

AADHAR ENABLED PUBLIC DISTRIBUTION SYSTEM (AEPDS), BENEFICIARY SURVEY AND ASSESSMENT FRAMEWORK

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ABSTRACT

Public Distribution System (PDS) has evolved as a system of managing scarcity through distribution of food grains at affordable prices. In 2015, Aadhar enabled Public Distribution System (AePDS) made linking AADHAR cards of the beneficiaries to the Ration Cards mandatory enabling the Fair Price Shops to use biometrics to authenticate the beneficiaries improving efficiency and transparency of the system. The study aims to assess the application of AePDS w.r.t service provided to the beneficiaries, challenges and benefits of the system; infrastructure adopted for efficient implementation for the process of grains distribution in the context of Raigad District in Mumbai Metro Politian Region. A strategic framework and scoring system were developed to assess the system based on literature studies, analysis of existing scenario and structured stakeholder surveys conducted in the Raigad District. Hence, on the basis of the responses scoring was done, reasons were noted and recommendations were given for the challenges.

KEYWORDS

AePDS, Fair Price Shop, Beneficiary, Biometrics, Raigad District

1. INTRODUCTION

Public Distribution System (PDS) has evolved as a system of managing scarcity through distribution of food grains at affordable prices. PDS is supplemental in nature and is not intended to make available the entire requirement of any of the commodities distributed under it to a household or a section of the society. [1] The system envisions ensuring Food Security for citizens of India. Hence, ensuring availability of food grains and sugar through appropriate policy instrument by procuring efficiently at Minimum Support Price (MSP), storage and distribution of food grains; this includes maintenance of buffer stocks of food grains and commodities making it accessible to vulnerable and economically weaker sections of the society. [1]

1.1. Timeline

In India, the inception of the system travels back to World War II in 1939. It has grown ever since, with various improvements in policies and technological advancements happening over the years. [2] In 1997, Target Public Distribution System was launched to target the beneficiaries on the basis of annual income. [1] This was further supported by National Food Security Act, 2013 which was responsible for altering the allocation quality and quantity of food grains at affordable prices. [1] In 2012, an end-to-end computerization scheme was launched as Mission Mode Project for targeting atomization in the sector over the period of 5 years [1] The detailed timeline is shown in Figure 1.

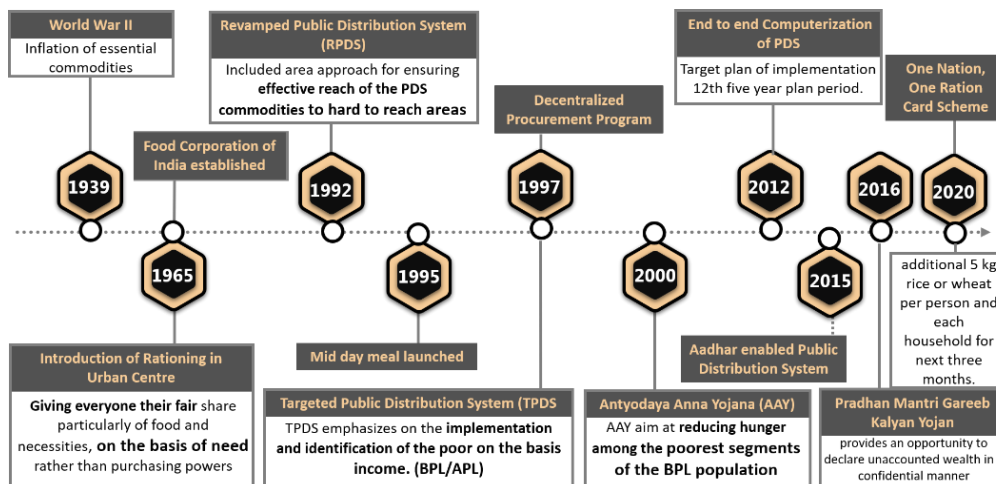


Figure 1. Timeline of PDS

1.2. Process and Structure

Ministry of Consumer Affairs, Food and Public Distribution System is responsible for procurement at the central level, headed by Mr. Piyush Goyal. [1] The decision making, and implementation is done at all the three levels. The State Food Corporation manages procurement and transportation at the state level, each Department of Food and Civil Supplies manages the functioning of the TPDS through district food offices headed by a district food officer at district supply offices. A team of assistant food officers and food inspectors assist the district food officers. Food officer monitors procurement and distribution of grain the and distribution of food grain, which are managed by the FCI and the Department of Public Distribution respectively. [3]

1.3. AADHAR enabled Public Distribution System (AePDS)

AePDS was introduced in compliance with end-to-end computerization strategy by Government of India in 2015. This compelled beneficiaries to seed their Aadhar cards with ration cards. Thus, authenticating the biometrics of the beneficiary coming to the FPSs at the UIDAI server. This further eliminated the ghost cards and made the functioning of FPSs more accountable and transparent. [4]

AePDS is mainly focused at FPS level, as it is only touch point for beneficiaries and point where transparency in functioning is required. [5] Hence the objectives are,

- To issue food ration to genuine card holders [5]
- To make a fool proof PDS System, free from hoarding, stock diversions and corruption, [5]
- To monitor the movement of PDS stocks right from the FCI go down to fair price shop point until it reaches the consumer. [5]

Various aspects of AePDS system covered in the study are Acts and schemes, Infrastructure, Digitization, Monitoring and Modes of Payment.

1.3.1. Acts and Schemes

- Target Public Distribution System
- Target Public Distribution System was introduced in 1997 by GoI, to target the beneficiaries on the basis of annual income to be identified by states. [6]
- Antyodaya Anna Yojana
- The scheme involved identification of poorest of the poor families from amongst the BPL families covered under TPDS scheme within the state. [6]
- National Food Security Act, 2013
- The objective of NFSA 2013, was to provide food and nutrition to people by en-suring access to adequate quantity and quality of food at affordable prices to help them lead dignified life. [6]
- End-to-end Computerization
- The strategy introduced as a Mission Mode Project (MMP) by the Government. National Informatics Centre (NIC) is the Technical Partner under the scheme. [1]
- Pradhan Mantri Gareeb Kalyan Yojana
- Amid COVID in 2020, the scheme was extended by the finance minister under Atmanirbhar Bharat scheme, promising 5 kg wheat or rice and 1 kg of preferred pulses for free every month for the next three months in addition to other aspects of the scheme. In 2021, the scheme further promised door to door delivery of the commodities during the pandemic. [7]

1.3.2. Infrastructure

Infrastructure required for implementation of the AePDS system is Ration Cards, Fair Price shops, e-POS machine. Following are the details of each.

- Ration Cards

Triple ration card scheme is implemented in the state of Maharashtra in the year 1999, according to which three colours of ration cards are issued to the beneficiaries according to income groups. [6]

Table 1. Specifications of respective Ration Cards

	Annual Family Income (₹)	Allocation	Rate
Yellow Ration Card	15,000/-	35 kg per family i.e., 25 Kg Rice + 10Kg Wheat	Rs 2/ kg wheat and Rs 3/kg rice
Orange Ration Card (PHH)	15,000/- to 44,000/- (Rural area)	5kg food grains per member	Rs 2/ kg wheat and Rs 3/kg rice
	15,000/- to 59,000/- (Urban area)		
Orange Ration Card (APL)	59,000/- to 1,00,000/-	15 kg per Ration Card (10kg Rice + 5kg Wheat)	Rs 9.6/ Kg Rice and Rs 7.20/ Kg Wheat
White Ration Card	More than 1,00,000/-	No Benefits	

- Fair Price Shops

Fair Price Shop means a shop which has been licensed to distribute essential commodities by an order issued under section 3 of the Essential Commodities Act, 1955, to the ration card holders under the Targeted Public Distribution System. [6]

In Raigad District the FPSs are allotted according to the government cooperative housing societies. For the same, dealer is expected to be licensed to own an FPS. The dealer who is resident of the region in the district, literate, not head of the village and capable of running the shop on his own expenses is given license to own a shop. [6]

- e-POS machine

This is a machine used at the FPSs to scan biometrics and approve the allotment of grains to beneficiaries. [5] The process flow (Fig 2) shows working of biometrics through the machine. This is explained further in the study.

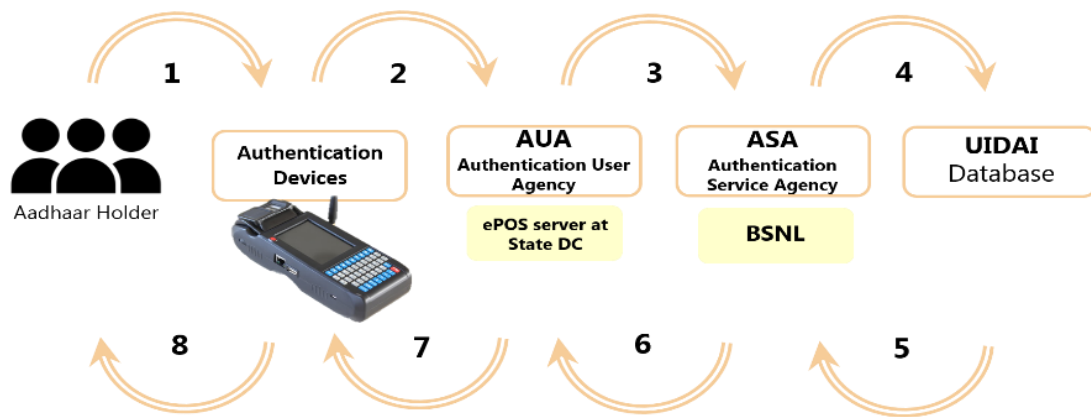


Figure 2. AePDS Architecture

1.3.3. Digitization

Digitization is the process adopted by the governments at various levels to feed in the data and make system more transparent to the stakeholders, for better management of the system. In addition, this would also mean, minimizing human intervention.

Table 2. Websites and information given by them at various levels

Website	Link	Data Given
Central Government		
Department of Food and Public Distribution	https://dfpd.gov.in/index.htm	About the department, various sectors, divisions, acts and rules related to the system, publications and circulars etc.
PDS Portal of India	https://pdsportal.nic.in/	Links to state government portals, statistics, food grain schemes, stagewise storage capacities, allocation policies, FPS offtake, FPS automation manual, etc

Annaitaran Portal	https://annaitran.nic.in/welcome	Data of distribution of food grains through e-PoS devices within a state, unautomated states, reports of NFSA status, documents and manuals and PMGKAY data.
National Food Security Portal	https://nfsa.gov.in/	The portal shows data like No of FPS, No of POS enable FPS, No of Ration Cards, central allocation of grains, state allocation of grains, Total Distribution of grains, online complaint etc.
State Level Government		
Department of Food, Civil Supplies and Consumer Protection	http://mahafood.gov.in	About the department, related policies and ration cards, go down details, allocation lifting and distribution, State & Distt. Level Consumer Protection Organization details, links to – ration card management portal, FPS management portal, etc.
Aadhar enabled Public Distribution System – Government of Maharashtra	http://mahaepos.gov.in/	District wise FPS details like – sales, allocation, stock details etc., every detail related to e-PoS machines in Maharashtra are displayed on this portal
GRAS Portal	https://gras.mahakosh.gov.in/e-challan	Website used to enter, issue challan to the Fair Price Shop Dealers
District Level		
Raigad District Website	https://raigad.gov.in	Monthly allotment and distribution, taluka wise contact list and addresses of FPSs in the district.
Controller Rationing and Director of Civil Supplies	http://controllerofrationing-mumbai.gov.in	List and contacts of officials list and responsibilities, Region wise allotment of commodities etc

1.3.4. Monitoring

There are vigilance committees set up at various levels, inspections happening and complaint redressal mechanisms established to monitor the service in the sector [6]

- **Vigilance Committee**

The State Government of Maharashtra has set up vigilance committees at various levels including government officials and ensuring public participations to monitor the quality of service provided. 50% of women population is mandatory in the com-mittee team [6]

- **Inspections**

Supply Inspectors in the Supply Offices in Taluka level to conduct regular inspec-tions within the time intervals as notified by the District. The inspector is responsible to check regularity of opening FPS store, Quality of grains maintained and distribut-ed, Complaints in FPSs, Maintenance and cleanliness of the shops and shops putting up the rate boards outside the shops as expected. [6]

- **Transparency**

Issuance of the printed receipts and SMS on issuing the required quantities to the beneficiaries through e-PoS machine. [6]

- **Complaint Redressal**

People are integral part of any service. Hence, any problems in the service, a solid complaint redressal system helps in rectifying easily. [6]

- **Modes of Payment**

There are various modes of payments used for the transactions in various states. Following are some of them.

- **Direct Benefit Transfer**

Aimed to transfer the promised subsidies directly in the bank accounts of the beneficiaries. In few states with AePDS in force, Direct Benefit Transfer accounts are enabled along with the Aadhar cards to Ration Cards. [8]

- **Cash Transactions**

Use of cash as a mode of payment is primarily accepted as any mode of payment.

- **Mobile Wallets**

Use of Mobile wallets of mobile wallets and UPI Applications in order to process payments. (BHIM UPI, GPAY, PAYTM).

1.4. Problem Statement

End-to-end computerization scheme launched by the central government to eliminate the grain hoarding and other malpractices observed in the system hindering smooth reach of commodities to the beneficiaries. AePDS is the part of the scheme that been adopted by the state of Maharashtra since 2015. Yet, there are some districts in the state that have been observed to be lagging behind in terms of implementation and are still trying to cope up with the advancements expected.

1.5. Research Question

Where does Raigad district stand with respect to implementation and use of technologies recommended in AePDS?

1.6. Objectives

The Objective of the study are

- To understand status of use of various technological components in Raigad district.
- To understand challenges and benefits of existing technologies.
- To understand technological infrastructure used to implement the scheme.

1.7. Scope of Work

The study aims to explore the working of AePDS at the Fair Price Shops (FPSs), service provided to the beneficiaries and use of technology in the process of distribution of grains in a context of Raigad District in Mumbai Metro Politian Region.

The limitation of the study is that it focuses on technological aspects of the system, benefits and challenges related to distribution of the food grains at Fair Price Shop level and not on the other processes like procurement and transportation of food grains at earlier stages (procurement of food grains from farmers by Central Government at MSP and transporting them further to the states and districts by Food Corporation of India and other state level agencies).

1.8. Research Methodology

Phase 1 – Literature Review and Background study, Field Visit to understand the existing technologies used, Making Process Timeline of the functioning of FPSs and Supply Offices and marking delays if any.

Phase 2- Stakeholder survey (structured beneficiary and FPS dealer survey and semi - structured interview of officials), Develop a framework and scoring system to analyse the working of FPS in the district and give recommendations for the analysed challenges.

2. LITERATURE REVIEW

2.1. Technologies in PDS in India

In Chhattisgarh, CORE PDS is used for end-to-end computerization. CORE PDS was introduced for two reasons. First, during informal interactions several beneficiaries reported poor service followed by implementation of the administrative reforms. Second, evidence of proxy issues, provided with a point of sale (POS) device and a smart card. [9] The device is responsible to authenticate, form-based module, for online purchase of paddy to millers, storage centres and FCI, Unified Ration card Data base, Citizen participation website, Call Centre and feedback monitoring system Motor Cycle riders for data transmission from secluded areas, SMS sent to citizens when a truck is dispatched, Chawal Utsav (rice festival), GPS in trucks enabling tracking. [10]

In Bihar, coupon system was introduced in Bihar in 2008 as pilot project. It follows the calendar cycle of June-May. One 12-page booklet each for wheat and rice and a separate 12-page booklet for kerosene, was issued to the beneficiaries. The booklet was printed with the price and entitled quantum and colour coded for BPL, AAY beneficiaries. [11]

Tamil Nadu, launched mobile Fair Price Shops namely, AMMA Mobile Fair Price Shops by the CM Jayalalithaa, in the year 2014. In Sept 2020, these vans were expanded to 3501 across the state. [12]

Above are few technologies adopted by various states, having certain benefits and challenges. The benefits being increased transparency, accountability, maintained stocks, reduced leakage, grievance redressal system gave beneficiary say if the ser-vice was not satisfactory [3] GPS trackers curbed diversion of food [13], reduced government expenditure [14]. Further, beneficiaries benefitted as Direct Benefit Transfer (DBT) reduced corruption. [14].

Whereas the challenge of the system observed were Officials cheating on beneficiaries due to absence of proper recordings [15], CORE PDS operating without portability created inefficiency [16] Receiving food grains and swiping of smart cards not done at same time [16] Officials demanding money as tax while issuing new Ration Cards [16] Device speed, internet connectivity was a worry in secluded areas [17] and so on.

2.2. Case Study

Krishna District

Krishna District in Andhra Pradesh was the district where the AePDS was first piloted in 2015 [4]. The area of the district 8727sq km. The population of the district is 45,17,398 [18]11.9 lakh Ration Cards prevail in the district with 36.6 lakh beneficiaries. There were 2161 FPSs catered to in the district. [4]

Learnings from the case study: Savings in subsidy, saved number of trips of the beneficiaries, helped reduce ghost cards and authenticate the beneficiaries, efficiency enhancement: the improper practices in closing balances were now completely pre-vented, accuracy: accuracy in data updated and output, the GPS trackers in the trucks helped locate the food grains after they leave the go downs, Direct Benefit Transfer was the facility which deducted the amount directly from the beneficiary's account. [4]

3. EXISTING SCENARIO

In the state of Maharashtra, Food, Civil Supplies and Consumer Protection Department is responsible to manage the PDS. The department is responsible to tackle with the demand and supply of the promised essential commodities in the open market as well as PDS. The department was established in the year 1965. [6]

3.1. Raigad District

Raigad District is located at the western coast of the state of Maharashtra. With area 7,152 sq Km (Collector Raigad) and population of 26,34,200 [18] including 13,44,345 males and 12,89,855 females [18]. Common areas in Raigad District and MMR are Panvel, Karjat, Khalapur, Pen, Alibaug and Uran. As Panvel has highest number of FPSs i.e., 193 it has been chosen as study area. [19]

Infrastructure

As mentioned above, the district has 193 FPSs. A Taluka level Supply Office in Pan-vel Taluka. In place AADHAR cards seeding system and e-PoS machine distributed to the licensed dealers. Oasis is the company responsible for the machines and a des-ignated officer is posted in the office to solve any machine related issues. [20]

Digitization

In Raigad District, the attendance system observed is manual. The GPS trackers in the trucks are not in place. the website doesn't consist of details like organization structure, roles and responsibilities etc. Mode of complaint redressal used is majorly offline in spite online system is in place. The permit slips are sent manually to the go down. [20]

Monitoring

One Inspecting officer is responsible for inspecting 193 shops, addressing complaints and taking actions against any wrong doings. For complaint redressal all the shops are mandatory to keep the complaint books.

Mode of Payment

Cash is the mode of payment used everywhere in the system.

3.2. Thane District (Comparative study)

Thane district is located at north-east of MMR. With area 9,558 sq Km (Collector Raigad) and population of 1,10,60,14 (Census 2011) including 58, 65, 078 males and 51, 95, 070 females, giving 36.01% of growth rate and 84.53% literacy rate (Census 2011). As the district is located at the north of Raigad district in the MMR hence is taken as area for comparative study.

Controller of Rationing and Controller of Civil Supplies is a statutory body Rationing introduced in Greater Mumbai and the Industrial complex of Thana which included the Thana Town, Kalyan, Belapur, Ulhasnagar and Ambernath.

Under the organization, the Greater Mumbai and Thana town are divided in 5 zones. Thane F Region is biggest of all in term of area. Region F, Thane which has 1444 FPS and 4000 sq. km of area. The region is divided into 13 sub division offices. Controller of ration heading the organization, is responsible for Salaries and Service-related issues, verification of licenses issued under Essential Commodities Act,1955 to take cognisance of complaint related to hoarding and black marketing.

- **Infrastructure**

The FPSs in 41F Vashi region are 104 wherein the age of shops observed to be is 20 years. In place AADHAR cards seeding system and e-PoS machine distributed to the licensed dealers. Oasis is the company responsible for the machines and a designated officer is posted in the office to solve any machine related issues. The person is also available on calls if any problem is faced by the dealers.

- **Digitization**

The attendance system observed is biometric. The GPS trackers in the trucks are in place. And the details like organization structure, roles and responsibilities etc are not put up on the website. Mode of complaint redressal used online system is in place. The permit slips are sent via software to the go downs.

- **Monitoring**

Three Inspecting officers are responsible for inspecting 104 shops, addressing complaints and taking actions against any wrong doings. For complaint redressal all the shops are mandatory to keep the complaint books. And they are also supposed to put helpline nos outside the shops.

- **Mode of payment**

Cash is the mode of payment used everywhere in the system. Some shops do use mobile wallets.

4. DATA COLLECTION

The data is collected through primary and secondary sources. Primary data collected is from the various stakeholders namely FPS dealers, beneficiaries and officials at tehsildar office. Officials were asked semi structured questionnaire which included understanding process involved from procurement to distribution, software used, inspection intervals, modes of payments used, complaint redressal process etc. The beneficiaries and FPS dealers were asked structured interviews wherein a questionnaire was made. The FPS dealers were asked about other source of income, age of shops, beneficiary turnout, shop timings, benefits and challenges of the system etc. whereas the beneficiaries were asked about the type of card they bared, occupation of the head of the family, family size, and were supposed to rate the parameters like quality of grains, quantity of grains, accessibility of FPS and other parameters listed in detail below. On the basis of the questionnaire pilot survey was conducted and then, actual survey was conducted in order to identify the gravity of challenges and the benefits of the system in the district.

4.1. Data Representation

The sample size is 100 beneficiaries standing outside 10 FPS s. (10 beneficiaries from each FPS): Male: 34, Female: 66

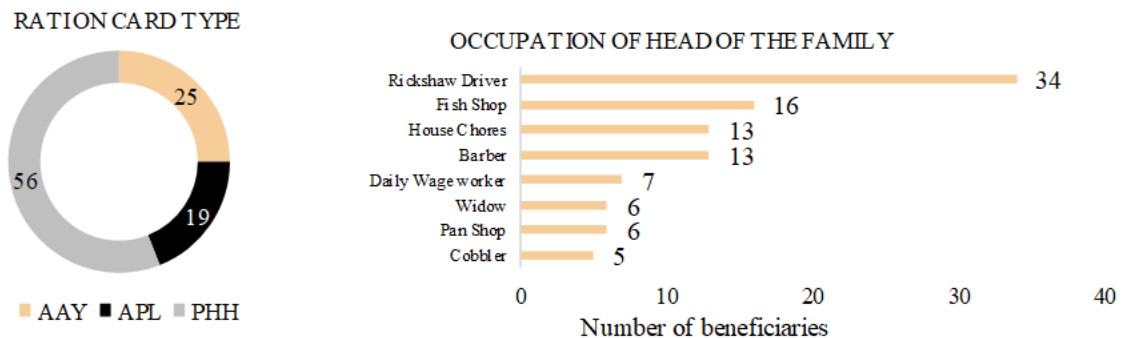


Figure 3. The graphs show the types of ration cards and family size of the beneficiaries surveyed

5. DATA INTERPRETATION

A framework is made to analyze the responses of the respondents on the pre decided criterions namely, food grain distribution, Infrastructure, monitoring, digitization and mode of payments.

The rating given by the respondents on the scale of 1 – 5 shop wise (10 FPS) was taken average of (e.g.: suppose x is the total of the rating, hence average would be (x / 10) This average is further converted into 10 scale i.e., double for the ease of taking percentage. Further, the total of average scores of all the FPSs was marked to find where the parameter stands.

(scale: 0 – 25 % - Needs Immediate attention, 25% - 50% - Needs Improvement, 50% - 60% - Neutral, 60% - 80% - Satisfactory, >80% - Excellent)

Note: The scores marked in below table are the total of average scores of all the 10 shops.

Table 3. Assessment framework

	Parameter	Rai. Dist.	Reason for The Score	Recommendation
FOOD GRAIN DISTRIBUTION	Quality	44	Varies seasonally, deteriorated than before	<ul style="list-style-type: none"> Stock rotation in First in first out basis Quality control during purchase of food grains
	Quantity	74		
	Accessibility	78	Difficulty in reaching in shop like KOPRA area	Relocation of FPS to more accessible shop
	Regularity	58	Inspections happening once in 6 months	<ul style="list-style-type: none"> Increase frequency of Inspections in Raigad district. e-POS machine to scan dealer's biometrics as the machine is on.
	Rate Board with Necessary Information	70	3 shops didn't have the facility.	Photo of rate board on a WhatsApp group including all officials and FPS dealers
INFRASTRUCTURE	Helpline Number	100	All shops have displayed	
	Network Issues	73		
	Seamless Machine	57	Irregularity of opening of shops in addition to the issues.	<ul style="list-style-type: none"> Spare machine Increase frequency of inspection to increase regularity of opening shops
DIGITIZATION	Biometrics	46	Smudging of fingerprints due to nature of work.	<ul style="list-style-type: none"> Include IRIS Scan Barcode the Ration Card (to work only on biometric not scanned error)
	Department info	80	Description of DFSO, responsibilities etc.	Raigad District officials should update the details on Raigad District website in PDS section.
	Organogram Of DFSO	0	Not given	
	SOPs	100	Present on Mahafood website.	
	Citizen Charter	0	Not Given	Raigad should update the details on Raigad District website in PDS section.
	Role and Responsibilities	0	Not Given	
	Contact Details	50	Only emails of post displayed	

MONITORING	Pending Com.	0	No Updates	
	Updated Sales Records	100	AePDS-Maharashtra Site	
	Inspections	60	One Inspector for 193 shops	Appoint clerks/officers to help inspections
	Update of Food Grain Received	0	Not given	Receipts should be given by Raigad district FPSs
	Mode of Complaint	50	Offline at the supply office	Spread awareness about the site on the FPSs
	Complaint Books in FPS	50	5 shops didn't keep the books	Inspector to ensure the Complaint books
	Time Taken to Address the Complaint	47	Maximum time to address 5-10 days	More no of on ground staff helps Thane district. The practice should be adopted by Raigad District.
	UPI	0	No option	Raigad District should Update the contacts on the Raigad District Portal
	Cash	100	Only Cash	

6. CONCLUSION

The above scoring in the above table shows, that digitization and monitoring are the two parameters that needs improvement in order to overcome the challenges faced in the smooth functioning of AePDS. The district should look forward to direct benefit transfer as mode of payment and if possible, use biometrics for attendance of the FPS dealers and officials which could help ensure regularity in functioning.

- Benefits of existing technologies.

- Organized Distribution of grains as compare to before
- More Transparent system
- Ease of maintaining Closing balance for FPS dealers

- Technological infrastructure used to implement the scheme

- e-POS Machine
- Complaint redressal System
- Websites

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