

**TRANSFORMING PUBLIC DISTRIBUTION SYSTEM :  
A COMPREHENSIVE STUDY ON CONSUMER SATISFACTION  
THROUGH DIGITALIZATION IN KERALA'S  
PUBLIC DISTRIBUTION SYSTEM**

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**Submitted by**

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**CERTIFICATE**

This certifies that the dissertation titled **“TRANSFORMING PUBLIC DISTRIBUTION SYSTEM: A COMPREHENSIVE STUDY ON CONSUMER SATISFACTION THROUGH DIGITALIZATION IN KERALA'S PUBLIC DISTRIBUTION SYSTEM”** was meticulously prepared by ALINA VARGHESE, KAAJAL. N.M, and MEGHA SURESHKUMAR under my supervision and direction. It serves as a partial requirement for obtaining the Bachelor of Commerce degree from Mahatma Gandhi University. This work is original and has not been submitted for any other degree, fellowship, associateship, or similar accolades.

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## DECLARATION

We solemnly affirm that the project titled "**TRANSFORMING PUBLIC DISTRIBUTION SYSTEM: A COMPREHENSIVE STUDY ON CONSUMER SATISFACTION THROUGH DIGITALIZATION IN KERALA'S PUBLIC DISTRIBUTION SYSTEM**" is the result of our own efforts and has not been previously submitted to MG University or any other institution for academic credit. This project was conducted as part of the completion requirements for the B. Com program (2021-2024) at Bharata Mata College, Thrikkakara, Ernakulam, under the affiliation of MG University, Kottayam.

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## **LIST OF ABBREVIATIONS**

1. PDS - Public Distribution System
2. ePOS - Electronic Point of Sale
3. ABBA - Aadhaar-Based Biometric Authentication
4. FPS - Fair Price Shop
5. ID - Identification
6. RFID - Radio Frequency Identification
7. SMS - Short Message Service
8. NFS Act - National Food Security Act
9. ICT - Information and Communication Technology
10. QR Code - Quick Response Code
11. IoT - Internet of Things
12. AI - Artificial Intelligence
13. TinyML - Tiny Machine Learning
14. LCD - Liquid Crystal Display
15. OTP - One Time Password
16. GSM - Global System for Mobile Communications
17. BPL - Below Poverty Line
18. APL - Above Poverty Line
19. % - Percentage
20. No - Number

**CHAPTER 1**  
**INTRODUCTION**

## 1.1 INTRODUCTION

Public Distribution System (PDS) in India stands as a pivotal mechanism for ensuring food security and alleviating poverty by providing subsidized food grains to the economically disadvantaged population. Historically, the PDS has played a crucial role in addressing the nutritional needs of millions of Indian citizens. However, the system has encountered challenges such as leakages, inefficiencies, and corruption, leading to suboptimal outcomes in achieving its intended objectives.

In the pursuit of addressing these challenges, the Indian government has embarked on a transformative journey by embracing digitalization as a key enabler for the Public Distribution System. The integration of digital technologies aims to streamline processes, enhance transparency, and ultimately improve consumer satisfaction. This study delves into the multifaceted dimensions of this digital transformation within the PDS and examines its impact on consumer satisfaction, presenting a comprehensive analysis.

Digitalization in the context of the PDS involves adopting technologies such as biometric authentication, electronic point-of-sale (ePOS) devices, mobile applications, and data analytics. These innovations intend to eradicate leakages, reduce inefficiencies, and ensure that the benefits of the PDS reach the intended beneficiaries in a targeted and timely manner. The integration of digital tools not only holds the promise of enhancing the overall efficiency of the system but also opens new avenues for understanding and addressing the diverse needs and preferences of consumers.

This study aims to contribute significantly to the existing body of knowledge by critically evaluating the impact of digitalization on the various facets of the PDS and, more importantly, by assessing its implications on consumer satisfaction. The study employs a multidisciplinary approach, drawing on insights from economics, technology management, public policy, and social sciences to offer a holistic understanding of the dynamics at play.

Furthermore, the study seeks to identify the key challenges and opportunities associated with the digitalization of the PDS. It proposes strategic recommendations for policymakers, government

agencies, and other stakeholders to optimize the benefits of this transformative initiative. By doing so, this study aspires to inform evidence-based policy decisions, facilitate academic discourse, and contribute to the broader narrative on leveraging digital technologies for the improvement of public service delivery in India.

In the subsequent chapters, this dissertation will delve into the theoretical foundations, review of existing literature, research methodology, data analysis, and findings, culminating in a robust discussion and conclusion. Through this comprehensive exploration, the research endeavors to shed light on the intricate relationship between digitalization, consumer satisfaction, and the efficacy of the Public Distribution System in India.

## **1.2 SIGNIFICANCE OF THE STUDY**

The PDS is a crucial component of India's social welfare system, directly impacting the lives of millions. Studying its digitalization is of national importance, given the government's commitment to leveraging technology for inclusive development so it has national importance. The findings of this study can provide valuable insights for policymakers to refine and strengthen the ongoing digitalization initiatives in the PDS. Recommendations based on consumer satisfaction can contribute to the formulation of more effective policies, ensuring that the benefits of the PDS reach the intended beneficiaries.

Investigating the digitalization of the PDS offers an opportunity to understand the technological advancements and innovations implemented in the distribution system. This includes the use of mobile applications, electronic payment systems, and data analytics to streamline processes and enhance overall efficiency. The study explores how digitalization empowers consumers by providing them with greater accessibility, real-time information, and improved grievance redressal mechanisms. Understanding consumer satisfaction in the context of digital PDS can shed light on the extent to which technology contributes to empowering citizens to access essential commodities.

Assessing consumer satisfaction goes beyond the immediate impact on the PDS; it provides insights into the broader socio-economic impact on households. This study can uncover patterns related to income levels, geographic locations, and demographic factors that influence satisfaction levels, contributing to a more nuanced understanding of the program's effectiveness. The digitalization of the PDS aims to bring transparency and accountability to the distribution process. Investigating consumer satisfaction helps evaluate these goals' success, highlighting areas where transparency has improved or where further interventions are required. The study allows for comparisons with international models of public distribution systems that have undergone digital transformations. Understanding global best practices and challenges can provide a broader perspective and enrich the discourse on the adoption of digital technologies in the distribution of essential commodities.

### **1.3 STATEMENT OF THE PROBLEM**

The Public Distribution System (PDS) is pivotal in ensuring food security and poverty alleviation in India. Historically, the PDS has been characterized by inefficiencies, leakages, and inadequate consumer satisfaction. In recent years, the Indian government has embarked on a digitalization journey to transform the PDS, aiming to address these challenges and enhance overall effectiveness. However, the success and impact of this digitalization initiative on consumer satisfaction remain underexplored, necessitating an investigation. The study is conducted to know, What is the prevailing attitude among consumers towards the digitalization of the Public Distribution System (PDS)? How satisfied are consumers with the level of service provided through the digitalized PDS? What are the major challenges or problems encountered during the implementation of digitalized PDS from the consumer perspective?

### **1.4 OBJECTIVES OF THE STUDY**

- To understand the attitude of consumers towards digitalized PDS.
- To identify the level of consumer satisfaction.
- To understand major problems regarding the implementation of digitalized PDS

## **1.4 RESEARCH METHODOLOGY**

**1.4.1 Population:** The total number of cards in Ernakulam is 9,13,138.

The total number of beneficiaries is 33,35,492

**1.4.2 Sample:** The sample unit of the study consists of 75 people who are PDS recipients from Ernakulam district.

**Sampling Method:** The sampling method that we opted for is convenience sampling. The responses from the sample were collected through Google form. The district's population is effectively infinite, a sample of 75 responses has been selected from the entire population for this study.

### **1.4.3 SOURCES OF DATA**

**Primary Data:** The primary source of data was the PDS recipients. Data was gathered from them by distributing questionnaires through Google Forms.

**Secondary Data:** Secondary Data are acquired from various websites and, published sources such as books, journals, government reports, magazines, articles, etc.

### **1.4.4 TOOLS FOR ANALYSIS**

The data collected through primary and secondary sources was analyzed by using various tools and techniques like percentages, and pie charts.

## **1.5 SCOPE OF THE STUDY**

The digitalization of Kerala's Public Distribution System presents immense opportunities for improving consumer satisfaction. Streamlining processes reduces corruption and ensures timely access to essential goods. Furthermore, digitalization has the potential to create a more efficient and responsive distribution system. Digital platforms can facilitate transparency by allowing consumers to track transactions and hold accountable those responsible for distribution.

However, challenges such as digital literacy and infrastructure gaps must be addressed to fully realize the benefits of this transformation.

## **1.8 LIMITATIONS OF THE STUDY**

- The sample size is small, which could hinder the generalization of ideas and conclusions drawn from the study.
- The collection of data is a time-consuming process
- The responses from the sample were not up to the mark

## **1.9 CHAPTERISATION**

Chapter 1- Introduction

Chapter 2- Review of literature

Chapter 3-Theoretical framework

Chapter 4-Data Analysis and Interpretation

Chapter 5-Findings, Suggestions, and Conclusion

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**CHAPTER 2**  
**REVIEW OF LITERATURE**



## **2.1 INTRODUCTION**

The Public Distribution System (PDS) in India is vital for food security and equitable access to essential commodities. This literature review explores consumer perceptions, ICT impact, digital initiatives like Aadhaar and RFID, benefits such as reduced corruption, and challenges like leakages. By analyzing decades of research, it aims to offer insights into policy reforms and technological innovations to improve PDS efficiency and effectiveness, benefiting vulnerable populations and socio-economic development.

## **2.2 REVIEW OF LITERATURE**

Girija. C and Prasheedha V.P. (2020) conducted a study on the consumer perception of the digital transformation of PDS. The study analyzed, the attitude of consumers toward digitalized PDS. It also studied the level of satisfaction derived by the consumer through electronic PDS.

Maya Ganesh's (2019) diversion of subsidized goods for private gain is a common experience worldwide. Implementation of digitalized technologies can reduce the rate of diversion. This paper studies the effect of using E-POS devices in ensuring food security. This helps in the distribution of the grains to genuine beneficiaries. Also, it helps in better monitoring by authorities.

Vedica Awasthi and Tawheed Nabi (2021) emphasize, the impact of ICT on PDS and focuses on the advancement of ICT modules created by the Government of India. The study determines that out of all the initiative ICT modules, the Aadhaar-based biometric method of identification appears to be more successful.

Anand Pandey's (2023) understanding of the PDS and its implementation in Sanathapur village, Bhadohi district of Uttar Pradesh, India was the main goal of the study. To understand the PDS accessibility, use an effect in some Sanathapur villages. The research has used secondary data. The study also explores the problem faced by the beneficiaries of FPS centers.

Supriti Panigahi (2014) assesses the current system of PDS in several important categories including impact, utilization, efficiency, and accessibility in Odisha. According to the report, Odisha's PDS system is operating at a very high level and has greatly improved over time.

Arun Kumar and Mamata Jenamani (2018) examine various ICT initiatives and their impact on India's food security. They gathered secondary data both on the progress of various ICT projects and the performance of PDS. The analysis of the study reveals that there exists a positive correlation between ICT intervention and the effectiveness of the food security system.

Grace Carswell and Geert De Neve (2022) reveal the experience of beneficiaries of PDS on the implementation of new technologies. It also studies the impact of technology innovations on transparency, exclusion, and mediation. They examined how the digitalized smartcards and mobile text messages, provide transparency for the beneficiaries of PDS.

Deepak Sanathanakrishnan's (2020) primary goal is to determine how much the target population's food security has improved. As a result of the digitalization of PDS. The report recommends a different governance structure for future development and advises the government to prioritize the advancement of more progressive innovation in the PDS.

Satinder Kumar and Sandosh Nandal (2022) aim to analyze the benefits of the digitalization of FPS. The study reveals that the digitalization of FPS helps in reducing the corruption by FPS dealers. It also helps in providing information regarding real-time stock with the FPS. The study also reveals that the digitalization of PDS helps in reducing the problem of ration cards.

Sneha Menon (2017) studies the implementation of Aadhaar-based biometric authentication (ABBA) in Ranchi District.

Maserio (2015) highlights the global digitalization of social protection programs using biometric recognition in Kerala, India. The study uncovers, the effectiveness of biometric technology in public distribution Systems preventing diversions and enhancing efficiency.

Poduval (1984) found that the Public Distribution System in Tamil Nadu was highly inadequate in providing food access to consumers. He concluded that the system failed to impact consumption levels due to price control measures by the Tamil Nadu Civil Supplies Corporation.

Kurien (1981) analyzed India's food situation revealing a coexistence of undernutrition and increased food output. He highlighted conflicts between private production and the public distribution system, emphasizing the government's ineffectiveness, despite a large buffer stock, attributing it to public policy shortcomings.

Indian Institute of Public Administration (1987) assessed the public distribution system in India from 1986 to 1987. Bhabatosh Patta, Kamal Nayan Kabra, Anil Chandy Ittyerah, and Barbara Hams highlighted issues and proposed alternative strategies for enhancing the system's effectiveness.

Sathya Narayana and Rajashekara (2019) in Andhra Pradesh on ICT in PDS revealed Aadhaar seeding as a key addition, effectively eliminating duplication. AEPDS and ICT were identified as the best practices in this study.

Suiyan Barayana (1985) analyzed PDS in Visakhapatnam finding varied grains for consumer households. The study does not identify target groups. Identifying them is crucial to protect poorer sections from low consumption standards. PDS should benefit rural families more, but Kerala's new digitalized system has an urban bias.

Pathak (2022) shows a systematic review of food security challenges for elderly citizens and vulnerable populations. The study also examined macro-level strategies to enhance the Public Distribution System and support migrant workers, laborers, and farmers.

Amartya Sen (1982) highlighted persistent conflicts faced by economically vulnerable sections in India, revealing that a significant portion of the rural population experiences regular hunger and systematic malnourishment despite the country's self-proclaimed food self-sufficiency.

Rajapurohit (1978) identified the population consuming below-average cereal quantity as the targeted group. The study recommended substituting superior cereals With a coarse grain like jowar, Ragi, and bajra via market operations and the public distribution system.

Kumar and Pal (2013) aim to create an integrated ICT and PDS framework for developing economics The study identified key factors for the effectiveness of strong internet connectivity aadhaar seeding beneficiary bank details, skilled human resources, and regular hardware, and software upgrades at all levels.

Vijay Sonawane (2018) proposes an RFID and Biometric-based automatic ration shop system to enhance transparency and reduce malpractices in India's Public Distribution System (PDS). This system uses unique identification RFID cards and biometrics for consumer validation, automating product display and billing to curb unauthorized material exploitation. It represents a technological leap towards rectifying the inefficiencies of the PDS.

A. Prasad A. Ghenge, S. Zende, S. Mishra, and P. Gadakh, (2017)introduce a smart ration card system incorporating RFID, biometrics, and an SMS gateway to prevent ration forgery and enhance system integrity. By requiring thumb impressions and utilizing RFID for family details, this system ensures secure and transparent ration distribution, with real-time SMS updates to both government and consumers. This innovative approach aims to mitigate theft and ensure accountability in ration distribution.

Sharma N & Gupta S (2019) aims to examine the adoption of IT interventions in Chhattisgarh's PDS, revealing a mixed response to automated transactions and beneficiary portability. Utilizing stakeholder and agency theories, they highlight the influence of monitoring, risk, and goal conflict on technology adoption. This study underscores the complex dynamics affecting IT integration in social welfare systems.

Ateendra Tiwari (2017) explores consumer satisfaction with the PDS in Delhi, identifying issues like leakages, poor quality, and inefficiencies. The research suggests a preference for the PDS over cash transfers despite challenges, advocating for improvements rather than an overhaul.

This work highlights the critical role of the PDS in poverty alleviation and the need for system enhancements.

Priya, S.K., Balaganesh, N., and Karthika K.P. (2023) discuss integrating AI, Blockchain, and IoT to enhance the security and sustainability of India's PDS. Their proposed system uses TinyML and blockchain for secure, efficient commodity distribution, demonstrating superiority in simulations. This approach addresses key challenges in the PDS with cutting-edge technology.

Dr. Harvinder Singh (2020) provides a critical analysis of India's PDS as a crucial food security program, highlighting its operational challenges and inefficiencies. The paper draws on literature and secondary sources to offer insights for enhancing the system's impact. This review aims to guide policymakers in refining the PDS to ensure broader and more effective food grain access.

R.Prasanth V.Balamurugan, S.Roubavaan, E. Suresh, and Dr. N.Purushothaman, (2014) focus on improving family card security in the Civil Supply Corporation using fingerprint biometrics. This system enhances transparency and security in essential commodity distribution, ensuring equitable access. It addresses the gap in security with biometric integration, aiming to protect citizen rights and privileges.

Golden Bagul (2017) proposes a Smart Ration Card Automation System using QR codes and biometrics for a more secure and efficient PDS. This approach modernizes ration distribution, tackling security concerns and streamlining the allocation process. The literature highlights technological advancements as solutions to traditional system flaws.

Neetu Abey George and Fiona H. McKay (2019) review the impact of India's PDS on food security, emphasizing its role in combating hunger yet acknowledging operational shortcomings. They suggest that addressing these inefficiencies could significantly enhance the PDS's effectiveness in reducing food insecurity. The review points to the need for policy reforms to improve the system's impact on food and nutritional security.

Jos Mooij (1998) analyzes the political economy of India's PDS, tracing its evolution and the influence of political and economic forces. Highlighting the system's resilience against economic rationalization due to populist politics, Mooij provides insights into the complex interplay between policy, politics, and food security. This study offers a comprehensive understanding of the PDS's historical and contemporary challenges.

### **2.3 SUMMARY**

By looking at what others have studied and written about our topic, we've learned a lot. We've found where more research is needed and gotten ideas for how to approach our study. Thus, the review of the literature has provided a comprehensive understanding of the existing research and theoretical frameworks relevant to our project.

**CHAPTER 3**  
**THEORETICAL FRAMEWORK**

### **3.1 INTRODUCTION**

The Public Distribution System (PDS) in Kerala serves as a pivotal component of the state's social welfare framework, aiming to provide essential food items at subsidized rates to different sections of the population. This theoretical framework delves into the evolution and digitalization of the PDS in Kerala, including its ration card types, beneficiary categories, and the subsidies offered for food and commodities. The system's transition towards digitalization, coupled with targeted beneficiary identification, plays a crucial role in enhancing transparency, efficiency, and equity in the distribution process, ultimately benefiting the economically disadvantaged segments of society.

### **3.2 THEORETICAL FRAMEWORK: PUBLIC DISTRIBUTION SYSTEM IN INDIA**

The Ministry of Consumer Affairs, Food and Public Distribution of the Government of India launched the Public Distribution System (PDS), an American food security program, to provide food and non-food items at subsidized prices to India's poor population. Major goods given through a network of fair price shops, often called ration shops, established in different states around the nation include fuels like kerosene and staple food grains like wheat, rice, and sugar. The PDS is maintained by the Food Corporation of India, a government-owned corporation.

The Public Distribution System in India receives 70-90% of its wheat and 28-44% of rice from net food surplus states like Haryana and Punjab. It is then redistributed to other net negative producer states that produce less than they consume. The State Governments are in charge of distributing food grains to poor people throughout the country.

In 2013, the Indian parliament passed the National Food Security Act (NFSA). This has altered both the PDS and the country's food security policy. This involved changing PDS from a welfare program to a legally - mandated entitlement, reorganizing the procurement and distribution process, broadening PDS coverage, lowering the issue price, switching from household to per-capita entitlements, and discarding APL- BPL method of targeting. In an effort to reduce



leakages and corruption in the PDS, Aadhaar-Based Biometric Authentication (ABBA) became required for PDS ration access in some states in 2015-16.

### **3.3 THE EVOLUTION OF THE PDS SCHEME**

Over time, PDS's coverage and concentration have undergone significant changes. At first, during World War 2, civilian consumption was limited to divert food supplies to the armed forces. The planners were forced to consider food shortages as a result of the countrywide drought that followed. To mitigate these shortages, the ration system was established.

In order to distribute goods for mass consumption in urban areas, Fair Price Shops were established. In places where the Drought Prone Area Programme and Desert Development Programme were in effect starting in 1992, the Revamped PDS was implemented. People were allowed to buy necessities from the FPS under this arrangement at comparatively reduced subsidized prices. Following the Chief Ministers' Conference held in July 1996, a redesigned program called the Targeted PDS was implemented. A two-tiered subsidized pricing structure is used under the TPDS. The cardholders were Above Poverty Line (APL) and Below Poverty Line (BPL).

The Antyodaya Anna Scheme was included in the TPDS when it was substantially extended in December 2000. Ten million of the poorest families out of the 65.2 million BPL population were identified as "the Poorest of the Poor," giving each family 25 kg of food grains each month for Rs 2 per kg for wheat and Rs 3 per kg for rice.

### **3.4 THE PUBLIC DISTRIBUTION SYSTEM IN KERALA**

Kerala was regarded to have one of the most efficiently operated PDS networks in the country. Kerala was the only Indian state with nearly complete PDS coverage before targeting was implemented. Ration cards and PDS coverage were held by approximately 95% of all households in 1991. The majority of studies use the number of ration cards issued as a measure to determine the reach and coverage of the PDS, even though this does not necessarily indicate that all cardholders are using the cards. Kerala's PDS was widely praised as a model system that other states in the nation should consider replicating.

Compared to most other states, Kerala's PDS has provided a larger quantity of food grains, which has significantly improved household nutrition. A study in 1989 found that the amount of food grains supplied annually per person under the PDS was 5 kg in Uttar Pradesh, 6 kg in Bihar, 9 kg in Madhya Pradesh, 23 kg in West Bengal, and 52 kg in Kerala. In Kerala, the typical customer purchased 69.6 kg of rice and wheat through the ration system. By 1991, based on a calculation about half of a person's yearly cereal needs were met by the grain purchased from the PDS in Kerala.

Consumer studies show that, compared to other regions of the nation, the operation of ration stores and the distribution system in Kerala has been superior. The system's benefits were distributed fairly among socioeconomic classes in both rural and urban settings. The Food Corporation of India purchases rice and wheat, and the State Civil Supplies Department distributes sugar and kerosene through 14,234 fair-price shops. Remarkably, 12,203 of these stores were located in rural regions.

About 400 families were supplied by each retail location, and the State Government claims that no one had to walk more than two kilometers to get his ration. Kerala's total annual food grain requirement in 1997 was 48 lakh tonnes, of which only 10 lakh tonnes were produced domestically, according to government statistics. Under the PDS, twenty-four lakh tonnes were supplied through PDS; the remaining requirements were met from the open market.

Kerala was recognized as one of the top achievers in increasing rural household consumption and decreasing rural poverty, in part because of its successful public distribution system. Notably, more impoverished people than wealthy people used the PDS. According to a survey, 85% of customers got all or some of the rice they needed from fair-pricing stores.

The PDS in India faced criticism on many fronts, including its apparent urban bias, inability to assist those living below the poverty line (BPL), and insufficient coverage in states with high rates of rural impoverishment. In light of this, the government sought to streamline PDS during

the Ninth Five-Year Plan period by providing BPL families with special cards and food grains at specially discounted prices through PDS stores.

In order to target the poorest households, PDS changed its name to the Targeted Public Distribution System (TPDS) in June 1997. This was done by varying the access amounts and prices at which one can purchase. The State Official Poverty Lines are the basis for the differential under the current framework. Ration cards are available to households who fall below the federal poverty line (BPL households), enabling them to purchase larger quantities of goods at a higher subsidized price.

### **3.5 DIGITALIZATION OF PDS IN KERALA**

The manual labor at ration shops is replaced with a smart ration distribution system. To stop ration forgeries, biometric fingerprint scanners, and RFID (Radio Frequency Identification) technology are employed. Nowadays, the application procedure is completed online, which is a blessing for candidates who hate to wait in line to fill out an application and then return to the office to find out their status.

Each user in this system will have ration cards that are based on RFID technology and have a unique number on them. Additionally, each user will have their family member's fingerprints. When a user wishes to buy groceries, the ration shopkeeper requires him to either scan his fingerprint or show his RFID-based ration card.

### **3.6 WORKING**

In ration stores, the manual labor is replaced by the suggested system. Every ration shop has a fingerprint scanner, an RFID reader for validating users, and an RFID reader for reading RFID ration cards. This system will make use of biometrics. It is effective for user identification. User fingerprints are stored in a database. In addition to covering human labor, the newly developed system also detects fraud. When a user wishes to buy groceries, they have to scan their

fingerprint, show the shopkeeper their RFID-based ration card, and then either scan their RFID tag or their biometric.

The process will proceed if the user's authentication is confirmed; otherwise, the tag or fingerprint is not approved. Data is connected to a microcontroller, which will verify the user's identification. The weight of the item is added to the load cell, which loads the item and transmits information to the microcontroller. The microcontroller then transmits information to the LCD to display, and the process is not finished until the quantity that is displayed on the LCD is taken. The LCD will display user details and the quantity of the item to be loaded. The family member's head will receive the message via GSM. The user will see a message similar to "Person name for Family number has taken" if they attempt to take the ration again. If an unauthorized individual or the same individual attempts to collect rations more than once, the controller will automatically verify authenticity and issue an alarm, which will be shown on the LCD interface.

The OTP method is an alternative way used in digitalized PDS for availing benefits of PDS. The OTP method employed in the Public Distribution System in Kerala operates seamlessly to enhance transparency and security in the distribution process. Once a beneficiary approaches a PDS outlet to collect their entitled commodities, they provide their registered mobile number. Subsequently, a unique OTP is generated and sent to the beneficiary's mobile device. This OTP serves as a validation mechanism, ensuring that only the intended recipient can collect the allocated goods. Upon receiving the OTP, the beneficiary shares it with the PDS staff, who validate it against the system. If the OTP matches, the beneficiary receives their entitlement, guaranteeing a fair and efficient distribution process. This method significantly reduces the risk of fraud or misuse while promoting accountability and trust within the PDS system in Kerala.

**Figure 3.1 Biometric Fingerprint Scanners, and RFID (Radio Frequency Identification)**



### **3.7 KERALA RATION CARD TYPES**

The ration cards in Kerala are classified into four. They are

1. Yellow card
2. Pink Card
3. Blue Card
4. WhiteCard

**Figure 3.2 Kerala ration card types**



### **3.8 BENEFICIARIES AND SUBSIDIES ON FOOD AND COMMODITIES**

- Yellow card - The most economically backward section of society. Antyodaya Anna Yojana Beneficiaries. 35 kg of Food Grains completely free of cost Rice 28 kg, Wheat 75 kg.
- Pink Card - Priority or Below Poverty Line (BPL) - 5 kg of Food Grains completely free for each member of the family. Rice – 4Kg, Wheat – 1Kg
- Blue Card - Non-priority subsidy or Above Poverty Line (APL) - 2 kg rice at Rs. 2 per kg per person.
- White Card - Non-priority - Rice 8.90 Kg, Wheat 6.70 Kg

### **3.9 SUMMARY**

The theoretical framework relating to the topic of the Public Distribution System (PDS) in Kerala involves the history of PDS in Kerala and its evolution, and it also speaks about the working of digitalized PDS in Kerala. In conclusion, this chapter shows the relevant details relating to PDS in Kerala.

**CHAPTER 4**  
**DATA ANALYSIS AND**  
**INTERPRETATION**

## **4.1 INTRODUCTION**

In this section of the data analysis and interpretation, we delve into the descriptive analysis of various aspects related to the respondents' opinions and experiences with digitalization in Public Distribution System (PDS) services. The data provides insights into their satisfaction levels, convenience, and perceptions regarding digital platforms for accessing essential commodities and applying for PDS benefits. Through a detailed examination of their responses, we aim to understand the prevailing attitudes and areas for improvement in digital PDS services.

## **4.2 DATA ANALYSIS AND INTERPRETATION**

Data analysis involves examining, cleaning, transforming, and interpreting raw data to uncover meaningful insights, patterns, and trends. It often involves using statistical methods and techniques to make sense of the data and draw conclusions that can inform decision-making or contribute to the research objectives. Here it is divided as

- Demographic analysis
- Descriptive analysis

### **A. DEMOGRAPHIC ANALYSIS**

Demographic data analysis in research involves examining characteristics of a population, such as age, gender, income, education level, and more.

- Age-wise classification
- Gender-wise classification
- Employment-wise classification
- Card-wise classification



### 4.3 AGE-WISE CLASSIFICATION

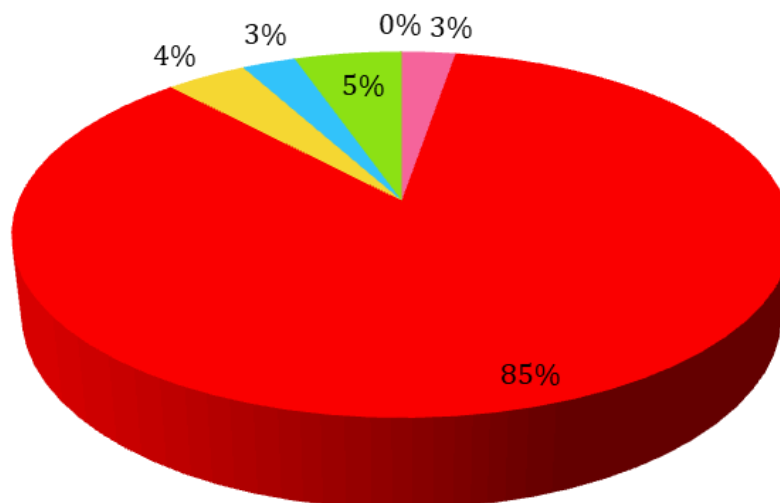
**Table 4.1 Age-wise classification**

CLASS	NO OF RESPONDENTS	PERCENTAGE
10 - 20	2	2.7%
20 - 30	64	85.3%
30 - 40	3	4%
40 - 50	2	2.7%
50 - 60	4	5.3%
60 - 70	0	0%
TOTAL	75	100%

*(Source: Primary Data)*

**Figure 4.1 Age-wise classification**

■ LESS THAN 20 ■ 20 - 30 ■ 30 - 40 ■ 40 - 50 ■ 50 - 60 ■ MORE THAN 60



### Interpretation:

The data shows the age-wise classification of respondents, with the majority falling between 20 and 30 years old, accounting for 85.3% of the total respondents. This indicates a significant proportion of young adults in the survey. The second largest group is the 50-60 age range, comprising 5.3% of respondents, followed by those aged 30-40 and 10-20, each making up 4% and 2.7% respectively. Interestingly, there were no respondents aged 60-70. This distribution suggests that the survey mainly captured the views and opinions of individuals in their 20s and 30s, with a smaller representation from older age groups.

### 4.4 GENDER-WISE CLASSIFICATION

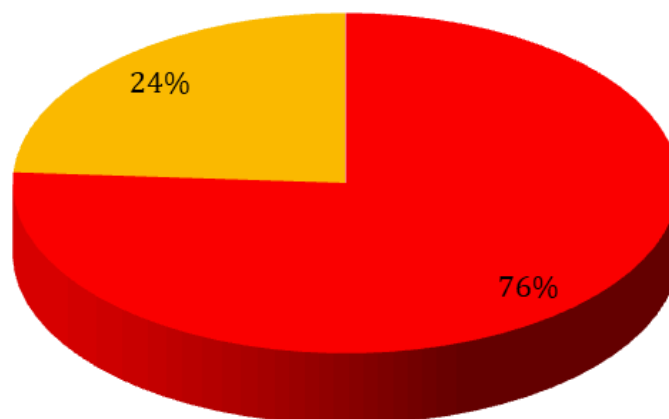
**Table 4.2 Gender-wise classification**

GENDER	NO OF RESPONDENTS	PERCENTAGE
FEMALE	57	76%
MALE	18	24%
OTHERS	0	0%

*(Source: Primary Data)*

**Figure 4.2 Gender-wise classification**

■ FEMALE ■ MALE



**Interpretation:**

This data shows the gender distribution among respondents. Out of 75 people surveyed, 57 are female and 18 are male. This means 76% of the respondents are female, while 24% are male.

There are no respondents who identified as "others." Overall, the majority of respondents are female, making up three-quarters of the total respondents.

**4.5 EMPLOYMENT STATUS**

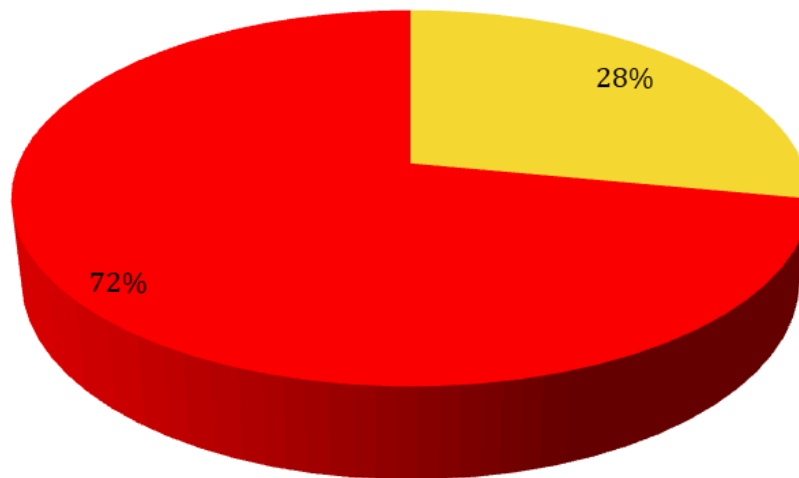
**Table 4.3 Employment status**

EMPLOYMENT STATUS	NO OF RESPONDENTS	PERCENTAGE
EMPLOYED	21	28%
UNEMPLOYED	54	72%

*(Source: Primary Data)*

**Figure 4.3 Employment status classification**

■ EMPLOYED ■ UNEMPLOYED



**Interpretation:**

This data shows the employment status of 75 respondents. Out of these, 21 are employed, which is 28% of the total. Meanwhile, 54 are unemployed, making up 72% of the total. This tells us that a larger percentage of respondents are unemployed compared to those who are employed. It

might indicate a need for more job opportunities or support for finding employment in the surveyed group.

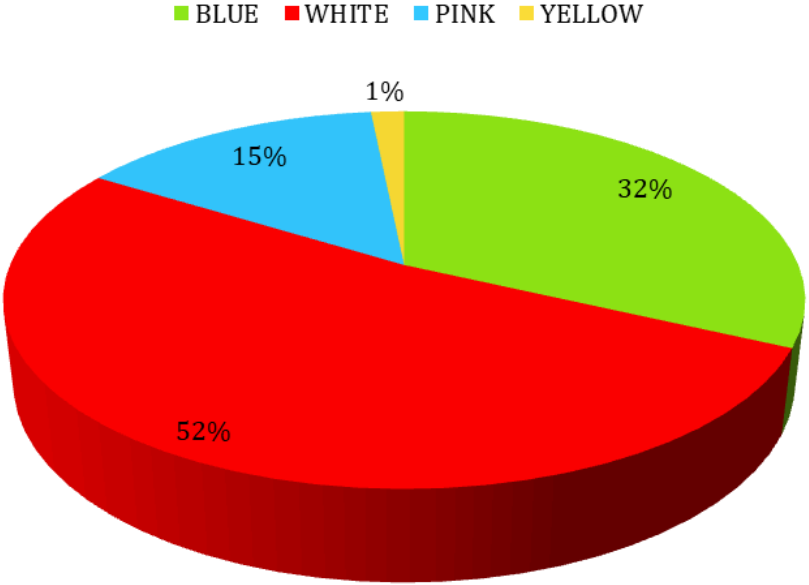
#### 4.6 COLOUR OF CARDS

**Table 4.4 Colour of cards**

COLOUR OF CARD	NO OF RESPONDENTS	PERCENTAGE
WHITE	39	52%
BLUE	24	32%
PINK	11	14.7%
YELLOW	1	1.3%

*(Source: Primary Data)*

**Figure 4.4 Classification based on the card colour**



**Interpretation:**

The data provided shows the colors of the cards and how many people chose each color. Among the 75 respondents, white was the most popular choice, with 39 people selecting it, making up

52% of the total. Blue was the next most popular color, chosen by 24 people, accounting for 32% of the responses. Pink was chosen by 11 people, making up 14.7% of the total. Interestingly, only 1 person, or 1.3%, chose yellow. In summary, white and blue were the preferred colors, with pink also being a popular choice, while yellow was the least favored among respondents

**B. DESCRIPTIVE ANALYSIS**

**4.7 THE DIGITALIZATION PDS HAVE IMPROVED MY OVERALL SATISFACTION WITH THE SYSTEM.**

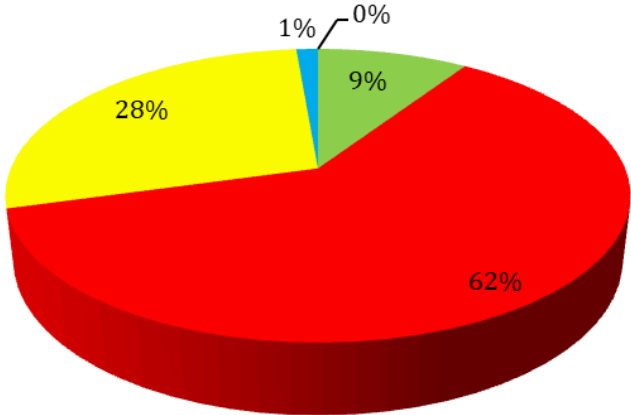
**Table 4.5 Digitalization of the PDS has improved my overall satisfaction with the system.**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	7	9%
AGREE	46	62%
NEUTRAL	21	28%
STRONGLY DISAGREE	1	1%
DISAGREE	0	0%

*(Source: Primary Data)*

**Figure 4.5 Digitalization of the PDS has improved my overall satisfaction with the system.**

■ STRONGLY AGREE ■ AGREE ■ NEUTRAL ■ STRONGLY DISAGREE ■ DISAGREE



**Interpretation:**

The majority of respondents, a significant 62%, expressed agreement with the statement. However, a considerable portion, 28%, remained neutral, indicating that they neither agreed nor disagreed. Only a small fraction, 9%, strongly agreed, while an even smaller fraction, just 1%, strongly disagreed. Notably, no one disagreed outright with the statement. This suggests that while the statement garnered a fair amount of agreement, a significant proportion of respondents remained ambivalent or neutral. This could imply that the topic is not particularly polarizing, or that respondents may require further information or context to form a strong opinion. Overall, the distribution of responses provides valuable insights into the perceptions and attitudes of the surveyed population towards the given topic.

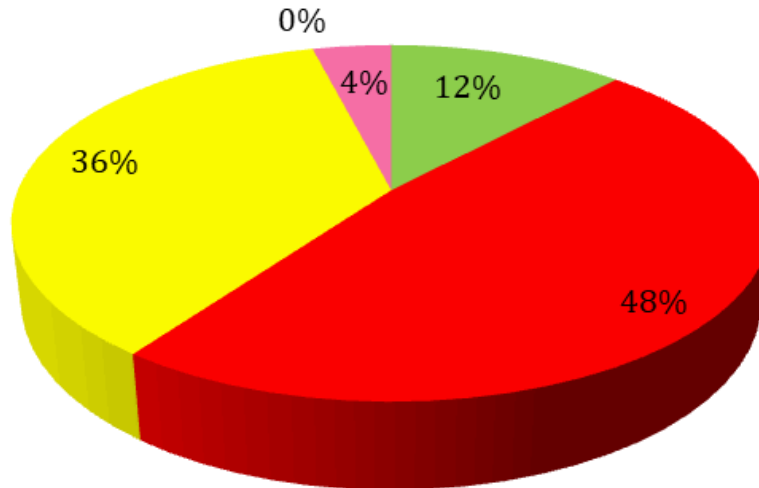
**4.8 THE ACCESSIBILITY OF DIGITAL PLATFORMS FOR PDS SERVICES HAS ENHANCED MY CONVENIENCE IN ACCESSING ESSENTIAL COMMODITIES.****Table 4.6 Accessibility of digital platforms for PDS**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	9	12%
AGREE	36	48%
NEUTRAL	27	36%
STRONGLY DISAGREE	0	0%
DISAGREE	3	4%

*(Source: Primary Data)*

**Figure 4.6 Accessibility of digital platforms for PDS**

■ Strongly agree ■ Agree ■ Neutral ■ Strongly disagree ■ Disagree



### **Interpretation**

The majority of respondents, 48%, showed agreement with the statement. A substantial portion, 36%, remained neutral, indicating neither agreement nor disagreement. No respondents strongly disagreed with the statement, and only a small fraction, 4%, disagreed. This suggests that the statement generally received positive responses, with a significant number remaining neutral. The absence of strong disagreement implies that the topic might not be particularly controversial. However, the small percentage of disagreement indicates that there are some dissenting opinions among the respondents. Overall, the distribution of responses offers insights into the prevailing attitudes and opinions of the surveyed individuals regarding the given topic.

#### 4.9 DIGITALIZATION HAS STREAMLINED THE PROCESS OF APPLYING FOR PDS BENEFITS.

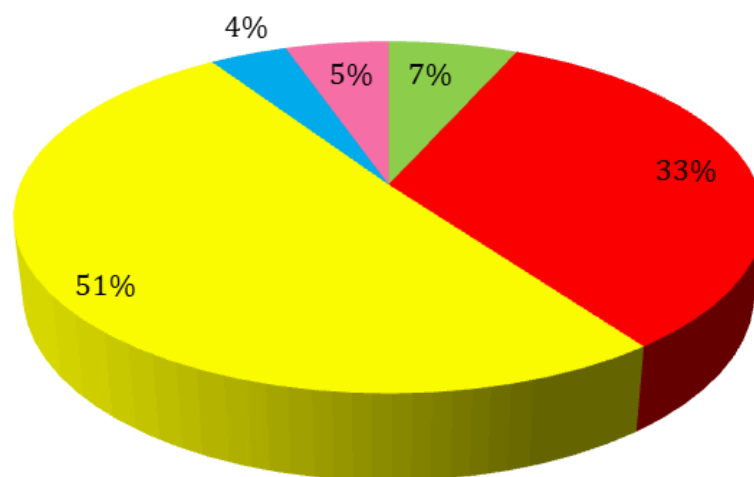
**Table 4.7 Digitalization has streamlined the process of applying for PDS benefits.**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	5	7%
AGREE	25	33%
NEUTRAL	38	51%
STRONGLY DISAGREE	3	4%
DISAGREE	4	5%

*(Source: Primary Data)*

**Figure 4.7 Digitalization has streamlined the process of applying for PDS benefits**

Strongly agree Agree Neutral Strongly disagree Disagree





### Interpretation

The data shows that people have mixed opinions about how digitalization has affected applying for PDS benefits. While there's some agreement that digitalization has helped, a significant portion remains unsure or dissatisfied, suggesting there's room for improvement or further analysis of the digitalization process for PDS benefits.

### 4.10 THE RELIABILITY OF DIGITAL PLATFORMS FOR PDS TRANSACTIONS MEETS MY EXPECTATIONS.

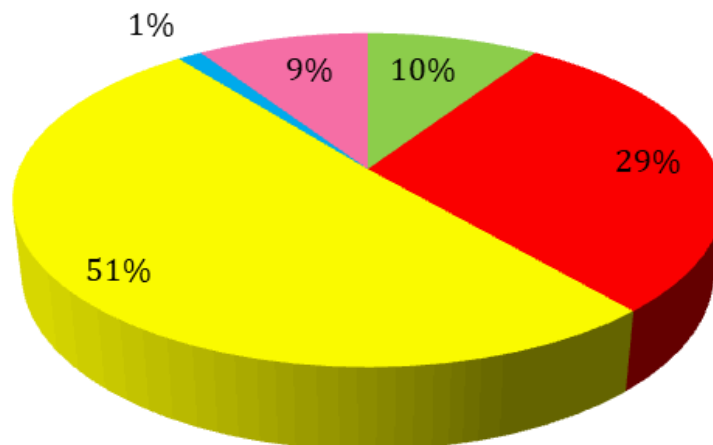
**Table 4.8 Reliability of Digital Platforms for PDS**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	7	10%
AGREE	22	29%
NEUTRAL	38	51%
STRONGLY DISAGREE	1	1%
DISAGREE	7	9%

*(Source: Primary Data)*

**Figure 4.8 Reliability of Digital Platforms for PDS**

■ Strongly agree ■ Agree ■ Neutral ■ Strongly disagree ■ Disagree



## Interpretation

According to the data, most people (79%) either agree or strongly agree that digital platforms for PDS transactions meet their expectations. Only a small percentage (10%) strongly disagree or disagree. The majority of respondents (51%) feel neutral about the reliability of these platforms. This suggests that while there's generally positive sentiment towards digital PDS platforms, there's also room for improvement in addressing the concerns of those who feel neutral or disagree

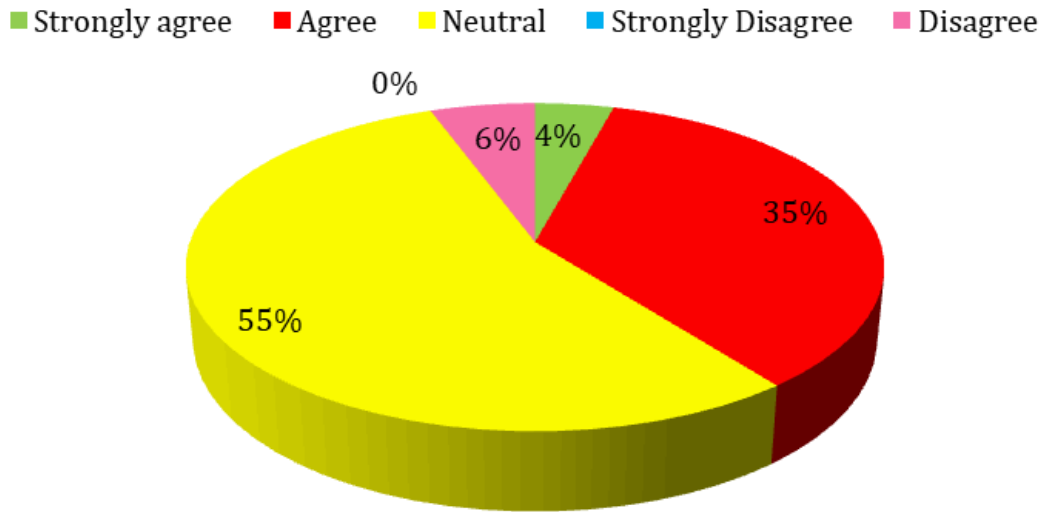
### 4.11 I FIND IT EASY TO NAVIGATE THROUGH THE DIGITAL INTERFACE WHILE AVAILING OF PDS SERVICES

**Table 4.9 Easy Navigation through the digital interface**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	7	4%
AGREE	25	35%
NEUTRAL	39	55%
STRONGLY DISAGREE	0	0%
DISAGREE	4	6%

*(Source: Primary Data)*

**Figure 4.9 Easy Navigation through the digital interface**



### **Interpretation**

From this data, we can see that the majority of respondents (55%) chose the "Neutral" option, indicating that they neither strongly agree nor disagree with whatever was being asked. This suggests a lack of strong opinion among this group.

On the other hand, 35% of respondents agreed with the statement, with only 4% strongly agreeing. This shows that there is some level of agreement, but not overwhelmingly so. Interestingly, there were no respondents who strongly disagreed with the statement, and only a small percentage (6%) disagreed.

Overall, the data suggests that while there is some agreement and a lack of strong disagreement, a significant portion of respondents are neutral, indicating a need for further investigation or clarification on the topic at hand.

#### 4.12 DIGITALIZATION HAS REDUCED THE OCCURRENCE OF ERRORS IN PDS TRANSACTIONS.

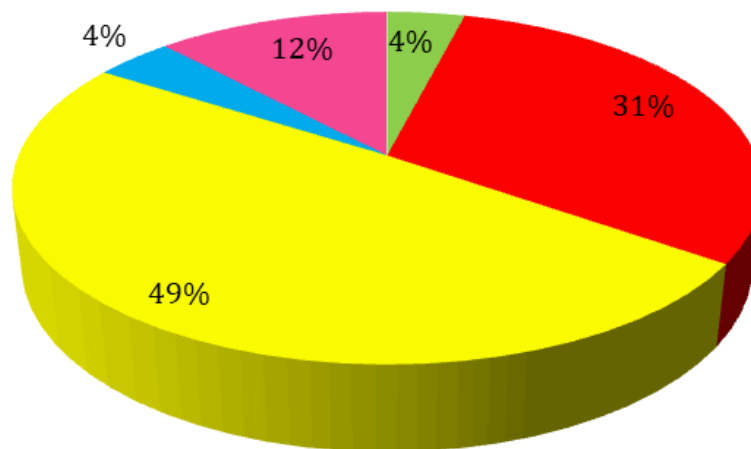
**Table 4.10 Reduced the occurrence of errors**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	4%
AGREE	23	31%
NEUTRAL	37	49%
STRONGLY DISAGREE	0	4%
DISAGREE	9	12%

*(Source: Primary Data)*

**Figure 4.10 Reduced the occurrence of errors**

■ Strongly agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



#### **Interpretation**

Overall, the majority of respondents (80% - 31% Agree + 49% Neutral) did not express strong disagreement, which could suggest a general acceptance or lack of strong opposition to whatever the statement or question was. However, it's important to note that a significant portion were neutral, indicating a lack of strong conviction either way.

#### 4.13 THE DIGITALIZATION OF PDS HAS INCREASED TRANSPARENCY IN THE DISTRIBUTION OF ESSENTIAL COMMODITIES.

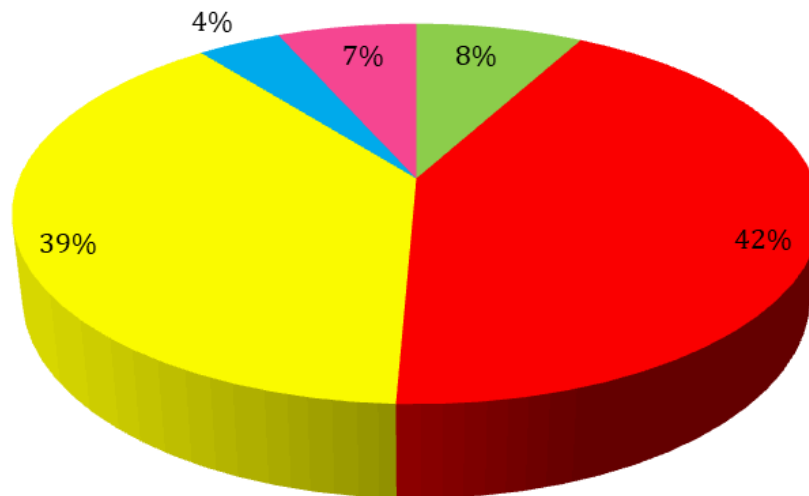
**Table 4.11 Digitalization of PDS has increased transparency**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	6	8%
AGREE	32	42%
NEUTRAL	29	39%
STRONGLY DISAGREE	3	4%
DISAGREE	5	7%

*(Source: Primary Data)*

**Figure 4.11 Digitalization of PDS has increased transparency**

Strongly Agree Agree Neutral Strongly disagree Disagree



#### **Interpretation**

From this data, we can see that the majority of respondents (8% + 42% = 50%) have positive opinions (either "Strongly Agree" or "Agree"). A significant portion (39%) are neutral,

indicating they neither agree nor disagree strongly. A very small percentage (4% + 7% = 11%) express negative opinions (either "Strongly Disagree" or "Disagree"). Overall, most respondents either agree or are neutral, while a smaller portion disagrees with the statement.

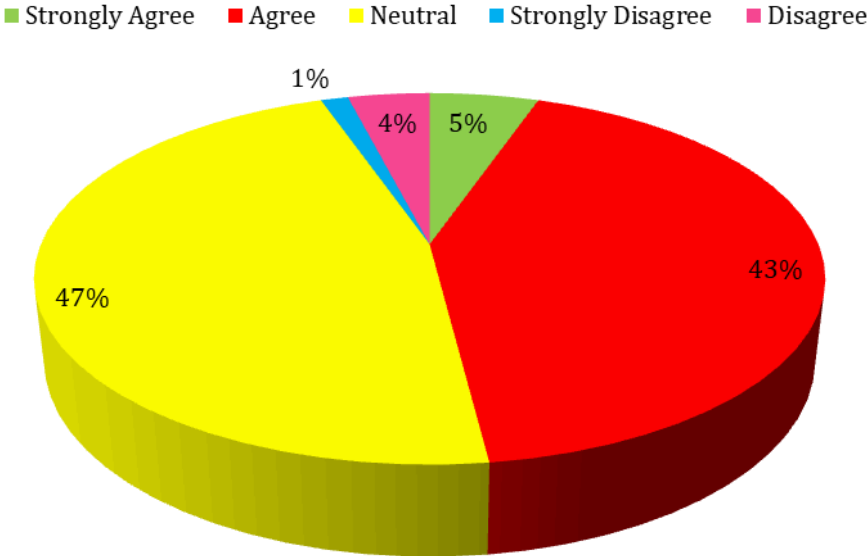
**4.14 I FEEL MORE EMPOWERED TO MONITOR MY PDS TRANSACTIONS THROUGH DIGITAL CHANNELS.**

**Table 4.12 Empowered to monitor my PDS transactions**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	4	5%
AGREE	32	43%
NEUTRAL	35	47%
STRONGLY DISAGREE	1	1%
DISAGREE	3	4%

*(Source: Primary Data)*

**Figure 4.12 Empowered to monitor my PDS transactions**



### Interpretation

From this data, we can see that the majority of respondents (90%) either agreed or were neutral about the statement. Only a small percentage (5%) disagreed or strongly disagreed. The data suggests that most respondents are either in agreement or have a neutral stance, indicating that the statement might be generally accepted or not strongly opposed.

### 4.15 DIGITALIZATION HAS IMPROVED THE TIMELINESS OF RECEIVING PDS BENEFITS.

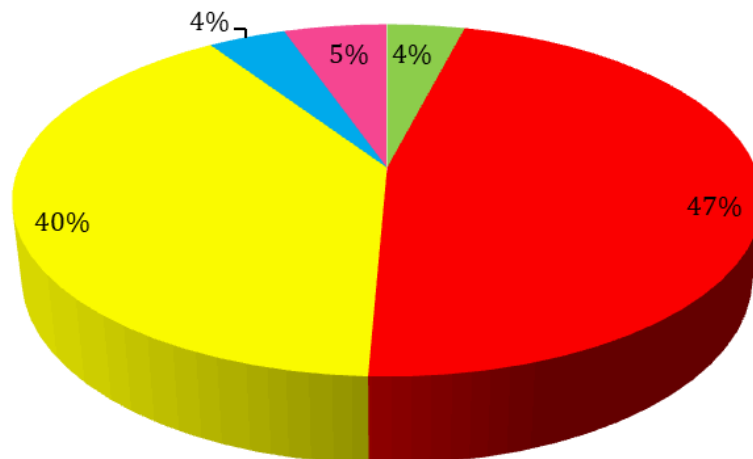
**Table 4.13 Improved the timeliness**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	4%
AGREE	35	47%
NEUTRAL	30	40%
STRONGLY DISAGREE	3	4%
DISAGREE	4	5%

*(Source: Primary Data)*

**Figure 4.13 Improved the timeliness**

■ Strongly Agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



### Interpretation

From this data, we can see that the majority of respondents either agree or are neutral about something, as these two categories together make up 87% of the responses. Only a small percentage strongly agree or disagree, with a very tiny percentage in the middle (neutral). This suggests that opinions are mostly polarized towards agreement or neutrality.

### 4.16 THE DIGITALIZATION OF PDS HAS REDUCED INSTANCES OF CORRUPTION IN THE DISTRIBUTION SYSTEM.

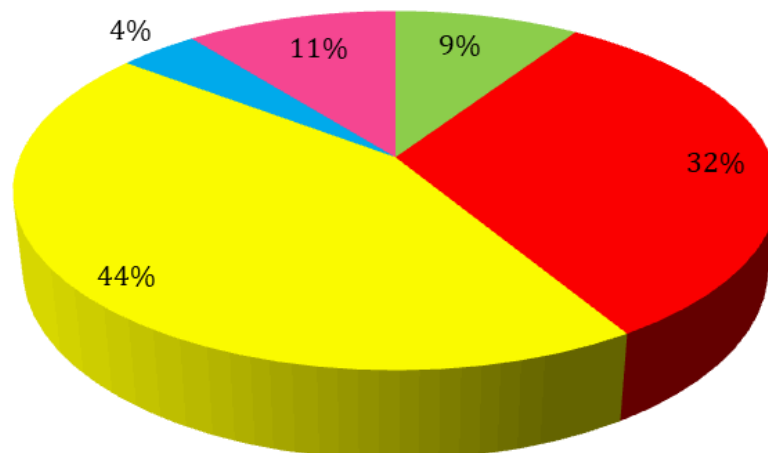
**Table 4.14 Digitalization of PDS has reduced instances of corruption**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	7	9%
AGREE	24	32%
NEUTRAL	33	44%
STRONGLY DISAGREE	3	4%
DISAGREE	8	11%

*(Source: Primary Data)*

**Figure 4.14 Digitalization of PDS has reduced instances of corruption**

Strongly Agree Agree Neutral Strongly Disagree Disagree





### Interpretation

From this data, we can see that the majority of respondents are neutral, meaning they don't strongly agree or disagree with the statement. However, there is a significant portion who agree with the statement, followed by a smaller group who disagree or strongly disagree. This suggests that opinions are varied, with a notable portion leaning toward agreement.

### 4.17 I TRUST THE SECURITY MEASURES IMPLEMENTED IN DIGITAL PDS PLATFORMS TO SAFEGUARD MY PERSONAL INFORMATION

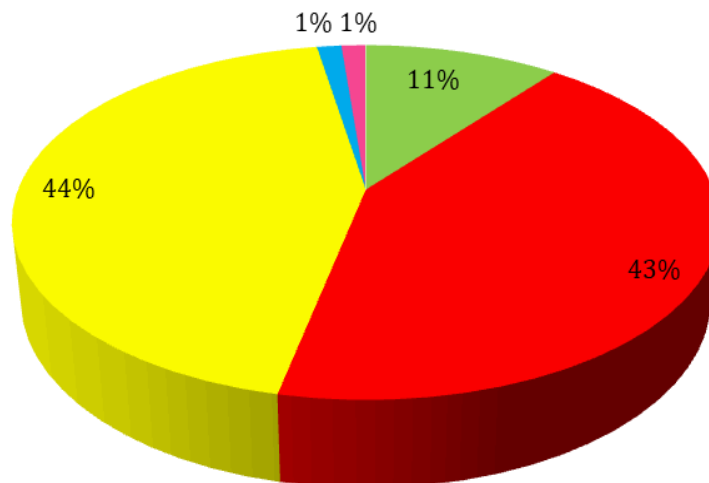
**Table 4.15 People trust in the security measures implemented in digital PDS platforms**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	8	11
AGREE	32	43
NEUTRAL	33	44
STRONGLY DISAGREE	1	1
DISAGREE	1	1

*(Source: Primary Data)*

**Figure 4.15 People trust in the security measures implemented in digital PDS platforms**

Strongly Agree Agree Neutral Strongly Disagree Disagree



### Interpretation

From this data, we can see that the majority of respondents (11% + 43% = 54%) either strongly agree or agree with something. However, a significant portion (44%) remains neutral, suggesting that they neither agree nor disagree or might not have a strong opinion. Only a very small percentage (1% each) either strongly disagree or disagree, indicating that dissenting opinions are rare among the respondents.

### 4.18 DIGITALIZATION HAS IMPROVED THE OVERALL EFFICIENCY OF THE PDS IN DELIVERING SERVICES.

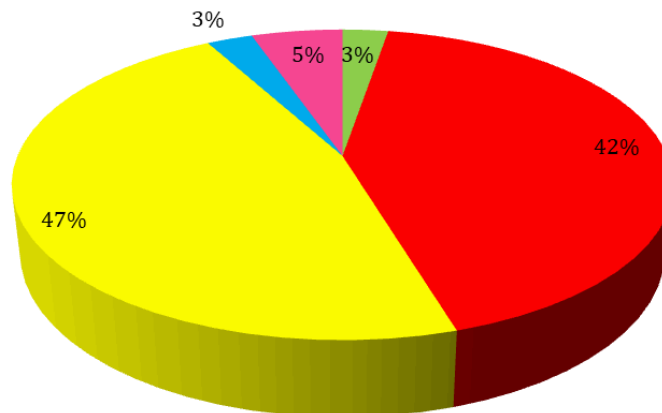
**Table 4.16 Digitalization has improved the overall efficiency**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	2	3%
AGREE	32	42%
NEUTRAL	35	47%
STRONGLY DISAGREE	2	3%
DISAGREE	4	5%

*(Source: Primary Data)*

**Figure 4.16 Digitalization has improved the overall efficiency**

■ Strongly Agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



## Interpretation

From this data, we can see that the majority of respondents (47%) were neutral, meaning they neither agreed nor disagreed strongly with the statement. A significant portion (42%) agreed with it, while a smaller percentage disagreed (5%) or strongly disagreed (3%). The low numbers in the "Strongly Agree" and "Strongly Disagree" categories suggest that the statement might not have evoked extreme opinions among the respondents, leading to a higher number of neutral responses. Overall, the data gives an insight into how people feel about the statement, with a sizable portion being undecided or neutral

### 4.19 I FEEL ADEQUATELY INFORMED ABOUT THE PROCEDURES AND BENEFITS AVAILABLE THROUGH DIGITAL PDS PLATFORMS

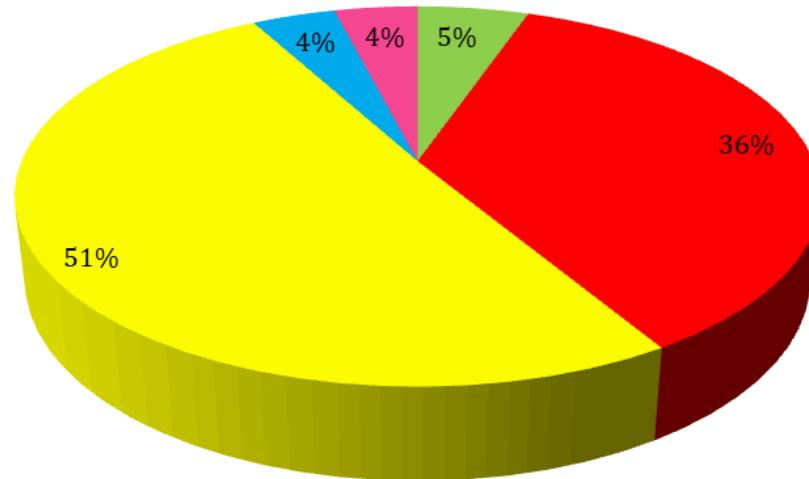
**Table 4.17 I feel adequately informed about the procedures and benefits**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	4	5%
AGREE	27	36%
NEUTRAL	38	51%
STRONGLY DISAGREE	3	4%
DISAGREE	3	4%

*(Source: Primary Data)*

**Figure 4.17 I feel adequately informed about the procedures and benefits**

■ Strongly Agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



### **Interpretation**

The majority of respondents fall into the neutral category, suggesting a lack of strong opinions either way. This could indicate that while people are not strongly against digital PDS platforms, they also don't feel overwhelmingly positive about them. However, there is still a significant portion (41%) who either agree or strongly agree, indicating a level of satisfaction or confidence in these platforms. The small percentages of disagreement and strong disagreement suggest that there are some concerns or dissatisfaction among a minority of respondents, but they are not widespread. Overall, it appears that there may be room for improvement in informing and engaging users about the procedures and benefits of digital PDS platforms

#### 4.20 DIGITALIZATION HAS REDUCED BUREAUCRATIC HURDLES IN AVAILING OF PDS BENEFITS.

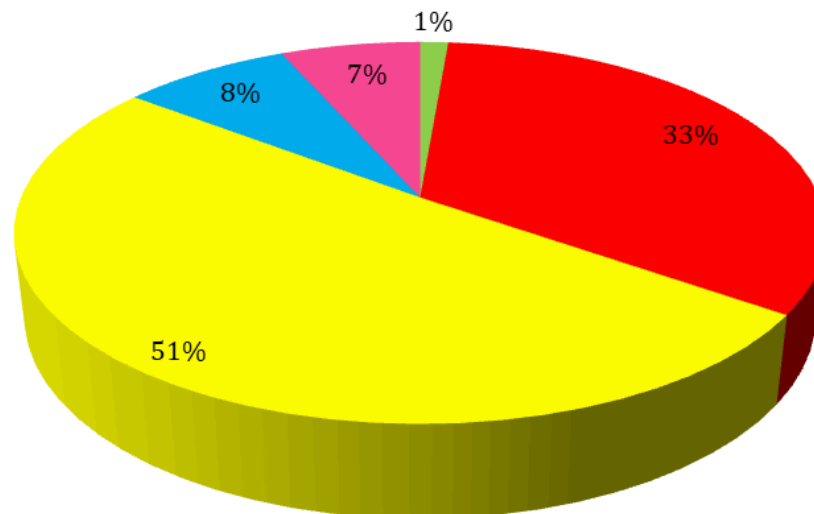
**Table 4.18 Digitalization has reduced bureaucratic hurdles**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	1	1%
AGREE	25	33%
NEUTRAL	38	51%
STRONGLY DISAGREE	6	8%
DISAGREE	5	7%

*(Source: Primary Data)*

**Figure 4.18 Digitalization has reduced bureaucratic hurdles**

■ Strongly Agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



#### **Interpretation**

According to the data, only 1% strongly agree that digitalization has reduced bureaucratic hurdles in accessing PDS benefits. However, 33% agree with this statement, while the majority,

51%, remain neutral. A smaller percentage, 8%, strongly disagree, and 7% disagree. This suggests that while there's some level of agreement and disagreement, the majority are either neutral or leaning towards agreeing, indicating a mixed perception of the impact of digitalization on bureaucratic hurdles in accessing PDS benefits.

#### 4.21 THE DIGITALIZATION OF PDS HAS ENCOURAGED ME TO UTILIZE MORE OF ITS SERVICES

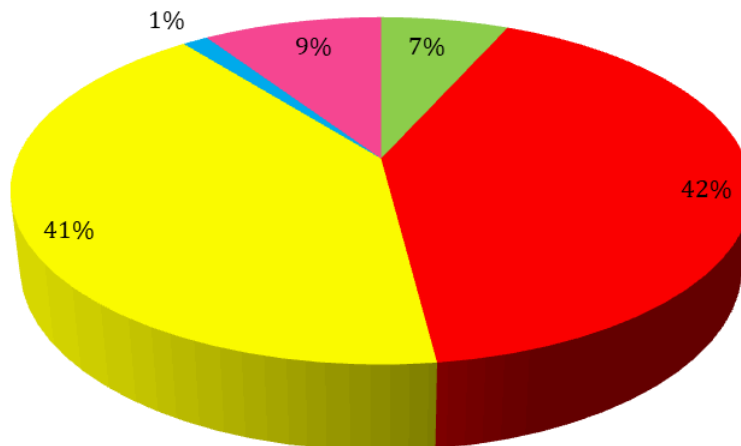
**Table 4.19 digitalization of PDS has encouraged me to utilize more of its services**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	5	7%
AGREE	31	42%
NEUTRAL	31	41%
STRONGLY DISAGREE	1	1%
DISAGREE	7	9%

*(Source: Primary Data)*

**Figure 4.19 digitalization of PDS has encouraged me to utilize more of its services**

■ Strongly Agree 
 ■ Agree 
 ■ Neutral 
 ■ Strongly Disagree 
 ■ Disagree



## Interpretation

Based on the survey data, it seems that the digitalization of the Public Distribution System (PDS) has had a positive impact on people's utilization of its services. A majority of respondents, about 49% (combining "strongly agree" and "agree" categories), expressed satisfaction with the digitalization efforts. About 41% of respondents were neutral, indicating they neither strongly agreed nor disagreed with the statement. Only a small minority, about 10% (combining "strongly disagree" and "disagree" categories), expressed dissatisfaction with the digitalization efforts. Overall, the data suggests that the digitalization of PDS has been successful in encouraging more people to utilize its services, with a large portion either satisfied or at least not opposed to the changes.

### 4.22 THE RESPONSE TIME FOR ADDRESSING ISSUES OR QUERIES RELATED TO DIGITAL PDS SERVICES IS SATISFACTORY.

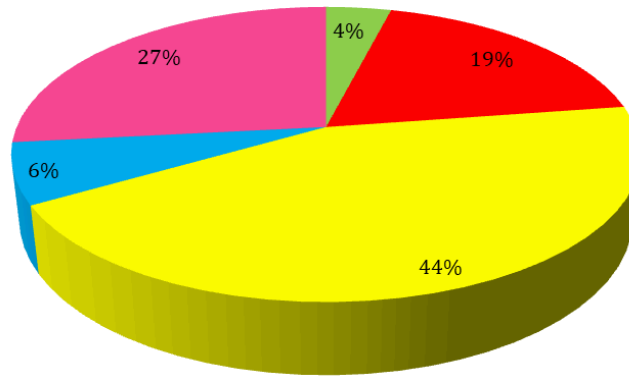
**Table 4.20 Response time for addressing issues or queries is satisfactory.**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	4%
AGREE	14	19%
NEUTRAL	33	44%
STRONGLY DISAGREE	5	6%
DISAGREE	20	27%

*(Source: Primary Data)*

**Figure 4.20 Response time for addressing issues or queries is satisfactory**

Strongly Agree Agree Neutral Strongly Disagree Disagree



**Interpretation**

While there is a sizable group who find the response time satisfactory or agreeable, a significant portion remains undecided or dissatisfied. This suggests there might be room for improvement in the responsiveness of digital PDS services. Further investigation into the reasons behind the neutral and negative responses could provide insights for enhancing service quality.

**4.23 DIGITALIZATION HAS IMPROVED THE ACCURACY OF INFORMATION PROVIDED REGARDING PDS BENEFITS.**

**Table 4.21 Digitalization has improved the accuracy of information**

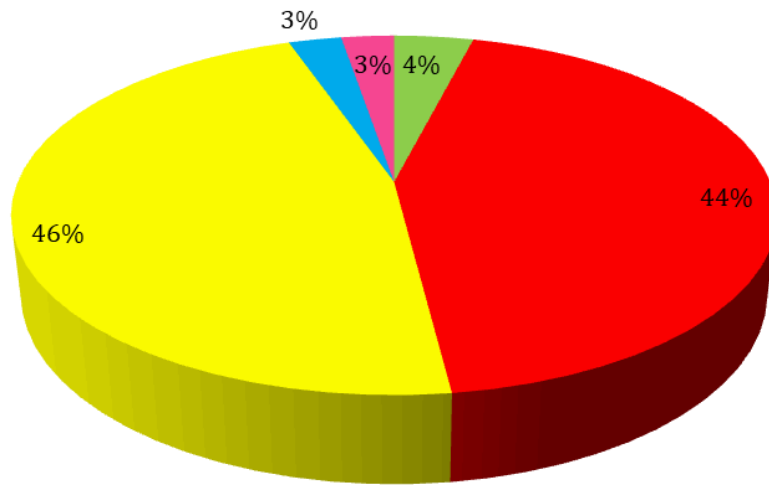
SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	4%
AGREE	33	44%
NEUTRAL	35	46%
STRONGLY DISAGREE	2	3%
DISAGREE	2	3%

*(Source: Primary Data)*



**Figure 4.21 Digitalization has improved the accuracy of information**

■ Strongly Agree ■ Agree ■ Neutral ■ Strongly Disagree ■ Disagree



### **Interpretation**

Based on the data provided, it seems that most respondents either agree or are neutral about the accuracy of information regarding PDS benefits after digitalization. This indicates that a majority of respondents either agree or are indifferent, suggesting that digitalization might have positively impacted the accuracy of information regarding PDS benefits. However, it's worth noting that a small percentage disagree, which could suggest areas where improvements are still needed. Overall, the trend appears to be positive towards the impact of digitalization on accuracy.

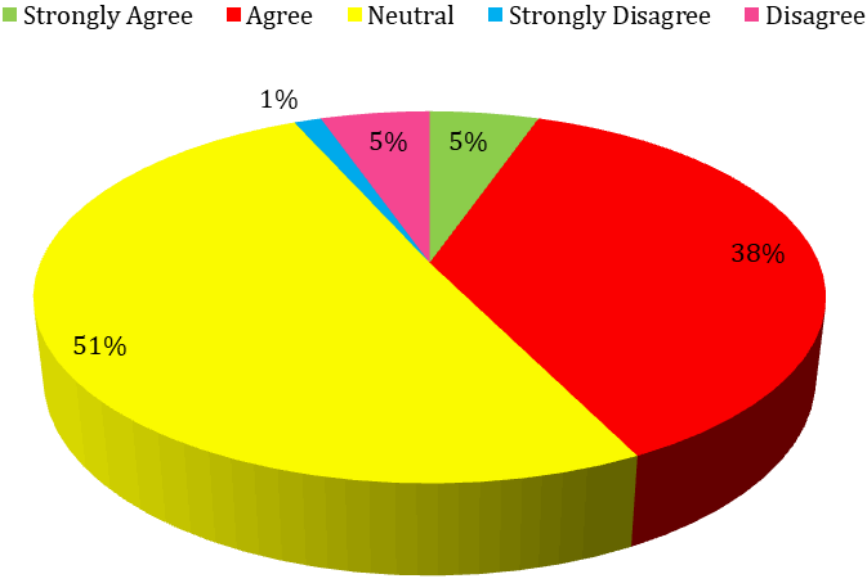
**4.24 I AM SATISFIED WITH THE USER SUPPORT AVAILABLE FOR NAVIGATING DIGITAL PDS PLATFORMS.**

**Table 4.22 Satisfied with the user support**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	4	5%
AGREE	28	38%
NEUTRAL	38	51%
STRONGLY DISAGREE	1	1%
DISAGREE	4	5%

*(Source: Primary Data)*

**Figure 4.22 Satisfied with the user support**



**Interpretation**

From the data, it seems like a majority of respondents (89%) either agree or strongly agree with the user support available for navigating digital PDS platforms. Specifically, 38% agree, while

51% remain neutral. Only a small portion, 6% combined, disagree or strongly disagree with the support provided. This suggests that the majority find the support satisfactory, though there's room for improvement to address the concerns of those who disagree or feel neutral.

**4.25 Digitalization has encouraged more accountability among PDS officials in delivering services.**

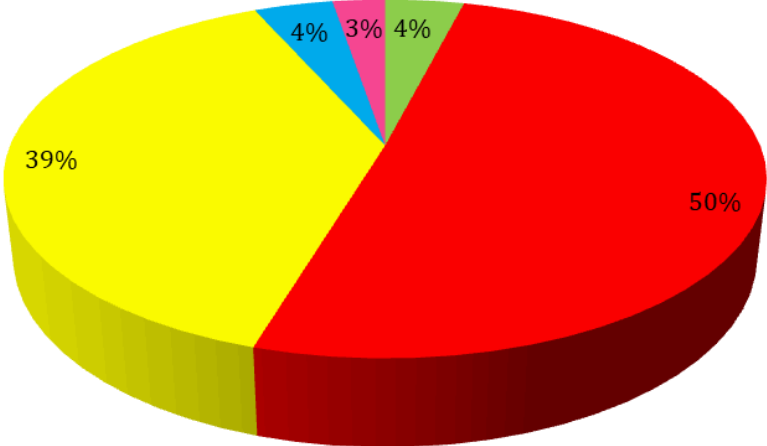
**Table 4.23 Digitalization has encouraged more accountability**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	3	4%
AGREE	38	50%
NEUTRAL	29	39%
STRONGLY DISAGREE	3	4%
DISAGREE	2	3%

*(Source: Primary Data)*

**Figure 4.23 Digitalization has encouraged more accountability**

■ Strongly Agree  
 ■ Agree  
 ■ Neutral  
 ■ Strongly Disagree  
 ■ Disagree



## Interpretation

Based on the responses from the survey, it appears that a significant portion of respondents, 54% to be precise (those who strongly agree and agree), believe that digitalization has increased accountability among Public Distribution System (PDS) officials in delivering services. However, it's notable that a considerable number of respondents, 39%, remain neutral on this topic, indicating some uncertainty or lack of strong opinion. Only a small minority, 7% in total (those who strongly disagree and disagree), feel that digitalization hasn't improved accountability. This suggests that while there's general agreement on the positive impact of digitalization, there's still room for improvement and clarification to address the concerns of those who are neutral or disagree.

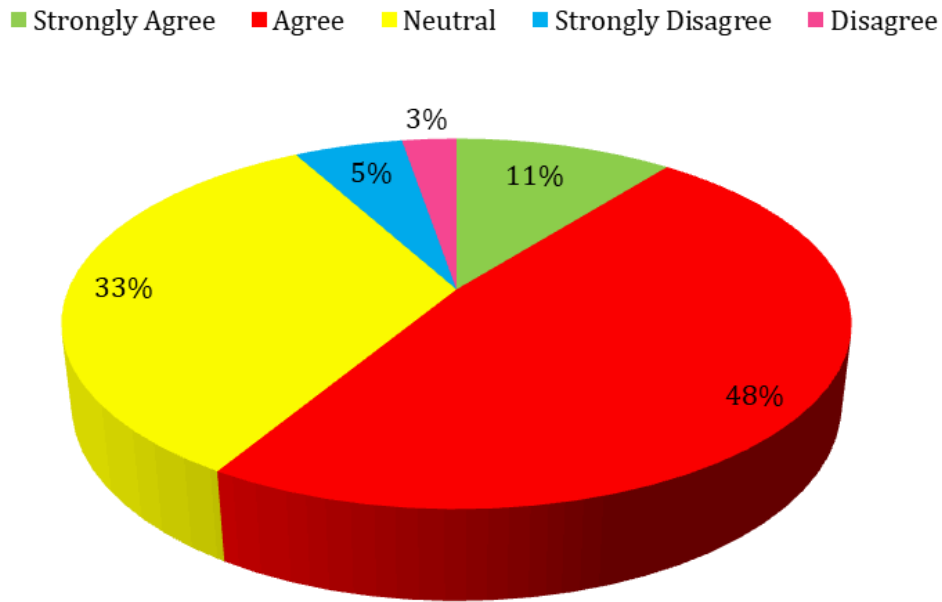
### **4.26 OVERALL, I BELIEVE THAT DIGITALIZATION HAS POSITIVELY IMPACTED THE PUBLIC DISTRIBUTION SYSTEM IN KERALA.**

**Table 4.24 Digitalization has positively impacted PDS**

SCALE	NO OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	8	11%
AGREE	36	48%
NEUTRAL	25	33%
STRONGLY DISAGREE	4	5%
DISAGREE	2	3%

*(Source: Primary Data)*

**Figure 4.24 Digitalization has positively impacted PDS**



### **Interpretation**

According to the data, it seems like a majority of respondents, about 59%, either strongly agree or agree that digitalization has positively impacted the Public Distribution System (PDS) in Kerala. This indicates that a significant portion of the surveyed population sees the benefits of digitalization in improving the PDS. However, about 38% of respondents either feel neutral or disagree with this notion, suggesting that there might be some skepticism or concerns regarding the effectiveness of digitalization in the PDS. Overall, while there is substantial support for the positive impact of digitalization, there are also some reservations among a portion of the respondents. The data analysis and interpretation reveal trends across various survey responses. Most respondents are young adults, female, and unemployed. White and blue are favored card colors. Opinion trends indicate neutrality or agreement, especially towards digital PDS platforms. While there's generally positive sentiment towards digitalization, there are areas for improvement, especially regarding user support and accountability among PDS officials in Kerala.

**CHAPTER 5**  
**FINDINGS, SUGGESTIONS AND**  
**CONCLUSION**

## **5.1 INTRODUCTION**

The Public Distribution System (PDS) in India is an essential social safety net aimed at providing food security and supporting the economically disadvantaged by offering subsidized food grains. The system, pivotal in combating nutritional deficiencies among millions, has historically faced challenges including inefficiencies, corruption, and leakage of resources, undermining its effectiveness. Recognizing these issues, the Indian government has initiated a significant shift towards digitalization to revamp the PDS, particularly focusing on the state of Kerala. This transformative approach leverages technological advancements such as biometric authentication, electronic point-of-sale (ePOS) devices, and mobile applications to enhance process efficiency, ensure transparency, and target benefits more accurately to the intended recipients.

This study explores the impact of digitalizing Kerala's PDS on consumer satisfaction, offering a comprehensive analysis that encompasses the technological, economic, and social dimensions of this shift. By employing a multidisciplinary methodology, the research examines how digital tools can address longstanding challenges within the PDS, potentially leading to improved service delivery and consumer experiences. The research context is set in Ernakulam district, with a primary focus on the perceptions and satisfaction levels of PDS beneficiaries post-digitalization. Through this investigation, the study aims to provide valuable insights for policymakers, contribute to academic discourse, and inform strategies for leveraging digital technologies to enhance public services in India. The digital transformation of Kerala's PDS represents a promising avenue for increasing efficiency, reducing corruption, and ultimately, ensuring that the benefits reach those in need in a timely and transparent manner.

## **5.2 FINDINGS**

- Most respondents in the survey are in their 20s and 30s, indicating a younger demographic.

- The majority of respondents are female, comprising 76% of the total surveyed population.
- A larger proportion of respondents are unemployed compared to those who are employed, suggesting potential job market challenges.
- White and blue are the preferred colors among respondents, while yellow is the least favored.
- Many respondents expressed agreement or neutrality towards various statements, indicating a lack of strong opinions.
- Digital platforms for PDS transactions generally meet expectations, though there are concerns about reliability.
- A significant portion of respondents neither strongly agree nor disagree with statements, indicating a lack of strong conviction.
- Positive opinions outweigh negative ones regarding the impact of digitalization on PDS services.
- Some respondents feel unsure or dissatisfied with the response time of digital PDS services, suggesting room for improvement.
- While many respondents agree that digitalization has improved accountability in the PDS, a considerable portion remain neutral or disagree, indicating some uncertainty.

### **5.3 SUGGESTIONS**

- Increase transparency by regularly sharing updates and progress reports on digital PDS services, especially addressing concerns about reliability.
- Ensure clear and accessible communication channels for users to report issues or provide feedback on digital platforms.
- Implement measures to reduce response times for digital PDS services to address concerns raised by some respondents.
- Provide user-friendly guides and tutorials on how to navigate and utilize digital PDS platforms effectively.
- Enhance accountability by regularly publishing performance metrics and outcomes of digitalization efforts in the PDS.



- Offer training and support programs to improve understanding and confidence in using digital PDS services, especially among older demographics.
- Foster community engagement and involvement in decision-making processes related to digitalization initiatives in the PDS.
- Conduct regular surveys or feedback mechanisms to gauge user satisfaction and identify areas for improvement in digital PDS services.
- Establish clear policies and protocols for data privacy and security to build trust among users of digital PDS platforms.

## **5.4 CONCLUSION**

The findings of the study shed light on the current state of transparency within Kerala's public distribution system (PDS) and provide valuable insights into consumer satisfaction. It is evident that there is a significant emphasis on digitalization within the PDS, with overall positive sentiments towards its impact on accountability and service delivery. However, there are notable concerns regarding reliability, response times, and the need for clearer communication channels. Moving forward, it is imperative for stakeholders to address these issues proactively to enhance transparency and ensure consumer satisfaction.

To foster a future-oriented approach, stakeholders must prioritize transparency and accountability in all aspects of the PDS. This includes implementing measures to improve reliability, reducing response times, and enhancing communication channels for user feedback. By leveraging digital platforms effectively, providing accessible guides and support programs, and actively engaging with diverse demographic groups, Kerala's PDS can evolve into a model of transparency and consumer-centric service delivery. Embracing these recommendations will not only enhance consumer satisfaction but also strengthen trust in the PDS, ensuring its continued relevance and effectiveness in meeting the needs of Kerala's population.

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# **APPENDIX**

## QUESTIONNAIRE

1. Name

2. Place

3. Age

4. Email

5. Gender

6. Employment status

7. Colour of card

8. The digitalization of the Public Distribution System (PDS) has improved my overall satisfaction with the system.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

9. The accessibility of digital platforms for PDS services has enhanced my convenience in accessing essential commodities.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

10. Digitalization has streamlined the process of applying for PDS benefits.

- Strongly Agree
- Agree
- Neutral

Strongly Disagree

Disagree

11. The reliability of digital platforms for PDS transactions meets my expectations.

Strongly Agree

Agree

Neutral

Strongly Disagree

Disagree

12. I find it easy to navigate through the digital interface while availing of PDS services.

Strongly Agree

Agree

Neutral

Strongly Disagree

Disagree

13. Digitalization has reduced the occurrence of errors in PDS transactions.

Strongly Agree

Agree

Neutral

Strongly Disagree

Disagree

14. The digitalization of PDS has increased transparency in the distribution of essential commodities.

Strongly Agree

Agree

Neutral

Strongly Disagree



Disagree

15. I feel more empowered to monitor my PDS transactions through digital channels.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

16. Digitalization has improved the timeliness of receiving PDS benefits.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

17. The digitalization of PDS has reduced instances of corruption in the distribution system.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

18. I trust the security measures implemented in digital PDS platforms to safeguard my personal information.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree

Disagree

19. Digitalization has improved the overall efficiency of the PDS in delivering services.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

20. I feel adequately informed about the procedures and benefits available through digital PDS platforms.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

21. Digitalization has reduced bureaucratic hurdles in availing PDS benefits.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

22. The digitalization of PDS has encouraged me to utilize more of its services.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

23. The response time for addressing issues or queries related to digital PDS services is satisfactory.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

24. Digitalization has improved the accuracy of information provided regarding PDS benefits.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

25. I am satisfied with the user support available for navigating digital PDS platforms.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

26. Digitalization has encouraged more accountability among PDS officials in delivering services.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

27. Overall, I believe that digitalization has positively impacted the Public Distribution System in Kerala.

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree