



IMPACT OF DIGITIZATION ON TRANSPARENCY AND SPEED OF SERVICE DELIVERY IN KERALA'S PUBLIC DISTRIBUTION SYSTEM

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ABSTRACT

Food is the necessity for the existence of all human beings. Therefore, ensuring food security has been always the concern of all the nations. The international agencies concerned are also emphasized their attention on the policies and issues associated with the same. Most of the nation's utilize various forms of PDS to provide basic food security to their citizens. Our country also introduced and transformed its own PDS to combat the issues of hunger and malnutrition. The PDS in India and Kerala has evolved through a series policies and measures ranging from regional systems to universal system and to targeted system and digitization through the National Food Security Act, 2013. The aim of the present study was to assess the impact of digitization on transparency and the speed of service delivery in Kerala's PDS. For the purpose data were collected from 444 households from the seven northern districts of Kerala during August-October, 2022. To analyse the data collected the study utilises a range of statistical methods. Descriptive statistics are used to find out the central tendencies and variations within important household variables. Inferential statistics are also used for our data analysis, with various statistical tools and tests to estimate the relationships among different variables.

The study revealed that even after the process of digitization of the PDS with the NFSA, 2013, still a long way to go in order to improve transparency and speed of service delivery in the PDS of Kerala. Majority of the respondents are not fully satisfied with the present level of speed of service delivery at the FPSs and most of them are not fully believed that the process of digitization has helped in improving transparency. Uncertainty about the monthly entitlements, Changes in quantity without prior information and corruption and transparency are still pervasive though at a medium level in the PDS of Kerala.

KEY WORDS: Food Security, Public Distribution System, Targeted Public Distribution System, Transparency, Service delivery,

INTRODUCTION

Food is the most essential necessity for the existence of human beings. It is because of this food security has been one of the important issues of discussion in most of the international conferences convened by the UN and other international Organizations from time to time. According to the Food and Agriculture Organization (FAO) of the UN, the basic notion of food security implies that all people at all times have both physical and economic access to the basic food they need. In 1996, the World Food Conference defined food security as "it declares that food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an

active and healthy life” (Saikia & Dutta, 2018). According to the United States Department of Agriculture (USDA), “food security for a household means all members’ access to enough food for an active, healthy life. Food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies”). (Saikia & Dutta, 2018).

Food security has once again put into the limelight in India with the publication of the Global Hunger Index 2021, in which India stands at 101 out of the 116 countries. Despite the implementation of the Food Security Act 2013, poverty and hunger are still pervasive in India. Though the country has made continuous efforts in eradicating poverty, nearly 84 million people, which constituted 6% of its total population as of May 2021 are under extreme poverty. Different states in the country have been implementing various measures complementary to the public distribution system to combat poverty. It is the Public Distribution System (PDS) which had long been considered as one of the important institutional interventions for attaining food security and to confront poverty in the chronically food deficit state of Kerala. The area under food crops, especially paddy has been shrinking drastically in the state and the inhabitants here are eagerly waiting for truckloads of rice and wheat from other states of the country. Introduction of the Targeted Public Distribution System (TPDS) in 1st June, 1997 in a state like Kerala which was widely hailed for a much efficiently run universal rationing system with relatively more benefits to the poor, has been criticized for alienating a large section of the middle-income groups from the real benefits of the PDS.

In Kerala, the poorer sections of the society continue to meet a major proportion of their food consumption requirements from the system. The Public Distribution System (PDS) was introduced in virtually all the states of India, but Kerala’s PDS was the one which transformed as one of the most efficient and effective measures of food security, considered as a model for most other states. The major characteristic features of the model were its universal coverage, comparatively very high levels of utilisation, efficient supply chain mechanism fulfilled through a wide network of retail ration

shops, rural bias and progressive utilisation of the system. In the extremely food deficit state of Kerala with a critically shrinking acreage under paddy cultivation, the PDS provided for the necessary food security for a large section of the society against the volatilities of the open market. The introduction of the Targeted Public Distribution System (TPDS) in 1997, replacing the universal system of food distribution was a major policy change by the Government of India (GoI). Many studies were conducted by prominent researchers and academicians on the effectiveness of the TPDS and whether the new approach was able to provide the anticipated benefits to the poor and the more vulnerable sections of the society.

Most of these studies have reached the conclusions that the working of the TPDS failed to provide the much anticipated and proclaimed benefits to the real target groups and excluded a large section of the middle-income groups from the purview of the system. These were particularly because of the reasons like inefficient delivery channels, weak and imperfect identification procedures of beneficiaries resulting in inclusion and exclusion errors, corruptive practices of the officials and dealers which led to the diversion of the PDF items to the open market, and so on. The Union government’s policy for the introduction of the TPDS in 1997 by restructuring its pricing rule and targeting it only to the poor has adversely affected the universal system of PDS in Kerala. The TPDS was introduced in Kerala from June 1, 1997, according to which the food grains at the subsidised prices were allotted based on the Planning Commission’s estimates of the number of poor households in the state. However, because Kerala being an acute food deficit state, the Government of Kerala (GoK) did not restrict the coverage of PDS to 15.54 lakh Below Poverty Line (BPL) households, as per the Planning Commission’s estimates. Up to 2001, the state government bore the additional subsidy burden in distributing the subsidised food grains to 20.19 lakh households in the state. But the burden of additional subsidy was discontinued by the GoK in 2014 and the food grains were distributed among all the BPL cardholders in the state from those allotted by the GoI. This has resulted in effective reduction in the per household entitlement in Kerala. The centrally allotted entitlement per BPL household was 35 kilograms per month, the entitlement for a BPL household in Kerala was just around 25 kilograms.

Digitization of Public Distribution System in India

The Public Distribution System (PDS) in India has been playing a crucial role in ensuring food security and combating malnutrition over the years. The classical objective of the PDS is to supply foodgrains at subsidized prices to the eligible beneficiaries, with a special emphasis on economically vulnerable sections of the society. This System has been evolving through a sequence of reforms to positively combat the various issues related to the PDS such as leakages of the supply chain, administrative inefficiencies, corrupt practices of officials and dealers and so on. The integration of technology that resulted in digitization has been one of such innovative programmes. This technological upgradation process has been expected to enhance efficiency of the system, reduced leakages, and increased transparency and pace of the delivery mechanism within the system. These aspects are crucial as the study finds that the 58 per cent of the foodgrains targeted to BPL families do not reach the intended beneficiaries (Mishra and Maheswari, 2021). The process of digitization of the PDS was motivated by the government of India's broader agenda to modernize public service delivery and enhance governance (Biswal and Jenamani, 2018). This modernization process gained substantial pace with the introduction of Aadhaar, a biometric identification system that made its entry in 2009. Aadhaar aimed to allot a unique 12-digit identity number interlinked with their biometric and demographic data to every Indian resident. This important step paved a crucial milestone in the journey toward digitizing the PDS in the country.

Major Aspects of Digitization in PDS

a. Linkage with Aadhaar Cards

Aadhaar played a crucial role in the digitization process of various government initiatives, such as the PDS. The government established a much more efficient identification mechanism through the linkage of Aadhaar with ration cards and beneficiaries. This linkage helped in the identification and elimination of duplicate or bogus ration cards and beneficiaries, consequently expected to reduce leakages and improving the mechanism of subsidy targeting. It has made the beneficiary identification more accurate and reduced the existence of bogus or fake beneficiaries thereby ensuring the subsidy allocation to only the targeted households. It is further claimed that the

biometric authentication process through Aadhaar has helped in saving the time for the verification process.

It is also noted that the Aadhaar linkage has led to an enhancement in the transparency of the Public Distribution System (PDS) as all the transactions are digitally recorded, which enables live tracking and preventing unauthorized elements from exploiting the system for diverting the items. These leakages were not only caused a loss of government resources but also eliminated genuinely deserving individuals from the purview of the PDS. The technology driven beneficiary identification and authentication processes have improved the operational efficiency within the PDS, as automation has minimized errors originating from manual record-keeping, consequently resulting in a more effective allocation and utilization of resources.

b. Use of Electronic Point of Sale (ePoS) Machines

The introduction of ePoS machines at ration shops was another important aspect of the digitization effort. This equipment facilitated the live - tracking of transactions and levels of stock. Before the introduction of the Electronic Point of Sales machines, ration shop owners used to manually record sales, leaving scope for errors and manipulation in records. With the new system, the process became fully automated, reducing the room for malpractices and human made errors. It also helps in ensuring beneficiaries to receive their rightful entitlements as the beneficiaries are able to have a clear information about their monthly entitlements through ePoS.

c. Introduction of the system of biometric authentication

The introduction of the mechanism of biometric authentication by utilizing the fingerprints of the beneficiaries was implemented to improve the precision and originality of the beneficiary identification within the Public Distribution System (PDS). This process served two purposes: firstly, it acted as an efficient shield against instances of identity fraud, impersonation, etc thereby strengthening the integrity of the system. Secondly, it has practically reduced the dependence on traditional physical documents, resulting in a more efficient and safe process altogether. Furthermore, the utilisation of biometric authentication links itself with broader efforts

towards digitalization and reducing paperwork in administrative processes. Verification of physical documents often necessitates physical handling, storage, and maintenance, which can be resulted in errors. As the biometric data are securely stored in digital formats, administrative hardships are significantly reduced and thus contributes to the overall efficiency and effectiveness of the PDS.

d. Computerization and Automation

The drive towards digitization is not confined only to the delivery point but extended well beyond the retail ration shops, covering the entire process and stages of the food grain supply chain, from the initial stage of procurement to the final distribution phase. The utilisation of integration of technology helped in improvement in inventory management, minimization of wastage, and overall enhancement of accountability throughout every stage of the supply chain. This innovative technology marked a revolutionary step in the conventional framework of the PDS which was based on manual processes and paper-based record – keeping. The digitization process has brought about overall efficiency and accuracy in each stage of the process of food grains distribution. Digital tracking as a component of computerisation mechanism enables an efficient coordination between various levels of distribution centres and ration shops. This results in economising the routes for transportation, reducing transit time and freight charges and the associated risks of spoilage. Moreover, online updates on stock levels at different points of the supply chain enable efficient stock rotation, thereby minimizing wastage which has been a major problem with PDS storage. This significantly enhanced the overall accountability and transparency of the overall supply chain of the PDS.

Introduction of Computerization results in documentation of each transaction, movement, and utilization of food grains. This transparency is significantly crucial in combating mismanagement, nepotism, leakages, or unhealthy practices that were associated with the conventional manual systems. This empowers the authorities concerned to promptly identify any irregularities and take necessary corrective measures, thereby safeguarding the integrity of the public distribution process. Computerisation and automation have played a crucial role in minimizing manual interventions and human errors, particularly seen in stock management and beneficiary identification procedures.

OBJECTIVES

The objective of the present study is to examine the impact of digitization on transparency and speed of service delivery in the public distribution system in Kerala. Recent researches and literature about the effectiveness of the PDS in Kerala raised several concerns that even after the implementation of the TPDS in 1997 and NFSA, 2013 crucial issues are still there in connection with transparency and speed of service delivery in the system. Therefore, our analysis focusses on the impact of the digitization process on these two aspects. The analysis is based on primary data collected from 444 sample households in seven northern districts of Kerala. The data include information on caste, occupation, landholdings, household size, type of ration card, and so on, besides the respondents' opinion about various issues associated with the PDS.

LITERATURE SURVEY

- Dhanaraj and Gade (2013) – Found that in Tamil Nadu, for every 5.43 kgs of PDS rice distributed by the government, only 1 kg reached those in need; the distribution was less efficient in the case of sugar, where only 1 kg for each 8.21 kgs distributed was consumed by those in need.
- Kumar, A.; Parappurathu, S.; Babu, S.; Betne, R. (2016) - Showed a positive trend in the state of Bihar, where in 1993, 90% of food grains were diverted away from those in need; by 2001 this figure was down to just 12.5% of diverted food grain. Nair R (2011) - Similar findings were reported in Kerala. In both states, this was attributed to better transparency and infrastructure.
- Gupta, P.; Singh, U (2016) Despite a number of significant, system-wide changes over recent years, high levels of corruption and leakage continue to prevail in the PDS. They also reported that some store owners exchanged the high-quality goods provided from the government for distribution through the PDS with lesser quality goods from the open market.
- Jha, R.; Gaiha, R.; Pandey, M.K.; Kaicker, N (2013) - Transparency, better governance, technology and the introduction of computerisation, along with use of global positioning system and

distribution via doorstep delivery have been suggested as potential ways to address issues in the PDS.

- Khera, R. (2017) - Whole India data of diversion have shown mixed results, with figures from 2007–2008 showing a 44 percent diversion rate for grain, down from 55 percent three years earlier. While these figures reflect a decrease in losses from the system, there remains a significant amount of food displaced in the system.
- Tanksale, A.; Jha, J.K.- (2015) - In addition to the formalisation of a number of pre-existing entitlements, the NFSA aimed to reinforce the role of the states in the coordination of the PDS, as well as improving transparency and accountability. With empowerment of women and the vulnerable sections of society among the key objectives of the NFSA, monitoring measures to address issues of corruption, diversion and leakages through better partnerships between the central and state governments are also highlighted. Problems with identifying those households in need have not been resolved by the NSFA, and there remains problems with illegal cards.
- Masiero, S. (2015) - The role of information and communications technology has the potential to be a critical element of success if endorsed and implemented efficiently. With the dissemination of digitalisation into the public sector, computerisation can improve the operation of PDS reducing some leakage.
- Biswal, A.K.; Jenamani, M. (2018) – Digitization can aid in the identification of beneficiaries and reduce inclusion and exclusion errors associated with targeting while increasing transparency and accountability.
- Kumar, A.; Parappurathu, S.; Babu, S.C.; Joshi, P, Balani, S. (2017) - Other technology currently trialled in some areas is the application of global positioning system in tracking the food supply chain. This approach works by ensuring that goods are scanned in and out at all points of the supply chain, and has so far shown a reduction in corruption, leakages, and diversion.

- Mauro (1997) - Corruption has been around for a very long time and will remain in the future unless governments can figure out effective ways to combat it. E-government system is increasingly used to improve transparency in the government sector and to combat corruption. Computerization can help in modernizing the PDS.
- Rajesh C. Pingle and P. B. Borole (2013) - Public distribution system is one of the widely controversial issues that involves corruption and illegal smuggling of goods. One reason of this to happen is because every job in the ration shop involves manual work and there is no specific technology involved in automating the job.

The key finding of this review is that, while the PDS has been strengthened over recent years, particularly through efforts to target those most in need and digitisation and automation process, more work remains, particularly around transparency and accountability.

MATERIAL AND METHODS

The present study is based on primary data collected from 444 households in seven northern districts of Kerala, i.e., Thrissur, Palakkad, Malappuram, Kozhikode, Waynad, Kannur and Kasarcode. The data were collected by using a survey questionnaire during August - October 2022. The primary data collected reflect the demographic and socio economic characteristics of the households, despite giving information about transparency and the speed and efficiency of the delivery mechanism of the Public Distribution System (PDS).

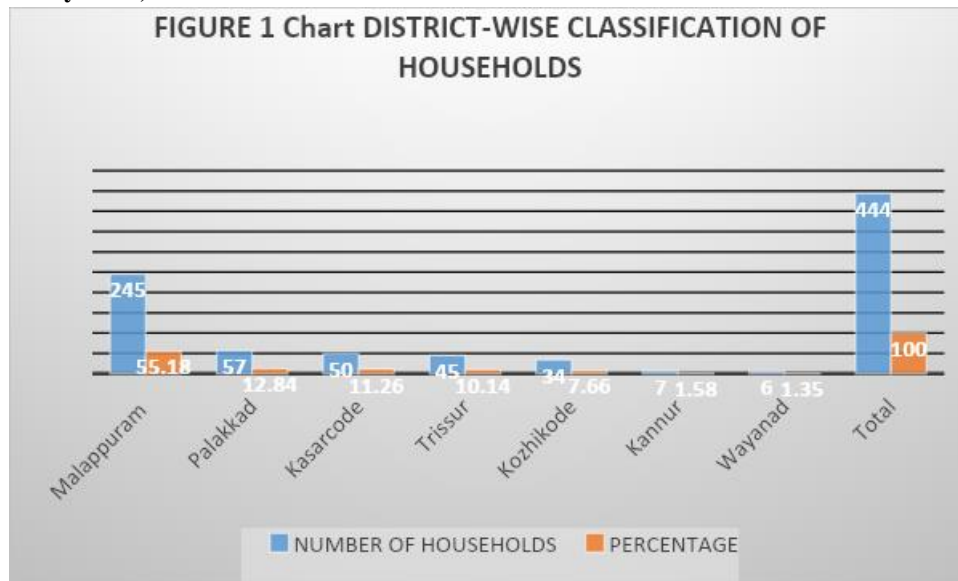
For the analyse of the collected data comprehensively, the study utilises a range of statistical methods. Descriptive statistics are used to find out the central tendencies and variations within important household variables. This work illustrates percentage distributions and frequency distributions, and illustrates the data through bar diagrams and pie diagrams. Inferential statistics are also used for our data analysis, with various statistical tools and tests to estimate the relationships among different variables. The study employs Pearson's Correlation Coefficient to examine relationships between categories of variables, such as transparency levels and speed of service delivery, with factors like digitization.

RESULTS AND DISCUSSION

TABLE 1. DISTRICT-WISE CLASSIFICATION OF HOUSEHOLDS

DISTRICT	NUMBER OF HOUSEHOLDS	PERCENTAGE
Malappuram	245	55.18
Palakkad	57	12.84
Kasarcode	50	11.26
Trissur	45	10.14
Kozhikode	34	7.66
Kannur	7	1.58
Wayanad	6	1.35
Total	444	100

Source: Primary Data, 2022

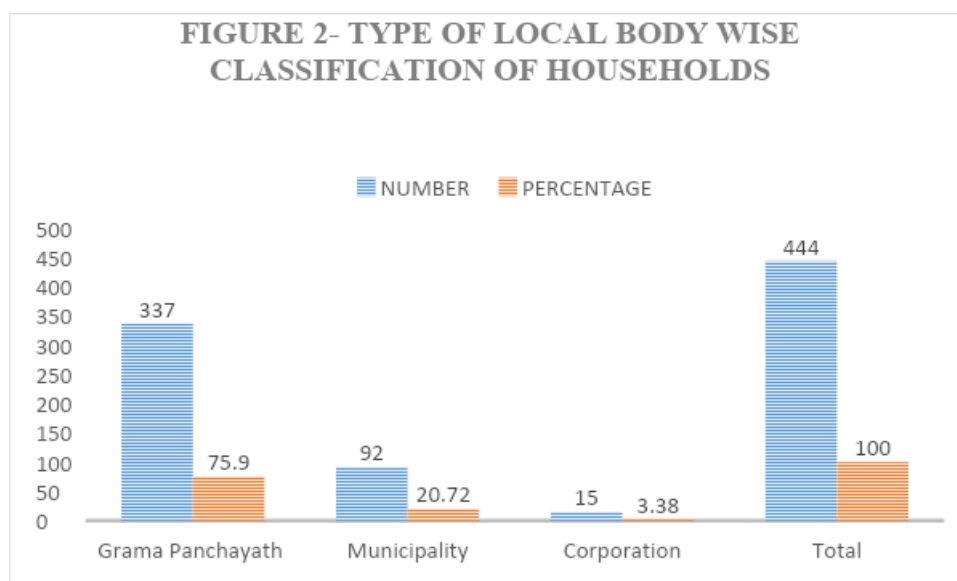


The above table and figure show that 55.18 % of the respondents are from Malappuram District, 12.84% from Palakkad, 11.26% from Kasarcode, 10.14 % from Thrissur, 7.66% from Kozhikode, 1.58 % from Kannur, and 1.35 % from Waynad.

TABLE 2 - TYPE OF LOCAL BODY WISE CLASSIFICATION OF HOUSEHOLDS

TYPE OF LOCAL BODY	NUMBER	PERCENTAGE
Grama Panchayath	337	75.90
Municipality	92	20.72
Corporation	15	3.38
Total	444	100

Source: Primary Data, 2022

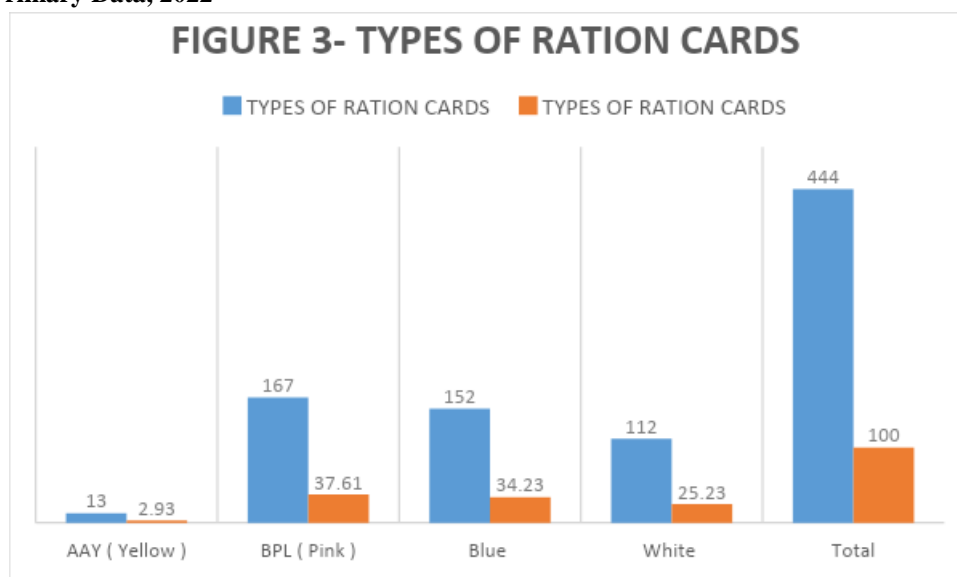


The Table 2 shows that 75.90 % of the card holders belong to Grama Panchayats, 20.72 % belongs to Municipalities, and 3.38 % Corporation areas.

TABLE 3 - TYPES OF RATION CARDS

TYPE OF CARD	NUMBER	PERCENTAGE
AA Y (Yellow)	13	2.93
BPL (Pink)	167	37.61
Blue	152	34.23
White	112	25.23
Total	444	100

Source: Primary Data, 2022



The Table 3 reveals that 37.61 % of the households are BPL Pink card holders, 34.23 % Blue card holders, 25.23 % White card holders and 2.93 % AA Y Yellow card holders

TABLE 4 - AWARENESS ABOUT MONTHLY ENTITLEMENTS

AWARENESS LEVEL	NUMBER	PERCENTAGE
Not clearly known	181	40.77
Something known	169	38.06
Very much known	94	21.17
Total	444	100

Source: Primary Data, 2022

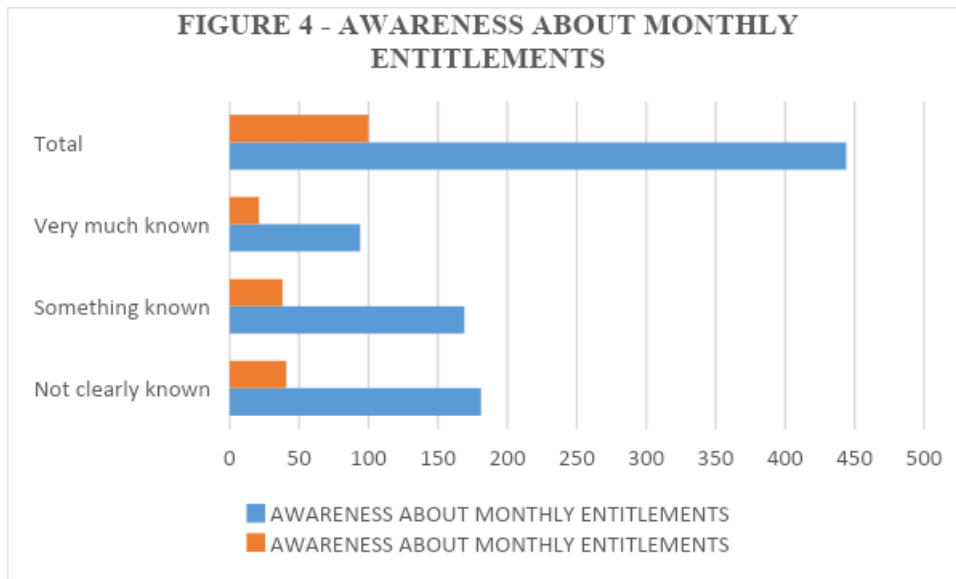


Table 4 shows that 40.77 % of the households are not clearly aware about their monthly entitlements and 38.06 % of the households only have partial knowledge about their monthly entitlements. Only 21.17 % of the households are fully aware about their entitlements.

TABLE 5 - SATISFACTION LEVEL ABOUT WORKING HOURS OF FPSs

SATISFACTION LEVEL	NUMBER	PERCENTAGE
Not satisfied	102	22.97
Average level satisfaction	298	67.12
High level satisfaction	44	9.91
Total	444	100

Source: Primary Data, 2022

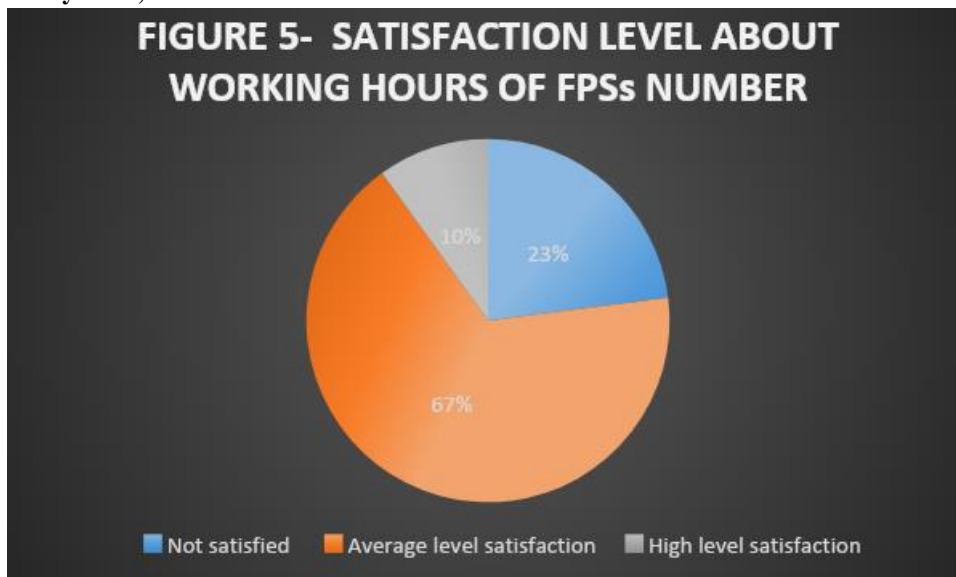


Table 5 illustrates that 22.97 % of the respondents revealed that they are not at all satisfied with working hours of the Fair Price Shops. 67.12 % of the households revealed that they have a medium level of satisfaction. Only 9.91 % of the households said that they are fully satisfied with the present working hours of the FPSs.

TABLE 6 - SPEED OF SERVICE DELIVERY

TIME LIMIT	NUMBER	PERCENTAGE
Below 10 Minutes	150	33.78
10-30 Minutes	246	55.41
30-60 Minutes	37	8.33
Above 60 Minutes	11	2.48
Total	444	100

Source: Primary Data, 2022

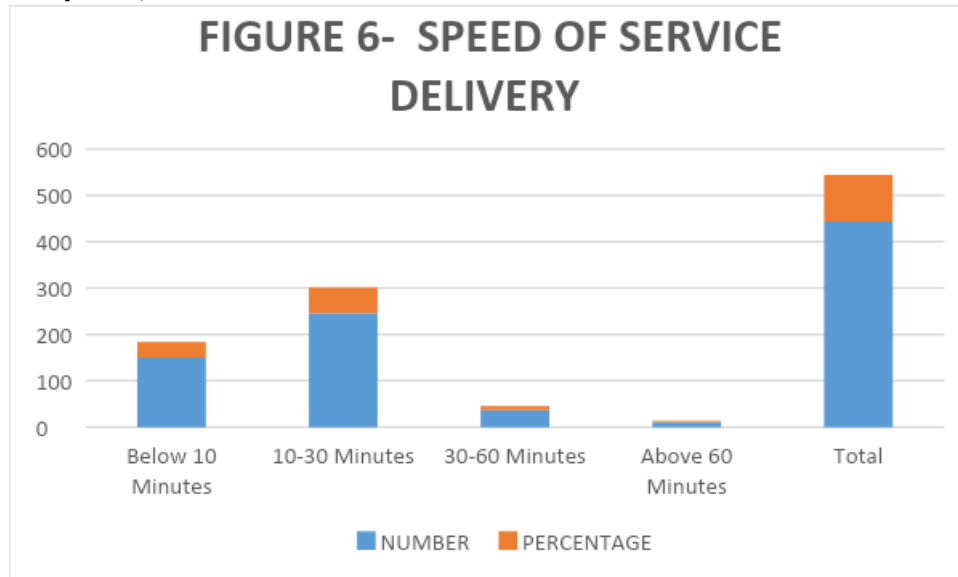


Table 6 shows that only 33.78 % of the households are receiving delivery of the items within 10 minutes. Majority of the households (55.41 %) revealed that they usually waiting between 10-30 minutes for getting the items. 8.33 % of the households took between 30 and 60 minutes, and 2.48 % took more than 60 minutes.

TABLE 7- UNCERTAINTY RELATED WITH SUPPLY OF PDS ITEMS

EXPERIENCE	NUMBER	PERCENTAGE
Not experienced	156	35.14
Sometimes experienced	226	50.90
Often Experienced	62	13.96
Total	444	100

Source: Primary Data, 2022

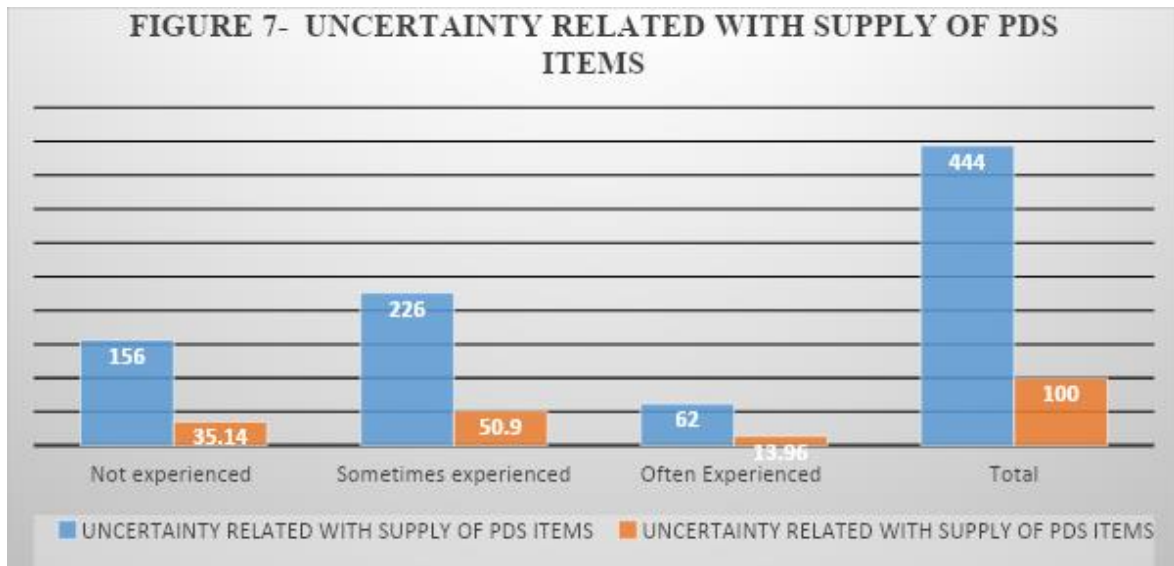


Table 7 shows that 13.96 % of the households regularly experienced uncertainty related with the supply of PDS items. 50.96 % sometimes experienced such uncertainty and 35.14 % revealed that they never experienced such uncertainty.

TABLE 8- OPINION ABOUT SPEED OF DELIVERY AFTER DIGITIZATION

RESPONSE	NUMBER	PERCENTAGE
Not Improved	44	9.91
Improved	207	46.62
Not Sure	193	43.47
Total	444	100

Source: Primary Data, 2022

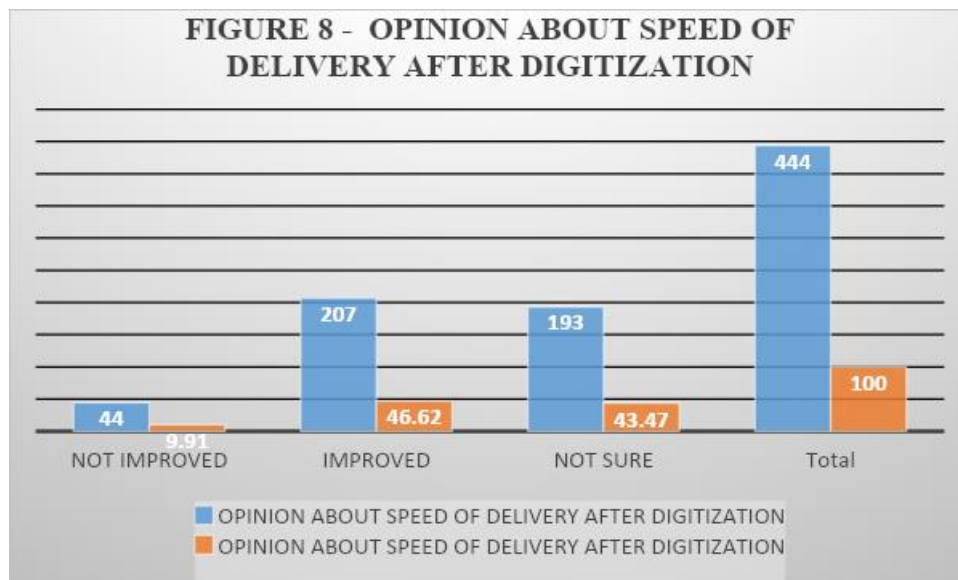


Table 8 shows that 46.62 % of the households opined that speed of delivery improved much after the digitization process, while 43.47 % of the households are not sure about improving the speed of delivery. Only 9.91% of the households opined that the speed of delivery has not at all improved after digitization.

TABLE 9- OPINION ABOUT THE LEVEL OF TRANSPARENCY

RESPONSE	NUMBER	PERCENTAGE
Improved	175	39.41
Not Improved	32	7.21
Not Sure	237	53.38
Total	444	100

Source: Primary Data, 2022

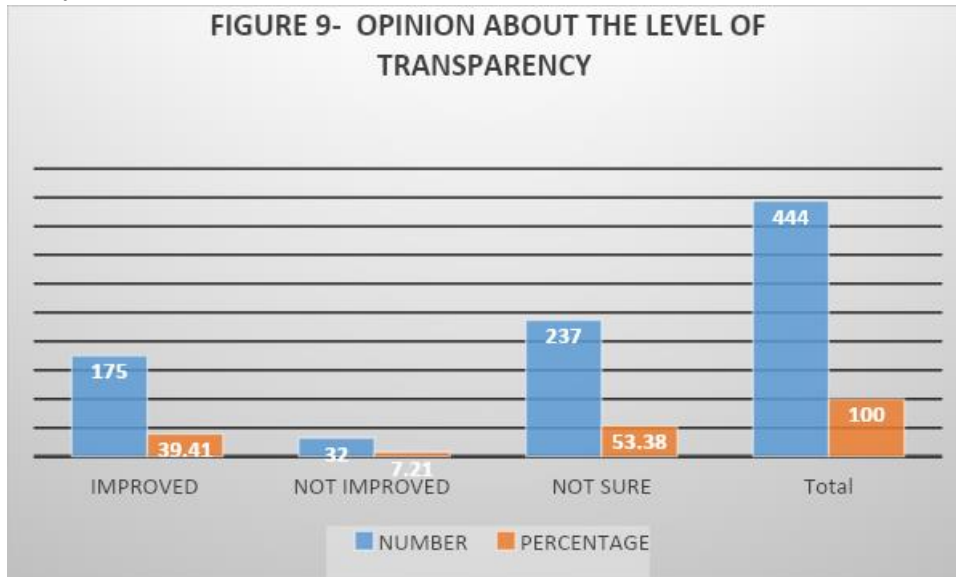


Table and figure 9 show that only 39.41 % of the households opined that the level of transparency has improved after digitization. 53.38 % of the households are not sure about whether there is any improvement in transparency. Only 7.21 % of the households are of the view that digitization has not led to improved transparency.

TABLE 10 - SATISFACTION LEVEL ON DIGITIZATION OF PDS

OPINION	NUMBER	PERCENTAGE
Not Satisfied	39	8.78
Medium Level Of Satisfaction	320	72.08
High Level Of Satisfaction	85	19.14
Total	444	100

Source: Primary Data, 2022

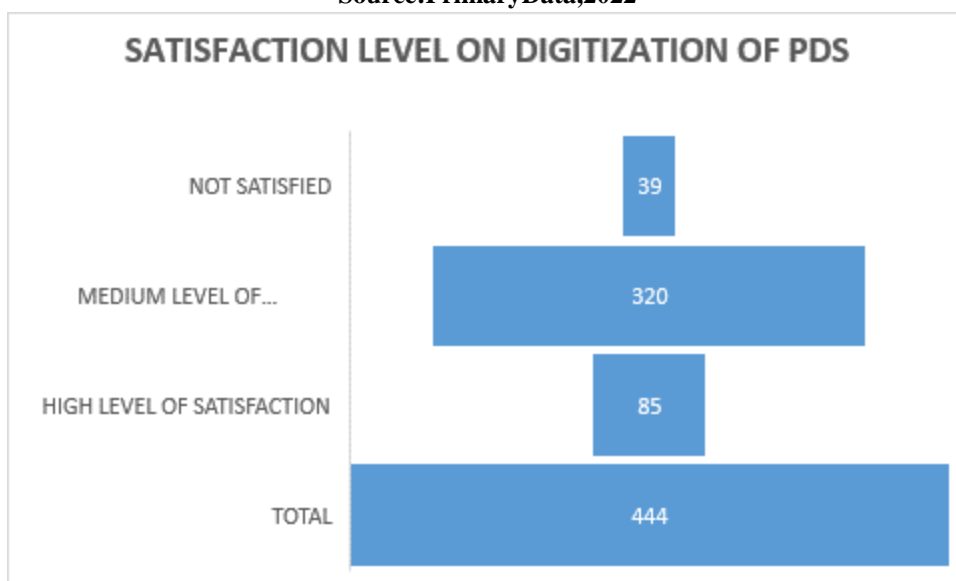


Table and Figure 10 show that only 19.14 % of the card holders are fully satisfied with the process of digitization, while 72.08 % has a medium level of satisfaction. 8.78 % of the households are not at all satisfied with the digitization process.

TABLE 11- MAJOR PROBLEMS WITH PDS AFTER DIGITIZATION

PROBLEMS	NUMBER	PERCENTAGE
Uncertainty about items and quantity	145	32.65
Changes without prior information	111	25.00
Corruption	10	23.19
Non transparency	76	17.11
Others	9	2.05

Source: Primary Data, 2022

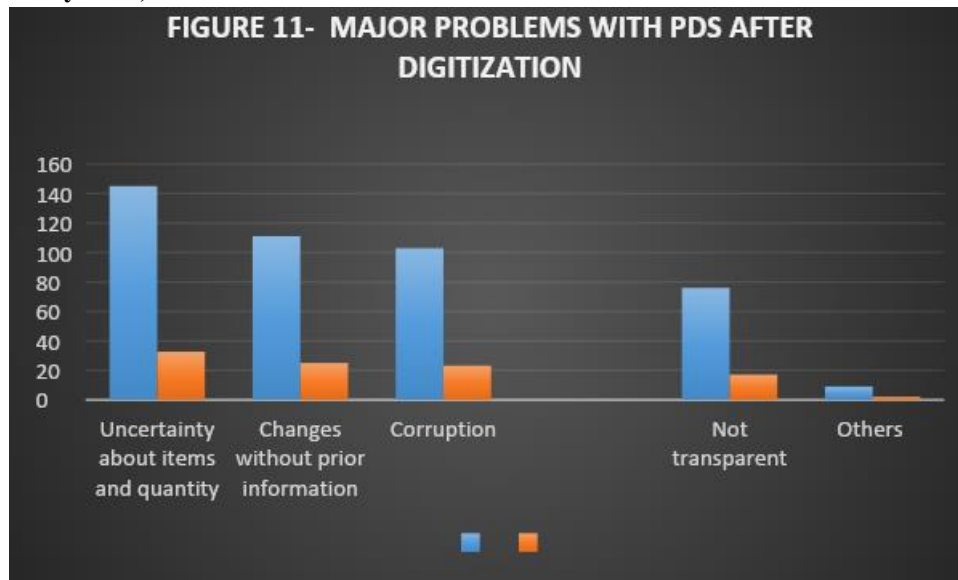


Table and figure 11 reveal that for 32.65 % of the household’s uncertainty about items and quantity is the major issue even after digitization. 25 % of the card holders opined those changes without prior information is the major problem and 23.19 % of the household reveal that corruption is still the major problem. 17.11 % of the card holder opined that non transparency is the main issue even after digitization.

Correlation between Digitization and Transparency of PDS

Correlation			
		Digitization of PDS	Transparency of PDS
Digitization of PDS	Pearson Correlation	1	.314
	Sig. (2-tailed)		.000
	N	444	444
Transparency of PDS	Pearson Correlation	.314	1
	Sig. (2-tailed)	.000	
	N	444	444

** . Correlation is significant at the 0.314 level (2-tailed).

The above table illustrates the correlation analysis between the digitization of Public Distribution Systems (PDS) and the transparency of PDS, using Pearson correlation coefficients. The digitization of PDS and transparency of PDS are two variables under investigation, and their relationship is explored in terms of both strength and statistical significance. The Pearson correlation coefficient between the digitization of PDS and transparency of PDS is reported as 0.314. This positive correlation suggests that as the degree of digitization in PDS increases, there is a corresponding moderate increase in transparency. The correlation coefficient of 0.314 signifies a relatively strong relationship, with values closer to 1 indicating a more robust association. The statistical significance of this correlation is denoted by the p-value (Sig. 2-tailed), which is reported as 0.000 for both variables. This p-value is less than the commonly accepted threshold of 0.05, indicating that the observed correlation is unlikely to have occurred by random chance. Consequently, the correlation is deemed statistically significant at the 0.05 level (2-tailed), providing confidence in the validity of the relationship. Notably, the sample size (N) for both variables is 444, indicating a substantial data set. The robustness of the findings is bolstered by the large sample size, increasing the reliability of the observed correlation.

In summary, the results highlight a statistically significant and positive correlation between the digitization of PDS and the transparency of PDS. This implies that as efforts are made to enhance the digitization of PDS, there is a concurrent improvement in transparency, underscoring the potential interplay between technological advancements and increased openness in Public Distribution Systems.

CONCLUSION

This study on the impact of digitization on transparency and the speed of service delivery of Kerala's Public Distribution System is based on the data collected during August – October, 2022 from the seven northern districts of Kerala. From the comprehensive analysis of the data we have reached to the following conclusions.

The study reveals that only 41 % of the households are not aware about their monthly

entitlements. The remaining 59 % of the households have awareness about their monthly entitlements, either fully (21 %) or partially (38 %). This awareness about monthly entitlements can be regarded as an indicator of transparency. It is also shown that only 14 % of the households often experienced uncertainty about the supply of PDS items and the remaining 86% of the households not experienced such uncertainty regularly. 35% of the households opined that they never met with any uncertainty regarding the supply of PDS items and 51 % experienced it sometimes only. This is also an indicator of improved transparency after digitization. It is also found that only 7% of the households are of the view that transparency of the system has not improved after digitization while 40 % of the households opined that digitization has improved the transparency of the system. However, 53 % of the households are not sure about whether it has been improved after digitization.

As far as the speed of service delivery is concerned, the study reveals that 89 % of the households completed the process of purchase of the items within 30 minutes of reaching the Fair households normally received their items within 10 minutes. Only 11 % of the households took more than 30 minutes for the same. In connection with this, it is also found that only 23 % of the households are not satisfied about the present working hours of the FPSs while the remaining 77 % expressed their satisfaction about the working hours (though 67 % of the households expressed only medium level of satisfaction). However, 10 % expressed very high level of satisfaction. The study reveals that only 10 % of the households are of the opinion that the speed of service delivery has not improved after digitization, while 47 % are of the opinion that the speed has improved after digitization. However, a sizeable percentage of the households (43 %) are of the opinion that they are not sure about whether the speed of service delivery has improved after digitization.

It is also noted that only 9 % of the households are not satisfied with the working of the PDS after digitization while 19 % of the household expressed their high level of satisfaction. Majority of the households (72 %) expressed medium level of satisfaction about the digitization process. The study also reveals that even after the digitization process the uncertainty about PDS items and

quantity, the problem of changes in items and quantity without prior information, corruption, leakage, and non-transparency are still pervasive in Kerala's PDS, though at a reduced level.

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