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Role of Technology in Implementation of Pradhan Mantri Awas Yojana in India

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Abstract: *The Pradhan Mantri Awas Yojana (PMAY) is a housing scheme initiated by the government of India to provide affordable housing to all. It is implemented in both the urban and rural areas of India, ensuring access to adequate and affordable housing, especially for the economically weaker section. This study aims to examine the role of technology in improving the implementation of the scheme in India. It highlights the use of digital tools such as Direct Benefit Transfer (DBT), geo-tagging, Aadhaar integration, and Management Information Systems (MIS) in ensuring transparency and efficiency. The findings reveal that technology has significantly reduced delays and leakages in the distribution of funds. The use of technology has also improved accountability and has transformed the traditional methods of implementation. However, several challenges still exist that affect the full utilization of these technologies.*

Keywords: PMAY, Technology, DBT, Housing Scheme, India

I. INTRODUCTION

Housing is one of the most essential needs of human life. It plays an important role in human survival and determining the standard of living. Every individual requires a safe and secure place to live. Housing shortage is a global crisis with a severe impact on developing countries like India. With the continuously increasing population, demand for affordable housing has also increased. After independence, the government of India launched numerous housing schemes, and the Pradhan Mantri Awas Yojana (PMAY) emerged as the most effective one.

PMAY was launched in the year 2015 with the objective of "Housing for All." The scheme covers both urban and rural areas, focusing especially on economically weaker sections, low-income groups, and middle-income groups. The scheme provides a permanent house with all basic amenities, or financial assistance to construct, enhance, or upgrade houses to beneficiaries directly to their bank account.

To understand the overall implementation of Pradhan Mantri Awas Yojana (PMAY), the following table presents the progress of PMAY in terms of houses sanctioned, completed, and funds released under both PMAY-Urban and PMAY-Gramin as of 2026.

Table 1: Physical and Financial Progress of Pradhan Mantri Awas Yojana (PMAY) in India (as of 2026)

Component	Houses Sanctioned (Nos.)	Houses Completed (Nos.)	Funds Released (₹ Crore)
PMAY-Urban	125.15 lakh	97.30 Lakh	₹ 1,77,179
PMAY-Gramin	3,90,89,613	3,00,73,310	₹ 4,07,549.9

Source: Compiled from PMAY-U and PMAY-G official portals

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In recent years, technology has become an integral part of every sector. It has transformed the way activities are planned, executed, and monitored. It improves transparency and accountability by reducing manual processes and human errors. Overall, technology is no longer an option but a necessity for effective functioning of work in any sector.
Technological advancements have transformed the way government schemes are implemented. The integration of digital tools into PMAY has improved transparency, efficiency, and monitoring mechanisms. Technology-driven governance has helped reduce corruption, ensured the timely delivery of benefits, and enhanced the overall effectiveness of the scheme.

II. LITERATURE REVIEW

Naik, Reddy, and Rao (2018) examined the role of construction technologies in the implementation of the Pradhan Mantri Awas Yojana (PMAY) with special reference to Andhra Pradesh. The study compares various low-cost housing technologies and found that, in comparison to modern technologies, conventional construction technologies are more time-consuming and less efficient for large-scale housing projects. The findings identify, in the case of Andhra Pradesh, the most suitable options are precast large panel systems, shear wall technology, and solid concrete block construction, and emphasize that the selection of technologies must be based on local conditions of respective states for effective implementation.
Madala, Asadi, and Satish Chandra (2019) conducted a critical study on technological interventions in affordable housing under the Pradhan Mantri Awas Yojana (PMAY). The study highlights that due to rapid urbanization, India is facing a housing shortage. It emphasizes the need for innovative, cost-effective, and sustainable construction technologies. The study applies the PUGH method and reveals that selecting appropriate technology through objective and systematic evaluation is crucial for ensuring efficient, high-quality, and timely implementation of mass housing projects under PMAY.
A report by The New Indian Express (2024) discusses the significance of Pradhan Mantri Awas Yojana–Urban 2.0 in addressing India's growing urban housing demand. The scheme aims to construct 10 million houses for urban poor and middle-class families by 2029. It highlights the urgent need for housing due to rapid urbanization. The article further emphasizes that the Technology Sub- Mission of PMAY recommends 16 emerging technologies focused on high-speed construction. It suggests that while modern technologies are being promoted, there is a need to adopt low-carbon materials to reduce environmental impact. Thus, the scheme is seen as a promising initiative for advancing both affordable and sustainable urban housing.
Dahiwale and Desai (2025) examined the impact of digital integration on the Pradhan Mantri Awas Yojana- Gramin scheme using secondary data. The study highlights the role of technology in improving operational efficiency, transparency, and beneficiary satisfaction. Authors identify challenges such as digital illiteracy, inadequate infrastructure, and regional disparities, especially in rural areas. They emphasize enhancing digital literacy through training programs, strengthening rural digital infrastructure, and promoting region-specific interventions. Additionally, the paper suggests using advanced technologies such as artificial intelligence, blockchain, and predictive analytics to improve the functioning of the housing scheme further

Objectives of the Study

- To study the role of technology in the implementation of PMAY
- To identify the challenges in the use of technology in implementing PMAY
- To propose suggestions for improving the use of technology in the implementation of PMAY

III. RESEARCH METHODOLOGY

The study is descriptive in nature and is based on secondary data. Data has been collected from government reports, official PMAY portals, websites, and research articles. The study uses qualitative analysis to understand the role and impact of technology in the implementation of the scheme and proposes suggestions for improvement.

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Role of Technology in PMAY Implementation

The following are the various technologies used in the implementation of Pradhan Mantri Awas Yojana to make it more effective and efficient:

Direct Benefit Transfer (DBT)

DBT ensures that financial assistance is directly transferred to the beneficiary's verified bank account. It has curtailed the role of intermediaries and minimized the risk of corruption and delay by ensuring the timely disbursement of funds.

Digital Monitoring and Geo-Tagging of Houses

Geo-tagging involves capturing location-based photographs of houses. Photographs are taken at different stages of construction, from ground work to completion, and uploaded to the Bhuvan portal. This helps in proper monitoring of construction progress and ensures funds are only transferred after verification of construction stages

Modern Construction Technology

The PMAY Technology Sub-Mission (TSM) promotes innovative, disaster-resilient, and eco-friendly technologies to construct houses faster and more sustainably.

Awaas+ App & AI Verification

The Awaas+ 2024 app uses AI-powered face authentication, Aadhaar-based e-KYC, and liveness detection (eye-blink/motion). This app eliminates fraudulent applications and ensures that only authentic beneficiaries receive assistance.

Management Information System (MIS)

The MIS portal provides real-time data on the progress of the scheme to track all the activities. It enables stakeholders to track the number of houses sanctioned, grounded, and completed. This system helps in performance evaluation and decision-making.

Use of Mobile Applications

Use of mobile applications like UMANG App, mAadhaar App, Bhuvan App, etc., improves efficiency and reduces paperwork. They are used by field officials to upload data, monitor construction, and update progress instantly.

Table 2: Technological Tools and Their Impact on PMAY Implementation

Technology Used	Impact on Implementation
Direct Benefit Transfer (DBT)	Reduces corruption and ensures timely payments
Digital Monitoring & Geo-Tagging	Enhances transparency and real-time monitoring
Modern Construction Technology	Speeds up construction and improves quality
Awaas+ App & AI Verification	Minimizes errors and improves beneficiary targeting
Management Information System (MIS)	Improves coordination and data accuracy
Use of Mobile Applications	Increases efficiency and ease of implementation

Source: Compiled by the researcher from secondary data obtained from MoHUA reports and the PMAY official portal.

Challenges in the Use of Technology

The use of technology has played an important role in the implementation of the housing scheme. Despite all the advantages, several challenges exist:

Digital Divide and Limited Access

One of the major challenges is the digital divide between urban and rural populations. Many beneficiaries, especially from economically weaker groups, do not have access to smartphones or stable internet connectivity. They also lack basic digital literacy and are unable to use online portals or mobile applications effectively.

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Data Entry Errors and Inaccurate Records

The implementation of PMAY relies heavily on digital databases such as MIS and SECC data. Problems can be faced due to errors in data entry, outdated information, and mismatches between Aadhaar, bank accounts, and survey data. These inaccuracies can lead to delays, rejection of eligible beneficiaries, or inclusion of ineligible ones, which may affect the overall efficiency of the scheme.

Technical Glitches and System Inefficiencies

PMAY uses Digital platforms for uploading data, verification, and fund disbursement. These platforms often face technical issues such as server downtime, slow processing speed, and application crashes. Such inefficiencies ultimately affect the timely completion of housing projects.

Issues in Geo-Tagging and Monitoring

Geo-tagging is not always reliable. In remote areas, due to poor GPS accuracy and weak internet connectivity, the quality of uploaded data can be affected. In some cases, incorrect or manipulated images may also be submitted, which reduces the reliability of monitoring systems.

Lack of Technical Skills and Training

Digital tools can be used effectively by trained and skilled field officials and staff. However, many officials lack adequate technical skills and knowledge to handle mobile applications. This reduces operational efficiency and slows down implementation at the ground level.

Cybersecurity and Data Privacy Issues

A large amount of personal data is collected and stored in various digital platforms involved in the implementation of the scheme. This raises concerns about data security and privacy. If proper cybersecurity measures are not implemented, the risk of data breaches, unauthorized access, and misuse of sensitive information increases.

Infrastructure and Connectivity Constraints

In many rural and remote areas, the lack of reliable internet connectivity and digital infrastructure poses a major challenge. This affects real-time monitoring and slows down the implementation process.

Resistance to Technology Adoption

Due to a lack of awareness or trust, some beneficiaries and even officials are hesitant to adopt new technologies. Preference for traditional methods, fear of digital systems, and low education levels act as barriers to the effective use of technology in PMAY.

IV. FINDINGS

The study reveals that the use of technology has significantly enhanced transparency in the implementation of the Pradhan Mantri Awas Yojana (PMAY). Digital platforms, geo-tagging of houses, and online monitoring systems have made it easier to track progress at every stage. This has reduced the chances of manipulation and ensured that the benefits reach the intended beneficiaries.

Another important finding is that the introduction of Direct Benefit Transfer (DBT) has played a crucial role in reducing corruption. The research also highlights that real-time monitoring tools have improved the overall efficiency of the scheme. Government authorities can now track construction progress, identify delays, and take immediate corrective actions. This has led to faster implementation and better coordination among different departments.

However, the study identifies that data entry errors, technical glitches, lack of technical skills, infrastructure, and connectivity constraints can affect the effective use of technology in implementing the scheme. Lastly, it is observed that the implementation of PMAY is more effective in urban areas compared to rural areas. Urban regions have better digital infrastructure, higher awareness, and easier access to technology, which supports smoother execution.

V. RECOMMENDATIONS

Improve internet connectivity in rural and remote areas by expanding digital infrastructure. This will ensure that beneficiaries can access online services without interruptions.

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Simplify mobile applications and portals with easy language and clear instructions. A user-friendly interface will help people with low technical knowledge navigate the system more efficiently.

Strengthen coordination between different government databases to avoid data mismatches. Proper integration will reduce delays in beneficiary identification and approval processes.

Establish local help centers or support desks for offline assistance. These centers can guide beneficiaries who face difficulties in using digital platforms and ensure inclusivity.

Provide regular training to government officials and field staff on the use of new technologies. This will improve implementation efficiency and reduce errors in data handling and monitoring.

Enhance data security systems to protect beneficiary information from cyber risks. Strong cybersecurity measures will increase trust in digital governance.

Conduct awareness campaigns about the technological features of the scheme. Informing people about benefits like Direct Benefit Transfer and tracking systems will encourage better utilization.

Focus on region-specific solutions for areas facing unique challenges, such as poor connectivity or low literacy. Customized approaches will improve effectiveness in underserved regions.

VI. CONCLUSION

The integration of technology in the implementation of Pradhan Mantri Awas Yojana (PMAY) reflects a significant shift towards digital governance in public welfare schemes. It demonstrates how technological interventions can streamline processes, enhance accountability, and improve service delivery in large-scale housing programs.

At the same time, the study highlights that the success of such initiatives depends not only on the availability of technology but also on its accessibility and usability among the target population. The unequal reach of digital resources creates gaps in implementation, particularly across different geographical regions.

Overall, technology acts as a strong enabling factor in PMAY, but its effectiveness is closely linked with supportive infrastructure, awareness, and institutional capacity. A balanced approach that combines technological advancement with inclusive practices is essential for achieving the broader objective of "Housing for All."

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