has matured into a more robust system and is expected to expand to every state by end of FY 2017-18.

In January 2017, *MicroSave* was asked by NITI *Aayog* to conduct a dipstick evaluation of AeFDS pilot in four districts – among the 17 new districts – along with Krishna and West Godavari to assess implementation issues and challenges.

The four new districts included in the assessment were: Rangareddy (Telangana), Pali (Rajasthan), Una (Himachal Pradesh), and Hoshangabad (Madhya Pradesh). Over a three-week-long study, *MicroSave* engaged with all the key stakeholders responsible for successful execution of AeFDS pilot and evaluated the end users (both retailer and buyer) and district administration's readiness.

The key actionable solutions proposed by *MicroSave* for further improvement in the system have been detailed in the forthcoming sections of the report.



## Methodology

*MicroSave* conducted mixed method research (both qualitative and quantitative) and adopted a consultative approach for designing the study and research questionnaires. The quantitative research was conducted with both farmers/buyers and retailers to gain in depth understanding of the AeFDS implementation process.

Farmers were randomly selected from the retailer's locations to conduct the interviews. *MicroSave* also conducted in-depth qualitative interviews with other stakeholders such as district government officials, fertiliser company representatives, and district consultants who are directly responsible for implementing the new system on the ground.

### Sampling of Retailers

As the sowing season was at its descent in some districts, it was important to understand the number of transactions at each of the retail locations to ensure we could meet our designated sample of farmers doing live transactions. Therefore, retailers with less than 30 transactions in the month of

January 2017 were excluded from the list and the remaining retailers were included. According to the average number of transactions conducted per month, remaining retailers were divided into following three categories:

1. *Category A:* >100 transactions
2. *Category B:* 50-100 transactions
3. *Category C:* <50 transactions

A total of 200 retailers and 1,734 farmers were surveyed and additionally, qualitative in-depth interviews were conducted with 69 retailers and 75 farmers.

Districts	No. of retailers	No. of farmers
<b>Krishna</b>	47	395
<b>West Godavari</b>	39	354
<b>Rangareddy</b>	39	311
<b>Pali</b>	23	235
<b>Una</b>	28	221
<b>Hoshangabad</b>	24	218
<b>TOTAL</b>	<b>200</b>	<b>1,734</b>



## Respondent Profile

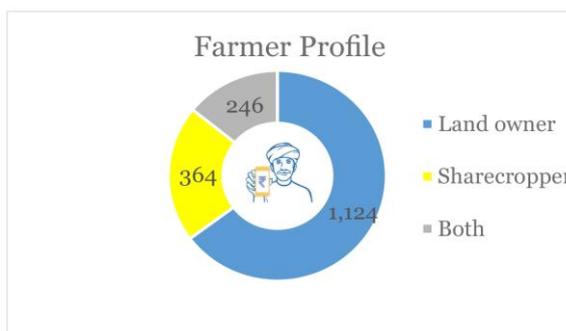


### Farmer Profile

- Out of the total 1,734 farmers surveyed, 65 percent were land owners and 21 percent were sharecroppers. Around one-sixth or 14 percent of the total farmers were both sharecroppers and landowners.
- 96 percent of the total respondents interviewed bought fertilisers for themselves, while remaining 4 percent of respondents bought fertiliser on behalf of other buyers/farmers.
- The average land size of all the farmers surveyed was 6.5 acres and average expenditure of INR 5,363 (USD 83.46) was made on purchase of fertilisers.

### Retailer Profile

- 62 percent of the 200 retailers surveyed were private retailers and remaining 38 percent of retailers were co-operatives who were also involved in additional activities such as sale of bulk farm produce, seeds procurement, banking services etc.
- On an average, retailers clocked fertiliser sales worth INR 1.06 crore (USD 0.165 million) in the year 2016, with 82 percent of these sales being carried out in cash.





## Findings

Retailers and farmers in all the districts reported no shortage of fertilisers in last two years. During the survey, retailers agreed that *Nem* coating of Urea and improved fertiliser distribution system through AeFDS has reduced diversion. However, they also cited that increase of fertiliser supply in last two years is also due to reduced fertiliser demand owing to low rainfall before FY 2016-17.

Before AeFDS, retailers used to overcharge farmers. For example, Urea with MRP of INR 298 (USD 4.64) per 50 kg of bag was sold for up to INR 310 (USD 4.82). Farmers consider that AeFDS has reduced overcharging by the retailers. Now, they can validate the actual price of fertiliser that is printed on the sale receipts generated from PoS.

MFMS application and AeFDS has led to increased accountability of stakeholders such as fertiliser manufacturers, wholesalers and retailers; besides, it has enhanced transparency by and tracking the physical movement of fertiliser from manufacturers to farmers. These steps have created positive push towards reducing diversion and the retailers who do not see business value due to increased tracking and reduced scope for diversion have been reported to have

left the system.

Anecdotal evidence suggests that 31 retailers in Pali, 51 retailers in Hoshangabad, 1 retailer in Rangareddy; 131 retailers in Krishna; 35 retailers in Una and; 50 retailers in West Godavari did not board the MFMS system and also did not renew their licenses post AeFDS implementation.

Both retailers and farmers were of the opinion that diversion should reduce because of AeFDS. *Aadhaar* authentication discourages buyers who purchase fertiliser for non-agricultural use due to the possibility of being tracked down later.

*“Machine ke aane se retailer zyaada nahin leta hai. Abhi toh bill pe bhaav likha hota hai.”*

*(Dealers do not overcharge after introduction of PoS for fertiliser sales. Now, we can check the fertiliser price written on the sales receipt.)*

– Farmer

However, overcharging farmers is still possible under AeFDS by selling less than a full bag of fertiliser, where per kg price tends to be higher. Although loose sale of fertiliser is not allowed, retailers sell loose fertiliser at a higher price; e.g. retailers sell at INR 8 (USD 0.12) per kg when ideally the price should be INR 6 (USD 0.09) per kg as Maximum Retail Price (MRP) of a 50 kg bag is INR 298 (USD 4.64).

Thus, a bag of INR 298 (USD 4.64) is sold at INR 400 (USD 6.22) when sold in loose quantities. The modus operandi is that retailer enters extra bag(s) into the PoS while making sales entry for farmers. Though, the retailer does not charge farmer for the extra bag(s), he keeps these extra bags separately to be sold in loose quantities.

*“Dishonest people will not be able to buy fertiliser because of Aadhaar authentication.”*

*-Farmer, Rangareddy*

*“Now I am afraid to provide my Aadhaar for purchasing fertiliser on behalf of farmers in my village. Most likely I would not give my Aadhaar again.”*

*- Auto driver, Hoshangabad*

### Availability of Fertiliser and Overcharging

Retailers and farmers in all districts reported no shortage of Urea in last two years. During the survey, retailers agreed that *Neem* coating of Urea and improved fertiliser distribution system through AeFDS has reduced diversion of Urea. However, the retailers cited that increase of fertiliser supply in last two years is also due to reduced fertiliser demand owing to low rainfall before FY 2016-17.



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MFMS application and AeFDS has led to increased accountability of stakeholders. Anecdotal evidences suggest that 31 retailers in Pali, 51 retailers in Hoshangabad, 1 retailer in Rangareddy; 131 retailers in Krishna; 35 retailers in Una, and 50 retailers in West Godavari did not board the MFMS system.



Both retailers and farmers were of the opinion that diversion should reduce because of AeFDS. The fact that *Aadhaar* authentication is needed to identify the buyer/farmer acts as a deterrent against diversion.

## Retailer Readiness

### Training and Awareness

- 97 percent (193) of the total retailers interviewed had received training from the district administration on AeFDS and procedures to operate PoS. Out of these, 97 percent of the retailers (188 out of 193) found the training useful in understanding the functionality and features of PoS device. The training period varied from 1 to 2 days in the surveyed districts.
- In Rangareddy and West Godavari districts, the retailers cited instruction manuals, training booklets, and refresher courses as useful support collaterals. However, retailers did not report receiving such training collateral in other districts.
- Most of the retailers were well aware of the government’s objectives to implement AeFDS. 75 percent (149) of the retailers said that AeFDS

will reduce the workload of manual record keeping and will facilitate real time stock management. 62 percent (124) of the retailers agreed that AeFDS will help to identify and target eligible customers/farmers efficiently and 32 percent said that the new system would check diversion of Urea.

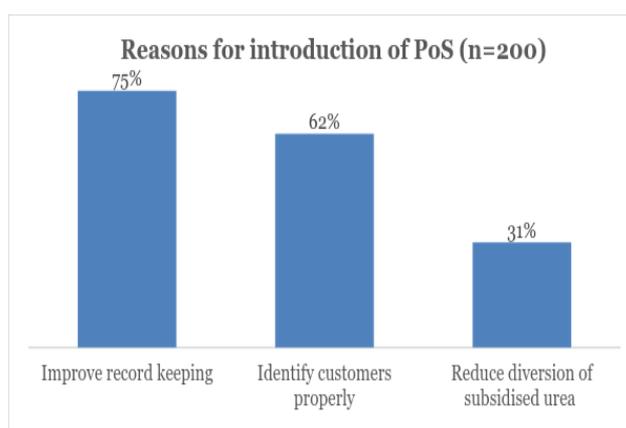
### Ease of Transaction

- 77 percent of the retailers conveniently logged into the PoS device to initiate transactions in one or two attempts.
- Most retailers (91 percent) said that they use the Subscriber Identification Module (SIM) that works best in their local area. Retailers did not complain of signal/connectivity loss while conducting transactions.
- However, retailers are concerned about high transaction time due to introduction of PoS for fertiliser sale.

*“season mein toh mai yeh machine side pa rakh doonga, jaise bechta hoon vaise hi bechungu, aur kisaanon ko baad me aane ko kahunga angootha lagane”*

(During –peak season I will keep the PoS aside and start selling manually as I used to do earlier. I would ask farmers to come and authenticate later.)

- Retailer, Una



According to the retailers, average transaction time per customer on POS is approximately 5 minutes compared to manual transaction time of a few seconds per customer to prepare the receipt. Due to off season, retailers were able to smoothly manage the sales currently, as customer footfall was low, i.e. average 10 to 20 customers per day.

However, retailers are concerned about serving and managing impatient crowd of farmers during the upcoming peak agriculture period in June/July when the footfall can range between 300-500 customers a day.

The survey reveals that during peak agriculture period, at any point of time during the day, up to 35 customers wait for their turn in queue to purchase fertiliser. Assuming 5 minute transaction time and 10 hours of operation, retailers can only handle 120 transactions a day – without any break for lunch or server problems. Retailers want resolution to the peak load management problem before start of the upcoming Kharif season.

### **Exception Management**

Exceptions are bound to happen and its adverse impact on vulnerable segments may jeopardise the success of AeFDS scheme. AeFDS does not allow retailers to sell fertiliser to farmers without their *Aadhaar* authentication. In case the farmer forgets to bring his/her *Aadhaar* number or the system fails to authenticate the farmer due to network/server issues or unclear fingerprint, the farmer cannot purchase fertiliser. Currently, no exception management practice is in place to tackle the situation.

In case of transaction failure due to any issue, retailer does one of the following:

1. Gives farmers the required fertiliser and asks him to come a few hours or a day later to complete the authentication on PoS
2. Asks for the farmer's relative's or acquaintance's *Aadhaar* and completes the transaction; Adds the number of bags purchased by a farmer to the sale of farmer standing next in queue.

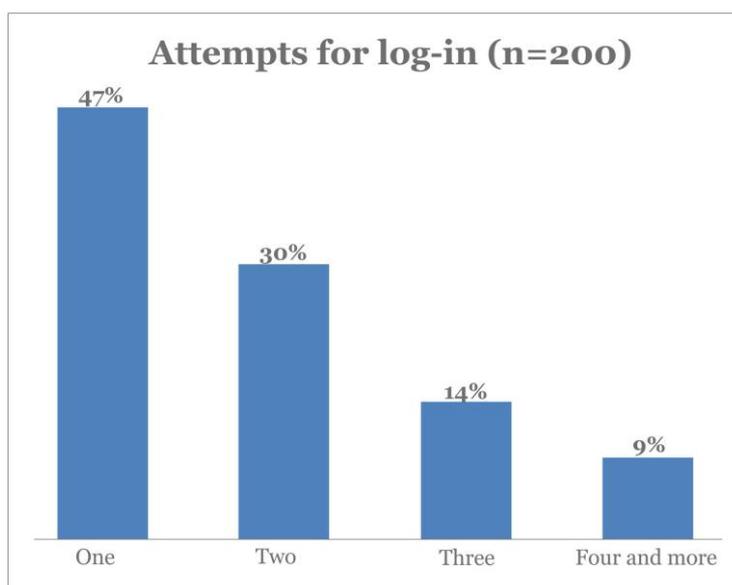
For example, if a farmer wants to buy 5 bags of Urea but the transaction is not getting through, the retailer would add these 5 bags of Urea to the sale of the farmer next in line. So, if the latter has to buy 2 bags of Urea, he/she will end up getting the sales receipt for 7 bags (2+5) but will pay only for 2 bags of Urea.

forwarded to concerned agriculture officers/ district consultants/DBT monitoring cell over phone or social media groups such as WhatsApp.

However, the existing GRM lacks record keeping, tracking of grievances, responsibility/escalation matrix, and resolution turnaround time. The existing GRM may be efficient and manageable at the present scale of pilots but it will not be effective once the AeFDS pilots are rolled out at pan-India level.

**Grievance Redressal Mechanism (GRM)**

- > 92 percent of the retailers find complaint resolution mechanism to be efficient and quick. Currently, retailer queries, and issues are



*“Season me bahar 500 Kisan khade hote hain, har saal humari society ka naam aata hai khabar mein is vajah se. Season mein teesre din se hum police station se bikri karte hain, abb jahan itni bheed ikatthi ho jaye uss samay ye POS se becha toh mujhe bhi dande padenge”*

(During peak season up to 500 customers visit our shop in a day. We face violent situations at our shop every year during the peak agriculture periods. Local newspapers publish these incidents. During the peak periods, we sell fertiliser from a location inside the police station to manage customer rush. If we start selling fertiliser using PoS during the peak season, the situation will be unmanageable.)

– Retailer, Pali

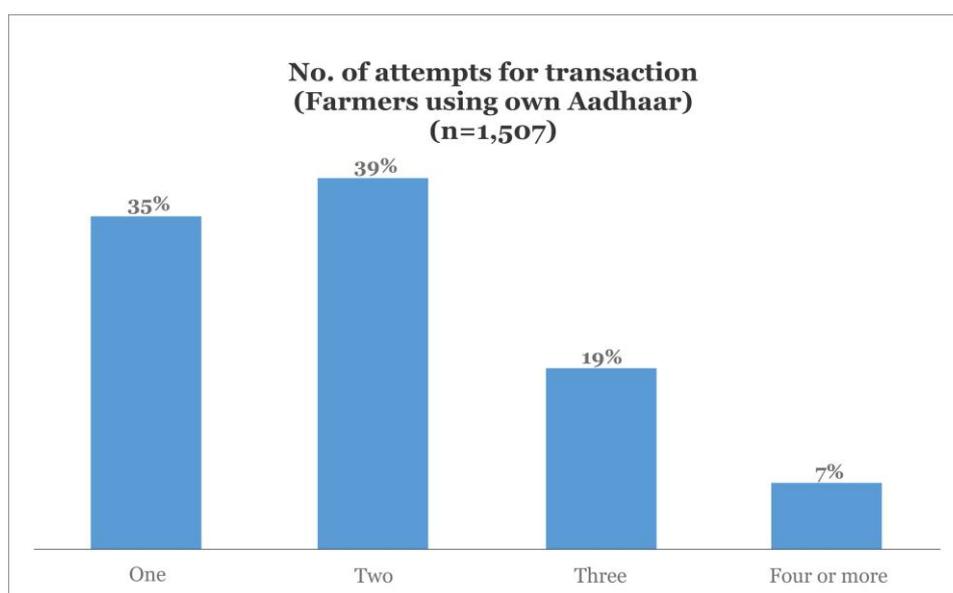
### Operational Issues

The fertiliser retailers across six surveyed districts reported the following operational issues:

#### 1. Stock update issues in MFMS:

- 58 percent retailers reported delay of more than a day in updating stock. This happens because of the gaps in the back-end stock update process. Even though the physical stock reaches the retailers on time, same is not reflected in their PoS machine. Retailers cannot sell the stock unless it is updated in the PoS. However, retailers sell the stock manually if they have old stock left in the shop. Later, to show the stock as sold through the PoS, the retailers switch to adjusted transactions in PoS after receiving the stock.

- Some retailers received PoS in January 2017. So, they should receive fertiliser stock in the PoS after PoS allotment i.e. January 2017. But the PoS showed the stock which the retailers have received and manually sold before January 2017. The PoS shows this stock as ‘pending’ which the retailers cannot sell. Retailers may switch to adjusted transactions to clear off the stock, if timely resolution is not provided.
- 14 percent retailers reported incorrect change in stock after each transaction and also that the stock does not update automatically if the transaction gets cancelled.
- In some instances retailers received the same stock twice on their PoS.



*“Sales in June/July are going to be a big problem. Usually, retailers have 5-6 helpers to increase the number of transactions happening at a time. With just 1 PoS machine, this would pose a huge problem”*

*– Additional Director,  
Agriculture, Rangareddy*

- Stock thus received can only be sold once as they received the physical stock only one time. The remaining stock erroneously shows up as unsold stock in the MIS. Here also, retailers may switch to adjusted transactions to clear off the stock, if timely resolution is not provided.
2. **Biometric mismatch/failure:** Error “K-100”, that relates to fingerprint authentication, appears frequently on the system. In case of this error, retailers either check with other fingers or call any family member and sells fertiliser on his or her Aadhaar number.
  3. **Net pack costs:** Every month retailer spends about INR 150-INR 250 (USD 2.33-USD 3.89) on buying 2G/3G services for the POS. In peak months, a retailer sometimes has to buy more than one pack which adds to his costs.
  4. **Sale receipt and reports** are printed on thermal paper that does not last long. Ink on thermal paper fades over a period of one month. This makes maintaining record books difficult for the retailers. Further, some retailers reported that the PoS does not print duplicate bills.
  5. **Retailers complain** that the screen on the device is too small. They find it difficult to make entries into the PoS while carrying out transactions, receiving/ updating stocks, etc.

## 10% transactions are adjusted

However, it is vital to note that this is likely to be a conservative estimate based on interviews with farmers at retail shops. Farmers interviewed are often unaware of the exact process that has been followed when they bought fertilisers. Moreover, some of them have limited understanding of AeFDS or the PoS machines. For example, a farmer may have used his fingerprint and believes that his transaction was registered successfully. But the retailer would have conducted the transaction manually since the fingerprint failed, thus leaving the farmer with a mistaken impression. In our qualitative discussion with retailers and other stakeholders, it was reported that the ratio of *adjusted transactions* usually ranges between 20-25 percent of total sales.

*“AeFDS dry-run was launched just 4 days before demonetisation. As a consequence of demonetisation, all farmers had Aadhaar cards with them on their way to bank branches, which had a positive impact on AeFDS uptake as well.”*

*-Dealer, Pali*

### Farmer Readiness

#### Awareness and Communication

- Farmers believe that the communication from the government about new fertiliser distribution system has been inadequate.
- 88 percent of the farmers received information that *Aadhaar* authentication is mandatory to purchase fertiliser from the retailers. However, farmers received this information only after they had arrived at retailer outlet to purchase fertiliser.
- Other modes of communication include Agriculture Officers who informed only 14 percent of farmers, while print media and TV/radio informed 15 percent and 10 percent of farmers, respectively.

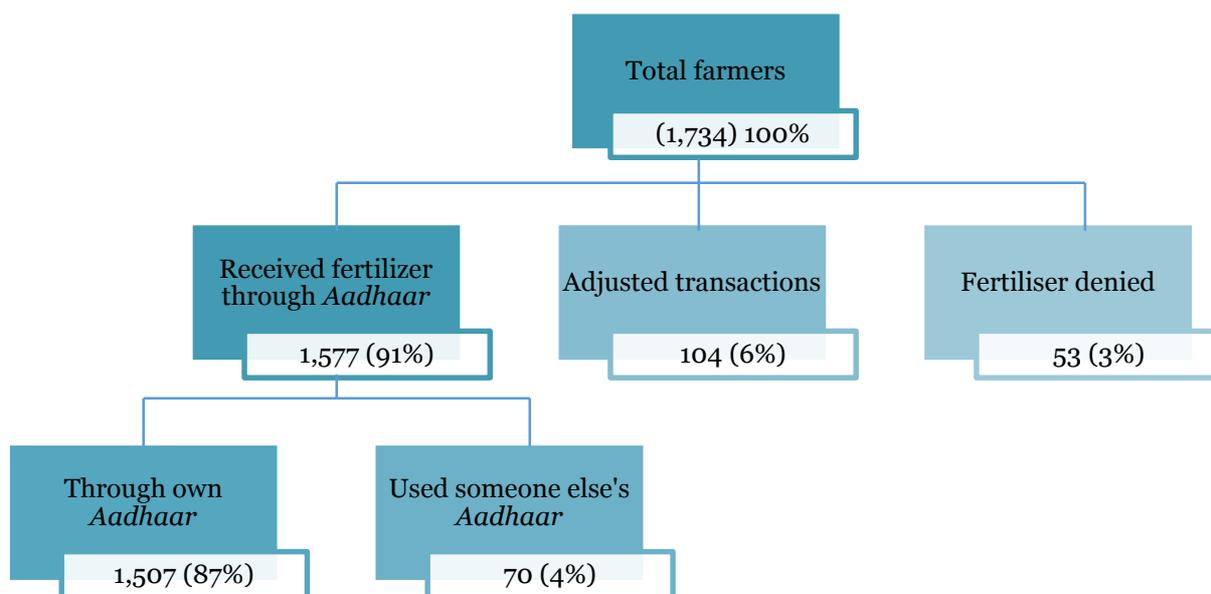
Pro-active communication strategy should be adopted to communicate and create awareness about AeFDS. Once made aware, farmers will carry their *Aadhaar* number to purchase fertiliser, reducing instances where retailers/farmers switch to other measures to conduct transactions.

#### Ease of Transaction

- 74 percent of farmers had successful *Aadhaar* authentication in one or two attempts. While 35 percent (529) authenticated in one attempt, 39 percent (591) did it in second attempt. In 19 percent of cases, a third attempt was required.
- Only 7 percent (100) farmers faced issues of biometric mismatch/failure where four or more attempts were made while transacting through *Aadhaar*.

#### Transaction Status

- 91 percent (1,577) of the total farmers surveyed received fertiliser through *Aadhaar* authentication. These farmers either used their own *Aadhaar* or requested their relatives/friends to use their *Aadhaar* to conduct transaction on their behalf. A small percentage of farmers (3 percent) were denied fertiliser, as they did not bring *Aadhaar* to purchase fertiliser and the retailers did not conduct transaction on someone else's *Aadhaar*.



➤ Retailers “adjust” 10 percent of total transactions due to *Aadhaar* unavailability, authentication issues and server problems. Out of the 1,577 farmers who received fertiliser through *Aadhaar* authentication, 1,507 farmers (87 percent of the total respondent farmers) received fertiliser using their own *Aadhaar*. However anecdotal evidences and informal discussions with farmers and retailers suggest that adjusted transactions could be as high as 25%.

The remaining 70 farmers (4 percent of the total respondent farmers) received fertiliser on someone else’s *Aadhaar*. In another 6 percent of the transactions, retailer conducted transaction manually and used own/employees/relatives *Aadhaar* to authenticate farmer transaction later.

As mentioned, retailers are worried that AeFDS transactions through PoS do not seem sustainable during upcoming peak season in “Kharif. After the initial rains, farmers need to apply fertiliser immediately for better productivity. Hence, farmers descend in hoards to fertiliser retail shops.

Once retailers see that they are not able to cater to the large number of farmers coming to their shop during peak season efficiently and their sales may decrease because of limitations of the PoS machine, they switch to manual transactions which are later ‘adjusted’. Moreover, absence of exception management practice will aggravate this situation. Adjusted transactions would reduce significantly, if exception management practices are put in place.

### What is *adjusted* transaction?

*Adjusted* transactions are those where retailer conducts manual transaction for farmer in the first instance and authenticates it later using another *Aadhaar* number. Retailers report unawareness, K-100 error (75 percent) and connectivity/server problems (57 percent) as major reasons for adjusted transactions.

### How is it conducted?

- Using own (retailer) or any acquaintance’s *Aadhaar*
- Increasing ‘quantity sold to’ in the transaction of the next farmer in queue
- Asks farmers to authenticate later or arrange another *Aadhaar*

### Impact

Approximate **error of 10 percent** in quantity and farmer database



### Key Insight: Auto-Drivers Transacting on Behalf of Farmer

Farmers do not necessarily buy fertiliser personally. Distance to the fertiliser shop can be 30-40 km which costs both time and money. It is uneconomical for small and marginal farmers to visit and buy fertiliser on a regular basis. Retailers observed that at least 25 percent of transactions are made by representatives of farmers. In some cases, this is a relative or friend who happens to visit the town and buys fertiliser/seeds on behalf of the farmer. However, in significant number of cases, auto or trolley drivers purchase fertiliser on behalf of farmers. For example, 5-10 farmers usually pool together to save costs and hire an auto driver to transport their produce for them to the markets. The farmers call their contact at the 'mandi' (market) and inform them to expect the auto driver later in the day. The auto driver sells the farmers' produce, collects the money, and goes to the retailer to buy fertiliser on behalf of the farmers. The driver purchases fertiliser with the cash he got by selling agriculture produce at the market. The auto driver uses his own *Aadhaar* number to authenticate the transaction. The database generated will reflect the purchase on an auto-driver's name whereas the end consumers are the farmers.

**Note:** The 25 percent referenced here are those transactions where the purchaser is not the farmer. It should not be confused with adjusted transactions. Several transactions are adjusted but in the name of some farmer while several transactions are not adjusted but the purchaser is a representative of the farmer.



## Why does TPDS Work Better in Some Areas?

There is an ongoing debate as to why *Aadhaar* enabled TPDS works better than AeFDS, though both rely on similar technology solution. Based on the insights from *MicroSave's* engagement with Ministry of Consumer Affairs, Food, and Public Distribution, the following factors may be responsible for the difference:

### Number of Products

In AeFDS, retailer can sell more than 75 different types of fertiliser products whereas TPDS has mostly four to five products. Moreover, selling price and quantity is fixed in TPDS, which is not the case with AeFDS. Fertiliser retailer has to maintain record, bill, and sell 72 different fertilisers through PoS. This increases complexity of billing and sales in AeFDS. The TPDS system is less complex due to lower number of products.

### Fixed Beneficiary List

TPDS has a fixed list of beneficiaries who visit FPSs every month to buy ration. However, in AeFDS, farmers list is not fixed and any individual can purchase fertiliser through his/ her *Aadhaar*. In TPDS, PoS interface automatically populates the beneficiary details and respective entitlement and sales are carried out accordingly. Whereas in AeFDS, large number of products coupled with changing customer base requires retailers to manually enter the details every time fertiliser is sold. This increases the processing and waiting time for the farmers and also makes the system much more complex.

### Purchase Window

Unlike fertiliser, where a farmer’s purchase is dependent on climatic factors, TPDS beneficiaries can purchase their fixed ration from their designated ration shop during any day of the month. The flexibility in the purchase window in TPDS does not lead to bunching of demand and the transaction is spread throughout the month, especially in the first half of the month. However, in AeFDS, bulk of the fertiliser stock is sold within three to four days of the first rainfall of the season. Since, the farmer cannot afford to wait during the sowing season, lest he forgoes his farm productivity, the sudden bump in the demand tremendously increases the footfall at the shops adding to the chaos.

### Smaller Ticket Size

Under TPDS, a monthly expenditure for a family with five members ranges between INR 65- INR 75 (USD 1.01 –I-USD 1.17). On the contrary, in the course of a season, a farmer ends up spending a minimum of INR 300 (USD 4.67), while the maximum can be in thousands. Low value purchase nature in TPDS makes it less demanding on the customers unlike AeFDS.

#### Why Does PDS Work Better in Some Areas

	 <b>PDS</b>	 <b>AeFDS</b>	 <b>Findings</b>
 Number of Products	4-5	>75	More number of products make AeFDS complex
 Beneficiary List	Fixed	Not defined	Makes data entry tough in AeFDS
 Purchase Window	Throughout the month	Climate dependent, leading to bunching of demand	Concentrated footfall after rainfall makes crowd management difficult
 Ticket Size	Small, between INR 65-INR 75 (USD 1.01-USD 1.17) for a family of 3-5 members	Large, varying between INR 300 (USD 4.67) and thousands	Dealing with high cash amount delays processing time and increases waiting making the process complex



## Recommendations

### Early Checkout System

Fertiliser retailers are worried that AeFDS transactions may not be feasible during upcoming peak season in “Kharif” and possibilities of retailers resorting to higher “adjusted transactions” to handle peak load exists. The following figure depicts break-up of current transaction time.

We recommend an “early check out” system to pre-authenticate farmers at designated Points of Authentication (PoA) before they buy fertiliser. This would reduce transaction time at retailers’ shop by up to 3 minutes. The early check out system has the following steps:

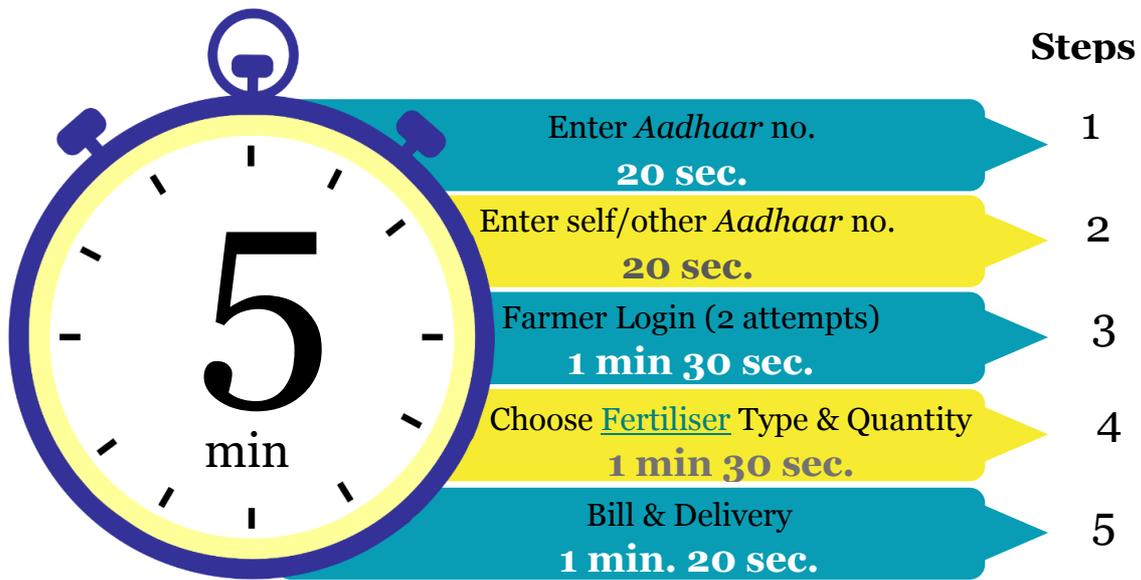
1. Farmer visits PoA. Existing infrastructure such as CSCs, BMs, FPSs, cooperative banks, post offices, etc. can be designated as PoA.
2. Farmer enters *Aadhaar* number, either himself or with the help of an agent, in the portal and authenticates himself/ herself. Farmer then enters the type and quantity of

fertilisers he/she wants to purchase in coming days.

3. Once the farmer confirms the details, the information is submitted and the farmer receives an acknowledgement receipt. The farmer also receives a Short Message Service (SMS) confirmation on his/her *Aadhaar* seeded mobile number. The validity of the receipt generated should be 10 days. The idea is to prevent the receipt’s misuse by keeping the number of days to minimum and allowing transactions in that duration. Since, a farmer’s purchase window ranges within 4 to 5 days after or before the rainfall, 10 days validity should be sufficient.
4. Pre-authenticated farmer can visit any retailer to purchase fertiliser. Based on the acknowledgment receipt, retailer enters farmer’s details into the PoS. The PoS auto populates types and quantity of fertilisers to be purchased by the farmer. The system

should not allow any changes in the PoS unless the farmer authenticates it. To change types or/and quantity of fertilisers, retailer can re-authenticate the farmer through his/her Aadhaar. The system will reduce the transaction time by up to 3 minutes as two steps i.e. farmer log-in, and choosing fertiliser type and quantity will be removed.

5. Now, the transaction steps would look as depicted in the figure below. With the system in place, retailer will be able to handle 300 farmers - assuming 2 minutes per transaction time and 10 hours of operation.



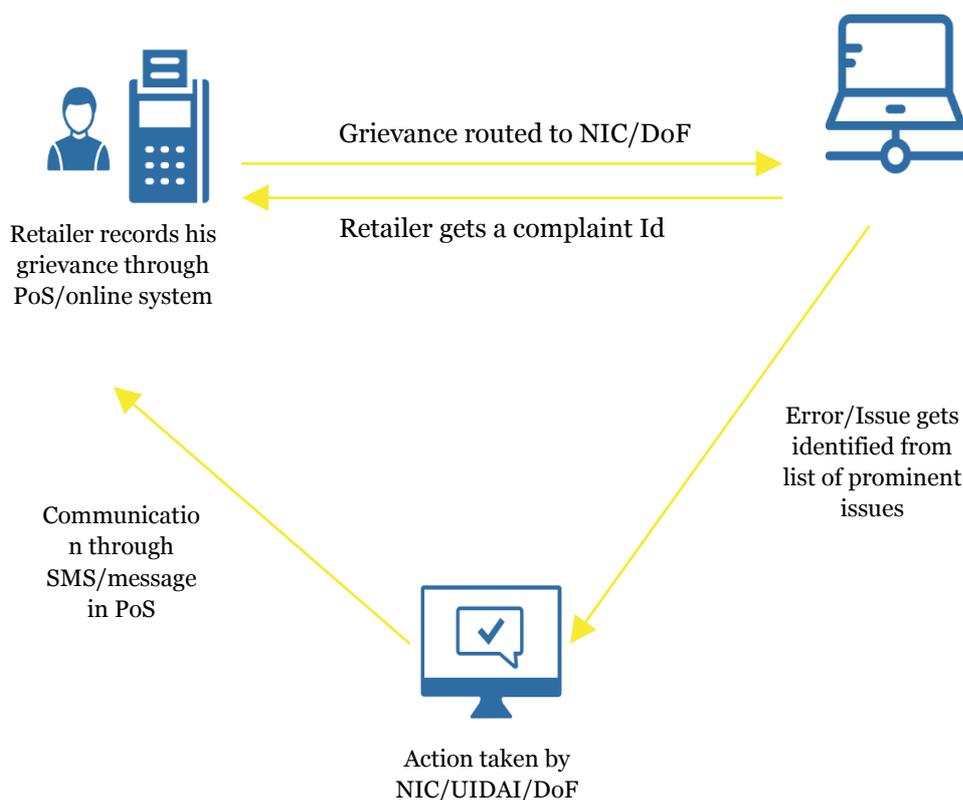
## Grievance Redressal Mechanism

A formal GRM is important when the AeFDS is rolled out at pan-India level. An indicative GRM structure is presented in the figure. The GRM should also have the following features:

1. A toll-free number which should be well advertised and communicated to the users.
2. Complainant should receive a complaint ID once the grievance is registered.
3. Complainant should be able to track the resolution status through the complaint ID.
4. Turnaround Time (TAT) should be decided for grievance resolution.
5. It should also include escalation/responsibility matrix which automatically escalates the grievance to the next level in the matrix, if it is not resolved within the pre-defined TAT at a particular level.

## Stronger Communication

88 percent of the farmers received information that Aadhaar authentication is mandatory to purchase fertiliser from the retailers. However, they received this information only after arriving at retailer outlet to purchase fertiliser. It was observed that many farmers are not aware of new fertiliser delivery system where Aadhaar is required to authenticate transaction and purchase fertiliser. Low level of communication among farmers lead to malpractices such as overcharging by retailers and to confusion that the government will directly transfer subsidy, shown on receipt, into the farmers' bank accounts. A strong communication campaign in vernacular language using mix of Above The Line (ATL) and Below The Line (BTL) communication methods needs to be designed to make farmers aware and empowered.



### Cashless Payment

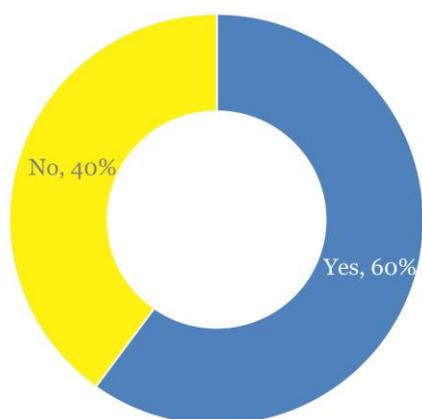
The field data shows that while the idea of cashless payments was met with lot of enthusiasm by the retailers, farmers, however, seemed a bit reluctant. 60 percent of the total retailers said they will prefer selling fertilisers in cashless mode. Demonetisation has also given a fillip to cashless transaction, increasing the usage of cheques/debit cards/National Electronic Funds Transfer (NEFT) payments. Retailers preferring cashless mode cited benefits such as reduced cost of handling cash (36 percent), reduced risk of handling cash (44 percent), convenience of carrying out transactions (64 percent), and easier record keeping (13 percent).

However, 36 percent of the retailers who did not prefer selling fertiliser in cashless mode cited farmers’ reluctance as the major hindrance.

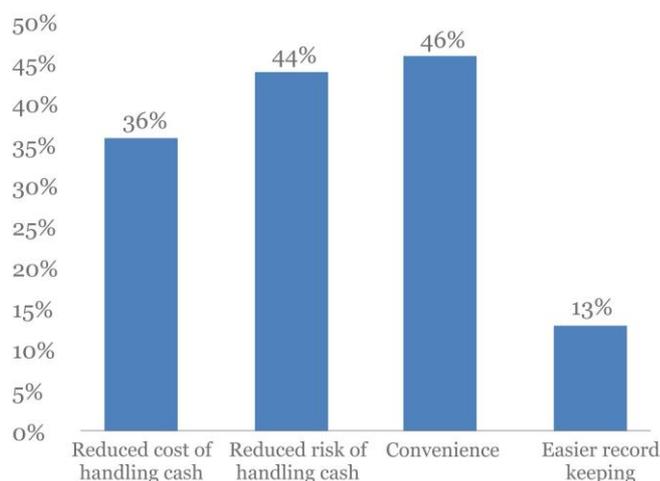
They told that the farmers either do not have means/access to cashless mode or are not aware of such modes. Retailers also consider Merchant Discount Rate (MDR) charged by the payment service providers as a hassle to switch towards cashless transactions.

54 percent of the total farmers prefer making payment through credit. Major reasons cited for low preference towards cashless modes are: ease of use, not having ATM card/smart phone, not knowing how to use Automated Teller Machine (ATM) card/wallets, and low access to cashless modes. Put simply, the ground situation requires more preparatory work on fundamental factors like banking access, connectivity, communication and awareness of farmers and retailers before cashless mode of payments is launched in the rural regions.

Retailer’s preference to sell in cashless mode



Reasons to prefer selling cashless (Multiple Responses)



## Operational Recommendations

### Some of the operational recommendations are:

1. Retailers are required to enter fertiliser MRP into the PoS with each farmer transaction. Option to enter MRP *only once* at the time of or after the retailer login should be provided in the PoS software. As the MRP for fertilisers are fixed in a state, such an option will reduce transaction time.
2. In some cases, one mobile network may not provide sufficient connectivity, all the time, to run PoS machines. Hence, PoS machines should be provided with multiple connectivity options such as dual- SIM, broadband, wifi etc. This would allow retailers to use the best connectivity option available at their location.
3. Retailer should be able to see and print daily, weekly, and monthly reports from the PoS. This would help them in stock management and book keeping. They can use these reports instead of preparing and maintaining manual records.
4. As mentioned, no exception management practice exists. This is hassle for farmers whose *Aadhaar* authentication fails during fertiliser purchase. *Aadhaar*-based One Time Password (OTP) on farmers' mobile phone can be one of the exception management practices.

Post completion of field research in Una, Pali, Rangareddy, Hoshangabad, Krishna and West Godavari districts, *MicroSave* team conducted a separate visit to Narmada district of Gujarat on the request of NITI *Aayog*.

### Based on the visit findings following technical up-gradations are suggested to tackle last mile operational challenges:

1. It was observed that PoS is not operational in villages where there is no network connectivity. Such retailers visit town to update their stock and conduct transactions manually in village. It is therefore advisable to have PoS machines with provision to add other connectivity options such as wifi, dongle, Ethernet, PSTN etc. apart from the current SIM based GPRS/3G.
2. It is advisable to provide fertiliser retailers with PoS machines having integrated digital payment options (debit/credit card, wallet, AePS, BHIM etc.). Additionally, the PoS machines should have interoperable features for integration with multiple operating platforms.
3. It was observed that the retailers struggled with smaller screen size of the PoS machines while entering details of fertiliser quantity and amount. A bigger screen size will make the transaction process smoother.
4. PoS machines should have functionality to print purchase receipts in local language so that farmers could read specific purchase details.



## Best Practices

Retailers across different districts follow practices to smoothen their business operations. Some of these are listed below. Retailers across the districts can adopt these practices to streamline business operations.

1. Retailers in Pali and Hoshangabad districts have maintained farmer details such as name, mobile number, *Aadhaar* number, village, etc. Farmers do not carry their *Aadhaar* card with them all the time. So, every time a farmer visits retailer shop he/she does not need to bring *Aadhaar*. This could be a serious privacy issue but is easing the work for the time being. A code of practice may be needed for retailers, and for everyone who handles *Aadhaar* data, on handling of *Aadhaar* and other personally identifiable information.
2. Retailers in Pali district also note which fingers of a particular farmer work best for *Aadhaar* authentication. They also check which finger is least soiled and likely to work for *Aadhaar* authentication. This practice reduces the frequency of *Aadhaar* authentication failure and saves time.
3. Retailers in Krishna district ask farmers to save their *Aadhaar* number in their mobile phones. So, if a farmer forgets to carry his/her *Aadhaar* card, he/she can check *Aadhaar* number from the mobile phone.



## ANNEXURES: District Profiles



# Una

Number of farmers

62,710<sup>9</sup>

Number of retailers

236<sup>10</sup>

- Soil type: Soil is sandy loam in nature but is deficient in Zinc. Soil colour is light grey to brown.
- All the retailers surveyed except one received training at district as well as block level. Post training, retailers seek support from district consultant or Indian Farmers Fertiliser Cooperative Limited (IFFCO) district lead.
- Retailers also have a WhatsApp group where they post their queries. District consultant who is also a member of the group addresses these queries.
- Due to slow or no connectivity during certain times of the day, transaction take longer time.
- Majority of the fertiliser uptake in the district happens through Primary Agriculture Credit Society (PACS). PACS have limited farmer base but with strong affiliation. Hence, PACS never deny fertiliser to farmers. Most of the fertiliser sale happens manually during peak season or rush hours. All the sales happen in cash mode. Credit sales hardly take place. In some case farmers are given a credit period

of one or two days to pay. In a few cases, farmers prefer their payment to be deducted from their savings accounts in the PACS.

- Retailers do not prefer selling cashless as they believe that it might have hidden costs such as service charges which will decrease their margins.
- Every month retailer spends about INR 150-INR 250 (USD 2.33-USD 3.89) on 2G/3G connection cost for the POS. In peak months, retailers sometimes have to buy more than one pack which adds to his costs.
- Farmer readiness to make cashless payment is poor. Many farmers do not have cheque books, ATMs and even bank accounts. Mostly, they rely on PACS.
- Most of the farmers said that the old system of manual sales took less time. They said that earlier the transactions used to happen in 2-3 minutes whereas it takes minimum of 5 minutes in the new system.
- According to the farmers, retailers cannot overcharge in the new system as the farmers receive sale receipt after each transaction. The sale receipt mentions the quantity of fertiliser bought and price

<sup>9</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>10</sup><http://164.100.128.10/mfmsReports/>

charged for respective fertiliser.

Number of farmers

551,567<sup>11</sup>

Number of retailers

1,047<sup>12</sup>

- Soil type: Fertile black cotton soil with moisture retention capacity and red soil. 11 mandals (blocks) near the sea have salinity problem.
- Most of the farmers said that the old system of manual sales took less time. They said that earlier the transactions used to happen in 2-3 minutes whereas it takes minimum of 5 minutes in the new system.
- Retailers are also worried that they will not be able to manage farmer transactions during peak season when up to 300 farmers visit in a day.
- Retailers switch to adjusted transactions when: farmers forget to bring their *Aadhaar* number, farmers arrive en masse at the shop and are difficult to manage, farmers' *Aadhaar* authentication fail due
- to poor connectivity or biometric failure, etc.
- In very remote areas of some districts, retailers are not using PoS because of poor connectivity and authentication issues.
- Major issues with PoS are related to stock update, biometric authentication, and server downtime.
- Retailers appreciate that PoS makes billing and stock reports easier since everything is automated now.
- Anecdotal evidences suggest that AeFDS has reduced fertiliser demand by 38,000 metric tonnes. Earlier, people used to buy higher quantities i.e. up to 200 tons and sell it in adjacent states.
- Retailers in some villages are keeping farmer details and their *Aadhaar* number in a register so that the transactions can be done even if farmers forget to bring their *Aadhaar* number.
- Retailers ask farmers to save their *Aadhaar* number in their mobile phones. So, if a farmer forgets to carry his/her *Aadhaar* card, he/she can check *Aadhaar* number from the mobile phone.

Krishna

<sup>11</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>12</sup><http://164.100.128.10/mfmsReports/>

## Hoshangabad

Number of farmers

138,040<sup>13</sup>

Number of retailers

296<sup>14</sup>

- Soil type: Predominantly black soil which is fertile having moisture retention capacity. Black soils highly retentive of moisture, extremely compact and tenacious when wet. Black soils are credited with high fertility.
- All the retailers in the district received training and consider it as sufficient. They are able to operate the PoS smoothly. 77 percent retailers are able to login into PoS in first two attempts. Remaining 23 percent retailers require 3 or more attempts to login.
- Transaction time per farmer has almost doubled after introduction of PoS. Hence, retailers are worried that they would not be able to manage farmer transactions during peak agriculture season.
- Mostly retailers approach district consultant for grievance redressal over phone or WhatsApp. They find the current system to be effective.
- Farmers came to know about the AeFDS through the fertiliser retailers after they had visited the retailer shops to purchase fertiliser. Farmers did not bring their *Aadhaar* card in such instances. Hence, retailers/farmers resorted to adjusted transactions.
- Some retailers received PoS in January 2017. So, they should receive fertiliser stock in the PoS after PoS allotment i.e. January 2017. But the PoS show the stock which the retailers have received and manually sold before January 2017. The PoS show this stock as pending which the retailers cannot sell.
- Retailers have maintained farmer details such as name, mobile number, *Aadhaar* number, village, etc. Farmers do not carry their *Aadhaar* card with them all the time. So, every time a farmer visits retailer shop he/she does not need to bring *Aadhaar*. Farmer can use the details maintained by the retailer for *Aadhaar* authentication.

<sup>13</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>14</sup><http://164.100.128.10/mfmsReports/>

## Pali

Number of farmers

214,035<sup>15</sup>

Number of retailers

373<sup>16</sup>

- Soil type: The soil of the district is mostly sandy loam. Sandy loam soils are dominated by sand particles, but contain enough clay and sediment to provide some structure and fertility.
- Many farmers are absentee landlords who have migrated out of the country. Others are mostly landowners who also take land on lease for farming.
- Though most of the retailers received PoS by November 2017, many of them avoided PoS sales until December 2017. They cited reasons such as PoS not working properly, not much stock left to sell, season is almost over, and software issues with the PoS.
- Approximately 80 retailers refused to use PoS machines. Retailers started using PoS machines only after issuance of few official memorandums by the district administration.
- Retailers complained of server downtime during initial one and half months of operations.
- Retailers have maintained farmer details such as name, mobile number, Aadhaar number, village, etc. Farmers do not carry their Aadhaar card with them all the time. So, every time a farmer visits retailer shop, he/she does not need to bring Aadhaar. Farmer can use the details maintained by the retailer for Aadhaar authentication.
- Retailers note which fingers work best for Aadhaar authentication for a particular farmer. They also check which finger is least soiled and likely to work for Aadhaar authentication.
- Retailers expect to have an exception management system in place for farmer authentication e.g. Aadhaar linked OTP or an Iris scanner.
- Retailers prefer the new system as accountability of farmers' authenticity is transferred from retailers to Aadhaar based authentication. However, in the existing system anyone can purchase fertiliser and farmer's authenticity is not checked.

<sup>15</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>16</sup><http://164.100.128.10/mfmsReports/>

## Rangareddy

Number of farmers

313,541<sup>17</sup>

Number of retailers

228<sup>18</sup>

- Soil Type: Red soil is predominant in the district followed by black soils. Red soils are generally poor growing soils, low in nutrients and humus and difficult to cultivate because of its low water holding capacity. Black soils highly retentive of moisture, extremely compact and tenacious when wet. Black soils are credited with high fertility.
- Majority of farmers and many retailers dislike AeFDS because of increased transaction time and inadequate peak season management.
- Retailers feel that AeFDS will stop black marketing. Farmers are scared to purchase too much fertiliser since they assume that the transactions are being tracked and the government can seek clarification on suspicious transactions.
- Retailers also feel that online stock management will reduce diversion as chances of being caught are high.
- Although sale of loose fertiliser is not allowed, retailers sell fertiliser in loose e.g. retailers sell Urea at INR 8 (USD 0.12) per kg that ideally should be INR 6 (USD 0.09) per kg as Maximum Retail Price (MRP) of a 50 kg Urea bag is INR 298 (USD 4.64). Thus, a bag of INR 298 (USD 4.64) is sold at INR 400 (USD 6.22) when sold in loose. The modus operandi is that retailer enters extra bag(s) into the PoS while making sales entry for farmers. Through, the retailer does not charge farmer for the extra bag(s).
- Retailers switch to adjusted transactions when: farmers forget to bring their *Aadhaar* number, farmers appear en masse at the shop and are difficult to manage, farmers' *Aadhaar* authentication fail due to poor connectivity or biometric failure, etc.
- Retailers are worried that they will not be able to manage the impatient crowd of farmers/customers during the upcoming peak agriculture period in June/July when the farmer/customer footfall can go beyond 200 per day.

<sup>17</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>18</sup><http://164.100.128.10/mfmsReports/>

## West Godavari

Number of farmers

545,301<sup>19</sup>

Number of retailers

1,260<sup>20</sup>

- Soil Type: Predominantly red and black soils are found. Red soils are generally poor growing soils, low in nutrients and humus and difficult to cultivate because of its low water holding capacity. Black soils highly retentive of moisture, extremely compact and tenacious when wet. Black soils are credited with high fertility.
- Farmers feel that the PoS-based system is more transparent than the old manual system because everything is driven through the POS and has minimised manual intervention by retailers.
- Farmers consider that AeFDS has reduced overcharging by the retailers. Now, they can validate the actual price of fertiliser that is printed on the sale receipts generated from PoS.
- Retailers can easily and reconcile fertilisers sales through the data generated from PoS. With the new system, retailers at any given time can check their sales status and place their future orders accordingly.
- Retailers expect to have an exception management system in place for farmer authentication e.g. Aadhaar linked OTP.
- Retailers are worried that they will not be able to manage the impatient crowd of farmers/customers during the upcoming peak agriculture period in June/July when the farmer/customer footfall can go beyond 200 per day.

*Authentication failure* due to poor connectivity was a concern among the farmers as they felt that there was a possibility that they might be denied fertilisers during peak seasons thus affecting the quality of the crop.

<sup>19</sup><http://agcensus.dacnet.nic.in/districtsummarytype.aspx>

<sup>20</sup><http://164.100.128.10/mfmsReports/>

# MicroSave

Market-led solutions for financial services



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