

2.1 Digital Public Infrastructure in Social Security: A Case Study of SAMPANN Pension Ecosystem

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Abstract

Pension administration converts a legal entitlement into recurring, timely, and verifiable income for retired employees and family pensioners. In India, pension systems operate at a scale where processing delay, payment error, weak grievance ownership, and fraud risk can directly affect social security and public trust. This paper examines SAMPANN-the System for Accounting and Management of Pension, as a case study of Digital Public Infrastructure (DPI) in social security delivery. It argues that SAMPANN is not merely a pension payment application, but a full lifecycle pension ecosystem covering case initiation, sanction, authorisation, e-PPO generation, disbursement, accounting, reconciliation, life-certificate integration, grievance redressal, and pensioner-facing self-service. The study combines a qualitative case-study method with empirical project indicators drawn from SAMPANN dashboard extracts. As on 1st May, 2026, SAMPANN had onboarded about 4.56 Lakh telecom pensioners, processed about 1.6 Crore transactions involving ₹ 68,417 Crores of pension disbursement, monitored approximately 3.7 Lakh monthly transactions worth about ₹ 1,650 Crore, and generated estimated recurring savings of about ₹ 44 Crore per year. Processing data since January 2026 till May 2026 shows that 77.3 percent of settled cases were completed within timeline and 90.6 percent within four months. Grievance data show 54,881 complaints registered during 2021-2026 and a fall in average resolution time from 67.6 days in 2021 to 3.6 days in 2026. The BSNL VRS 2019 data show 70,197 cases settled, including 47,559 cases (67.8 percent) within four months. The paper situates these findings within DPI theory, which emphasises foundational digital building blocks, interoperability, modularity, public benefit, inclusion, user-centricity, privacy, cybersecurity and governance. It concludes that SAMPANN 2.0 represents the transition from digitisation to intelligent service assurance through stronger authentication, centralised user management, automated arrears, analytics, Service Level Agreement (SLA) monitoring, account verification, audit trails, cybersecurity controls and scalable onboarding of other public institutions.

Keywords

SAMPANN; Digital public Infrastructure; Pension Administration; Social Security; Public Financial Management; Grievance Redressal; Fraud-Risk Management; Service Assurance

Introduction

A pension is more than a post-retirement payment. For a retired employee or a family pensioner, it is a recurring source of dignity, continuity and financial security. A delay in first pension, a wrong calculation of arrears, non-credit of pension after a life-certificate update, or an unresolved grievance can cause real hardship. Pension administration therefore lies at the intersection of social security, public financial management and citizen trust.

India's pension landscape is institutionally complex. It includes civil service pensions, defence pensions, social pensions, provident funds, contributory retirement savings, sector-specific pension arrangements and voluntary retirement-related benefits. The system also reflects a historical transition from defined-benefit, pay-as-you-go arrangements to defined-contribution models such as the National Pension System (NPS). Existing studies on NPS and pension reform emphasise individual retirement accounts, portability, fund-manager architecture, central recordkeeping, subscriber awareness and the policy rationale for shifting from employer-funded pension accumulation toward regulated contributory retirement savings (Eronimus, 2016; Tyagi, 2022; Shah, 2000).

However, pension reform has two distinct dimensions. The first concerns financing: who contributes, who bears investment risk and how liabilities are made fiscally sustainable. The second concerns administration: how pension cases are processed, how payments are authorised, how records are preserved, how grievances are resolved and how the pensioner experiences the system. The shift from the Old Pension Scheme to NPS primarily addressed the financing architecture. SAMPANN addressed the second dimension-the quality, transparency and accountability of pension administration and disbursement.

Before SAMPANN, pension administration for telecom pensioners depended on multiple institutional hand-offs among field offices, pension sanctioning authorities, banks, post offices, Central Pension Processing Centres and reconciliation units. Such a model could process large volumes, but its quality depended on coordination among several actors. For a pensioner, accountability was often difficult to locate:

delay might occur in case initiation, sanction, Pension Payment Order (PPO) dispatch, bank activation, life-certificate verification, payment-scroll reconciliation, revision processing or arrear calculation. The result was a Quality-of-Service gap in an area where the beneficiary is often elderly, dependent and unable to follow up repeatedly.

SAMPANN was designed to close this gap by digitising the pension lifecycle and enabling direct credit of pension into the pensioner's bank account through an integrated workflow. It re-established a direct administrative relationship between the pensioner and the pension-sanctioning/disbursing authority. In doing so, SAMPANN converted pension administration from a fragmented, intermediary-dependent model into a single-platform service ecosystem.

Digital Public Infrastructure: Conceptual Framework

Digital Public Infrastructure (DPI) refers to a mode of digitalisation that creates foundational digital building blocks for public benefit. In functional terms, DPI sits between physical digital infrastructure - such as broadband connectivity, devices, cloud servers and data centres - and the sectoral applications that citizens use, such as e-government portals, health applications, education platforms, social-security systems and payment services. The G20 framework describes DPI as shared digital systems that are secure, interoperable and capable of supporting inclusive public and private service delivery (G20 Digital Economy Working Group, 2023). The United Nations Development Programme (UNDP) playbook similarly treats DPI as an inclusive and rights-based approach to digital transformation, while the World Bank frames DPI as foundational digital building blocks designed for public benefit (United Nations Development Programme, 2023; World Bank, 2025).

The DPI approach has three pillars. The first is foundational scope. DPI performs society-scale functions that are not confined to one department or sector. Common examples are digital identity and e-signatures, fast digital payments and trusted data sharing. The second is digital building-block design. DPI should be interoperable, open, modular and minimalist, so that multiple applications can reuse core capabilities rather than rebuild them in silos. The third is public benefit. DPI must embed inclusion, user-centricity, privacy-by-design, strong governance, cybersecurity and institutional accountability into technical design and operating processes.

This framework marks a shift away from siloed digitalisation. Traditionally, each

sector or department built its own identity checks, payment connections, document repositories, grievance channels and reporting tools. Such duplication increases cost, locks knowledge inside departments, creates inconsistent service standards and makes scale difficult. DPI replaces this with shared rails and reusable modules. It allows different use-cases to plug into a trusted digital stack while preserving rule configuration for sector-specific needs.

The DPI framework is particularly relevant to social security. Social-security systems require proof of identity, entitlement validation, recurring payment, document authenticity, grievance handling and protection of vulnerable users. Pension systems add additional complexity because entitlements begin before retirement, change through commutation and gratuity, continue monthly, respond to Dearness Relief revisions, require periodic life certification, generate tax documents and may convert into family pension. A pension DPI therefore cannot be limited to a payment rail; it must connect identity, entitlement, payment, accounting, documents, life certification, grievance management and auditability.

Research Problem and Objectives

The research problem addressed in this paper is: how can a public pension-disbursement system be redesigned as digital public infrastructure that improves service quality for pensioners while strengthening public financial control, auditability and fraud-risk management for government?

The paper pursues four objectives. First, it situates SAMPANN within India's broader pension reform ecosystem and distinguishes financing reform from administration reform. Second, it identifies legacy bottlenecks that made a full-lifecycle digital pension platform necessary. Third, it uses quantitative indicators from SAMPANN project records to assess improvements in processing, grievance handling, scale and efficiency. Fourth, it examines SAMPANN 2.0 as the transition from basic digitisation to intelligent service assurance and fraud-resilient governance.

Methodology and Data Sources

The study adopts a case-study methodology. SAMPANN is examined as an institutional and technological intervention in pension administration. This approach is appropriate because SAMPANN is not only a software platform; it is also a governance reform, a workflow redesign, a financial-control mechanism and a pensioner-facing service infrastructure. In response to the need for stronger

empirical evidence, the revised paper combines qualitative analysis with quantitative project indicators. The evidence base consists of: (i) academic literature on pension reform and the NPS; (ii) DPI literature and conceptual frameworks; (iii) the SAMPANN 2.0 Detailed Project Report; (iv) the SAMPANN 2.0 Request for Proposal; and (v) SAMPANN project-record/dashboard extracts covering processing performance since January 2026 till May 2026, grievance data for 2021-2026 and Bharat Sanchar Nigam Limited- Voluntary Retirement Scheme (BSNL VRS) 2019 settlement time bands.

The quantitative indicators are used descriptively. They do not claim econometric causality, but they provide evidence on system scale, processing timeliness, grievance-resolution performance, transaction volume and recurring savings. This is suitable for a current case study because the objective is to understand how platform redesign changes service delivery and control architecture, rather than to isolate a single causal variable through experimental design.

India's Pension Ecosystem: From Financing Reforms to Administration Reform

A sound pension system is usually assessed against

- Adequacy, affordability,
- Fiscal sustainability,
- Robustness,
- Protection against inflation,
- Coverage and
- Administrative reliability.

The policy literature on pension reforms often concentrates on financing: whether a scheme is defined-benefit or defined-contribution, whether liabilities are funded or pay-as-you-go, and whether the system can withstand demographic ageing and fiscal pressure. Within this literature, the old civil-service pension system is a defined-benefit, pay-as-you-go arrangement applicable to Central Government employees recruited up to 31 December 2003 and to State Government employees up to the notified dates of respective States (Shah, 2000).

The transition to NPS was driven by fiscal, demographic and administrative concerns. NPS literature places the Union Budget 2003-04 announcement, the 1

January 2004 applicability to new Central Government recruits and the 1 May 2009 opening to all citizens within a broader move toward individual retirement accounts, professional fund management, portability and regulated investment options (Tyagi, 2022; Shah, 2000).

These reforms matter because they alter the long-term structure of pension liabilities. Yet a pensioner's experience of the state is shaped equally by administration. A valid pension entitlement trapped in delayed processing, opaque workflow, manual reconciliation or fragmented grievance channels fails in service terms. The distinction between pension financing and pension administration is therefore central. NPS reforms restructured accumulation and future liability; SAMPANN restructured pension-disbursement and pension-management experience for a specific public-sector pension population.

The scale of public pension administration reinforces the need for robust systems. In 2022-23, the Government reported disbursement of over Rs. 2,41,000 Crores in pension to more than 65.74 Lakh pensioners, including more than 20.93 Lakh family pensioners (Press Information Bureau, 2023). This shows that pension administration is not a peripheral welfare function; it is a recurring, high-value public financial operation. Where such payments recur monthly, even small errors in identity, entitlement, life-certificate status, bank account data or arrear calculation can become significant.

Legacy Bottleneck in Intermediary-Based Pension Disbursement

The pre-SAMPANN model for telecom pensioners was typical of multi-agency pension systems. Pension cases were processed through departmental channels, while payment often depended on banks or post offices acting as Pension Disbursing Authorities. This intermediary-based architecture created bottlenecks across the lifecycle.

- Pension processing depended on physical records, manual forms and sequential movement of files, increasing the possibility of delay at retirement.
- PPO generation, forwarding and activation involved institutional hand-offs, leaving the pensioner dependent on multiple offices for status information.
- The disbursing agency was often different from the sanctioning authority, creating diffused accountability for payment failure or revision delay.

- Life-certificate updation, pension revision and Dearness Relief-related arrears required coordination across agencies and systems.
- Reconciliation depended on payment scrolls and post-facto matching, which could identify overpayments or underpayments only after disbursement.
- Grievance handling was fragmented because the pensioner might approach a bank, post office, departmental office or pension-processing authority depending on the nature of the issue.
- The government incurred recurring commission and coordination costs for intermediary-based pension disbursement, while also carrying residual accountability for service quality.
- Telecom pension cases also required familiarity with Industrial Dearness Allowance (IDA) pay scales and the quarterly nature of IDA/Dearness Relief, which could be difficult for intermediary agencies not specialised in telecom pension administration.

The cumulative effect was not only administrative inefficiency but also erosion of pensioner confidence. A pensioner-centric system had to provide certainty of payment, visibility of status, access to documents, time-bound grievance response and a single source of truth for pension records.

SAMPANN as Digital Public Infrastructure in Social Security

SAMPANN-System for Accounting and Management of Pension, was dedicated to the nation on 29 December 2018 as a comprehensive pension-management ecosystem for Department of Telecommunications (DoT) pensioners. Conceived as the operational brand of the Comprehensive Pension Management System (CPMS), it integrates pension processing, sanction, authorisation, disbursement, accounting and pensioner-facing services on a single digital platform. The SAMPANN 2.0 Request for Proposal (RFP) describes the system as a platform designed to bring processing, sanctioning, authorisation and payment under one common system and to provide online services to DoT pensioners (CGCA, 2024).

The significance of SAMPANN lies in its lifecycle design. It does not merely push a payment file to a bank. It covers case initiation, pension forms, sanction, authorisation, e-PPO generation, pension disbursement, pensioner profile

management, payment ledgers, pension slips, life-certificate integration, accounting, Management Information System (MIS), grievance submission and grievance tracking. By enabling the pension-administration authority to act as the pension-disbursing agency, it reduces dependence on banks and post offices as intermediaries and creates a direct accountability channel between the administration and the pensioner.

SAMPANN can therefore be understood as a DPI in social security. It creates a pensioner identity and profile layer, a pension-entitlement processing layer, a payment and accounting layer, a document-access layer, a life-certificate layer and a grievance layer. Each layer strengthens the others. Direct payment improves timeliness; payment ledgers improve transparency; e-PPO and document access reduce dependence on physical papers; grievance records improve accountability; and MIS improves managerial control.

Quantitative Evidence of Service Improvement and Scale

Platform Scale, Transaction Volume and Savings

SAMPANN has demonstrated that pension disbursement can be transformed from a fragmented, intermediary-dependent process into a unified digital service. Project records used for this revision indicate that, as on 1 May 2026, approximately 4.56 Lakh telecom pensioners had been onboarded. The platform had processed about 1.6 Crore transactions involving pension disbursement of approximately ₹ 68,417 Crore. It was monitoring approximately 3.7 Lakh transactions per month with an estimated monthly disbursement value of about ₹ 1,650 Crore. The records also indicate estimated recurring savings of about ₹ 44 Crore per year due to reduced dependence on intermediary disbursement arrangements (CGCA, 2026).

These figures are important because they show that SAMPANN is not a pilot or a limited departmental application. It is a high-volume recurring-payment ecosystem. At this scale, service design, reliability, fraud-risk controls and grievance responsiveness become core public financial management requirements.

Table 1

SAMPANN Scale Indicators from Project Records

Indicator	Value	Interpretation
Telecom pensioners onboarded	About 4.56 Lakh	Large beneficiary base requiring stable service delivery.

Indicator	Value	Interpretation
Total transactions processed	About 1.6 Crore	High-volume recurring transaction environment.
Total pension disbursement	About Rs. 68,417 Crores	Material public financial management scale.
Monthly transactions monitored	About 3.7 Lakh	Continuous operational workload.
Monthly disbursement monitored	About Rs. 1,650 Crores	Recurring payment risk and service assurance requirement.
Estimated recurring savings	About Rs. 44 Crore per year	Efficiency gains from reduced intermediary dependence.

Note. Taken from CGCA/SAMPANN project records as on 1 May 2026 (CGCA, 2026d).

Comparative Pension Case-Settlement Performance: BSNL VRS 2019 and 2026

The dashboard extracts for BSNL VRS 2019 and for cases settled since January 2026 till May 2026 together provide a more useful empirical picture. The BSNL VRS 2019 represented a concentrated stress load of 70,197 pension cases, whereas the January 2026 till May 2026 extract represents routine processing in the current mature operational phase, covering 1,275 settled cases. The two datasets are not identical cohorts and should not be read as a strict causal before-and-after experiment. However, because both are processed using the same settlement time-bands, they permit a meaningful operational comparison of SAMPANN under a mass-retirement workload and under routine processing conditions.

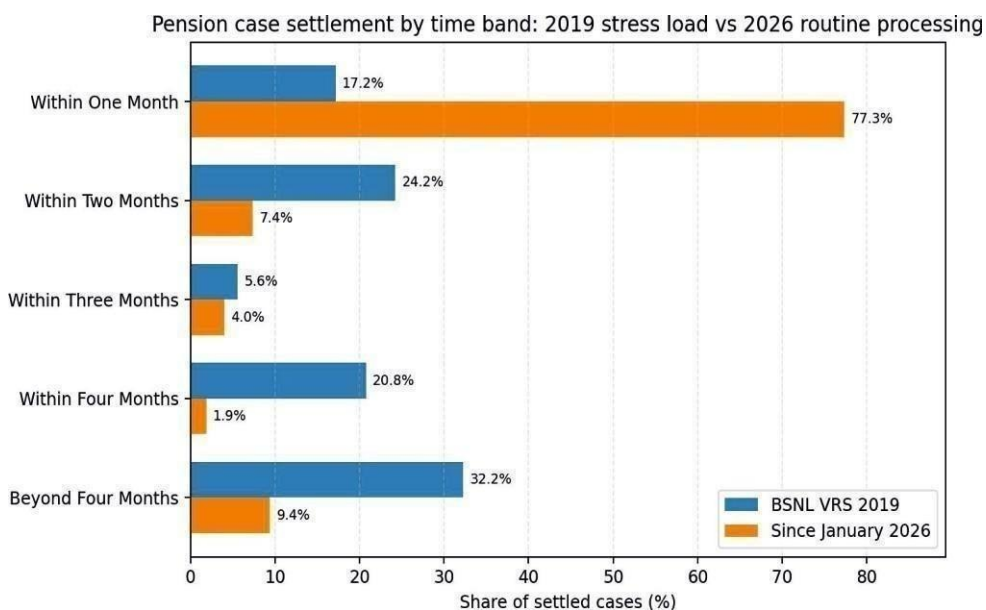
In the BSNL VRS 2019 cohort, 47,559 cases (67.8%) were settled within four months, while 22,638 cases (32.2%) fell beyond four months. In the January 2026 till May 2026 extract, 1,155 cases (90.6%) were settled within four months, while only 120 cases (9.4%) were beyond four months. The most visible improvement is in the first time-band: cases settled on time increased from 12,064 cases (17.2%) in the 2019 VRS stress-load dataset to 986 cases (77.3%) in the 2026 routine-processing dataset.

This comparison strengthens the service-quality claim with quantitative evidence. It shows that SAMPANN first created the capacity to absorb an exceptional pension workload and, in its current operational phase, has moved toward faster first-month

settlement and a much smaller long-tail of cases pending beyond four months. The evidence therefore supports the transition argument of the paper: SAMPANN established scalable digital processing, while the SAMPANN 2.0 direction is to govern such scale through continuous monitoring, workflow analytics and service assurance.

Figure 1

Comparative Pension Case-Settlement Performance: BSNL VRS 2019 and January 2026 till May 2026



Note. Taken from CGCA/SAMPANN project dashboard extracts (CGCA, 2026a; CGCA, 2026c).

Table 2

Summary of Pension Case Settlement Performance: BSNL VRS 2019 and January–May 2026.

Metric	BSNL VRS 2019	Since January 2026
Total Settled Cases	70,197	1,275
Settled on time	12,064 (17.2%)	986 (77.3%)

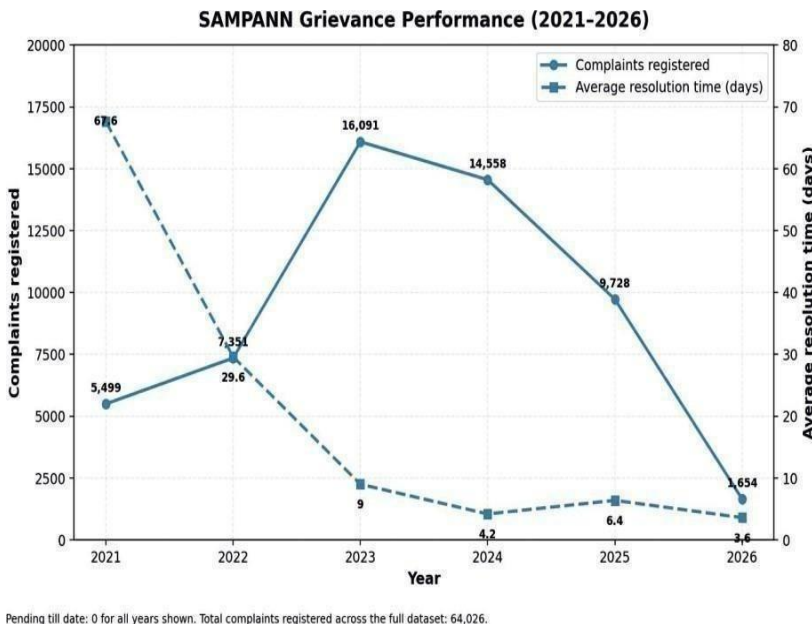
Metric	BSNL VRS 2019	Since January 2026
Cumulative settlement within four months	47,559 (67.8%)	1,155 (90.6%)
Case beyond four months	22,638 (32.2%)	120 (9.4%)

Grievance Responsiveness, 2021-2026

The grievance dashboard extract provides another quantitative indicator of service quality. During 2021-2026, 54,881 complaints were registered on the SAMPANN portal. The average time taken to resolve complaints is the strongest indicator of improvement. It declined from 67.6 days in 2021 to 29.6 days in 2022 and single-digit levels from 2023 onwards. In 2026, the average resolution time stood at 3.6 days. The temporary increase from 4.2 days in 2024 to 6.4 days in 2025 should be read with complaint volume and case mix; the overall direction remains a sharp reduction in grievance-resolution time over the period.

Figure 2

Grievance Registration and Average Resolution Time on SAMPANN Portal, 2021-2026



The line graph presents two quality-of-service indicators from the SAMPANN grievance data: the annual number of complaints registered and the average time taken to resolve complaints. While complaint registrations rose up to 2023 and declined thereafter, the average resolution time reduced sharply from 67.6 days in 2021 to 3.6 days in 2026. This trend indicates improved grievance responsiveness over time.

Table3

SAMPANN Grievance Performance (2021-2026)

Year	Complaints registered	Pending till date	Average resolution time (days)
2021	5,499	0	67.6
2022	7,351	0	29.6
2023	16,091	0	9
2024	14,558	0	4.2
2025	9,728	0	6.4
2026	1,654	0	3.6
Total	54,881	0	-

Note. CGCA/SAMPANN grievance dashboard extract

SAMPANN established the foundation: digital workflows, e-PPO access, pensioner dashboards, PFMS-based direct credit, life-certificate integration, accounting visibility and online grievance mechanisms. The project-record indicators show that the platform moved beyond proof of concept into large-scale, recurring operations. Once a platform reaches this stage, the design question changes. It is no longer enough to digitize transactions; the system must continuously assure service quality, control risk and protect both pensioners and public funds.

This is the point at which SAMPANN 2.0 becomes necessary. In a monthly pension ecosystem, even a small error in bank-account validation, life-certificate status, arrear calculation, Dearness Relief revision or user authorization can have repeated financial and service consequences. Similarly, as more pensioners and organizations are onboarded, the system must move from workflow automation to continuous assurance through stronger controls, real-time monitoring, analytics, improved grievance handling, enhanced cybersecurity and better service design. SAMPANN 2.0 therefore represents the natural evolution of SAMPANN: from an end-to-end digital pension-disbursement system to a more intelligent, secure and service-assured digital public infrastructure for social security.

SAMPANN to SAMPANN 2.0: From Digitisation to Intelligent Service Assurance

The SAMPANN 2.0 Detailed Project Report (DPR) identifies the next phase as covering fraud management, enhanced security, maintenance and infrastructure management, audits, grievance handling, dedicated call-centre support, onboarding of other departments and organisations, and project-management restructuring (CGCA, 2022). The logic is clear: once the platform becomes a high-volume recurring payment ecosystem, it must be governed as mission-critical financial infrastructure, not merely as an application.

Stronger Login and User Management

The first major enhancement is stronger authentication and user management. The RFP proposes pensioner authentication through multi-factor methods such as mobile/email One Time Password (OTP), password change after first login and periodic password reset. For internal users, it proposes a two-layer login through user ID, password and CAPTCHA followed by OTP-based authentication, along with periodic password changes (CGCA, 2024, pp. 117-118). It also proposes centralised user management at administrator level. This responds directly to fraud and accountability issues arising from decentralised user creation, weak control over active users and potential credential sharing (CGCA, 2022).

Automated Arrears and Supplementary Bills

The second enhancement is automatic arrear and supplementary bill management. Arrears are a recurring source of pensioner anxiety and administrative risk. The DPR notes that existing limitations required manual arrear calculations in some scenarios and proposes automatic arrear calculation for late life-certificate submission, delayed Dearness Allowance/ Dearness Relief (DA/DR) announcement with retrospective effect, delayed conversion to family pension and retrospective pay revision (CGCA, 2022). This improves service quality by reducing delay and improves control by reducing discretionary manual entries.

Payment Resilience and Account Verification

The third enhancement concerns payment assurance. SAMPANN 2.0 proposes bank-account verification through National Payments Corporation of India (NPCI) before vendor verification and integration with alternative payment gateways such as NPCI and eKuber, while retaining the existing Public Financial Management System (PFMS) integration (CGCA, 2022; CGCA, 2024). This is important because a

mature pension DPI should not depend on a single pathway without resilience. Account verification also reduces the risk of wrong-account credit, fraudulent account changes and avoidable payment returns.

Digital Document Access and Preservation

The fourth enhancement concerns document access and digital preservation. A pension system creates documents that remain useful for years: e-PPO, gratuity orders, commutation orders, payment history, tax documents and pensioner profile records. A mature pension DPI must therefore provide authenticated document storage, retrieval and integration with trusted document-access channels. Such document infrastructure reduces pensioner dependence on physical files and improves authenticity, portability and service continuity.

Unified Grievance Handling and Assisted Access

The fifth enhancement concerns grievance architecture. The DPR contains a dedicated grievance management, including the need for pension grievance redressal, existing systems, challenges, proposed architecture and grievance-management cells (CGCA, 2022). The RFP requires a grievance-redressal solution with chatbot and call-center integration. This approach recognizes that elderly pensioners cannot be served by a digital-only design. A mature system must accept grievances through portal, mobile app, helpline, email, letter, physical visit and assisted channels, while maintaining one common tracking and escalation logic.

Analytics, SLA monitoring and application performance monitoring

The sixth enhancement is the shift to analytics and service observability. The RFP includes real-time integrated analytics, reporting and visualization dashboards, business intelligence, SLA monitoring and application performance monitoring tools (CGCA, 2024). This changes the managerial posture of the platform. SAMPANN digitized workflows; SAMPANN 2.0 seeks to observe, measure and govern those workflows. Analytics can identify cases pending beyond service levels, unusual payment patterns, repeated grievances, circle-wise variation, life-certificate risk and account-change anomalies.

Accessibility and Inclusion

The seventh enhancement is inclusion. The RFP lists Android and iOS mobile applications, UMANG and DigiLocker integration, SMS/email gateways, dashboard notifications, pop-ups and alert mechanisms (CGCA, 2024). Accessibility

in a pension system is not limited to web-compliance standards. It also includes readable interfaces, simple workflows, assisted helplines, reminders, family-pension support and the ability to serve pensioners who may not be digitally confident. This is consistent with DPI theory, which treats inclusion, user-centricity and safeguards as design requirements rather than afterthoughts.

Onboarding of Other Departments and Organisations

The eighth enhancement is institutional scalability. The DPR identifies onboarding of other departments and organisations as a dedicated area of work (CGCA, 2022). This is central to the DPI argument. A department-specific application becomes public infrastructure when its core capabilities can be reused across institutions without rebuilding the same pension-processing, payment, document and grievance layers from scratch. Platform reuse reduces duplication, improves service standardisation and allows learning from one implementation cycle to strengthen the next.

Fraud-Risk Management and Cyber-Resilient Pension Governance

Fraud management in a pension ecosystem is not a single control. It is a chain of assurance covering identity, eligibility, entitlement, workflow authority, payment destination, document authenticity, audit trails and post-payment reconciliation. Pension systems are particularly exposed because payments recur for years or decades. A small weakness can accumulate into substantial financial loss.

SAMPANN 2.0 treats fraud management as a core design principle. The DPR recognises that because SAMPANN handles recurring pension disbursement and retirement-benefit payments, it requires a robust fraud-management setup that combines process controls and technology to avoid unwarranted disbursement from government funds (CGCA, 2022, pp. 12-14). Proposed controls include stronger authentication, centralised user management, improved audit trails, account verification, analytics and performance monitoring.

The most important governance shift is from post-facto detection to preventive and risk-based monitoring. In an intermediary model, errors may surface only after scroll reconciliation or pensioner complaint. In a digitally observable system, the platform can be designed to flag abnormal account changes, repeated user actions, sudden changes in payment status, delayed life-certificate updates, high-value arrears, dormant-user activity and role conflicts. This does not eliminate the need for audit, but it changes audit from an episodic activity into a continuous control environment.

Digital Public Infrastructure in Social Security: A Case Study of SAMPANN Pension Ecosystem

Cybersecurity is equally central. Pensioners are often targeted by fraud calls, identity phishing and document misuse. Stronger login mechanisms, OTP-based verification, digital signatures, encrypted document handling, role-based access and audit trails protect not only government funds but also pensioner dignity. In this sense, cybersecurity in SAMPANN is not merely a technical requirement; it is part of social-security protection

SAMPANN as Platform-as-a-Service and Reusable DPI

The expansion potential of SAMPANN beyond the Department of Telecommunications is significant because it shows the movement from department-specific application to reusable public digital infrastructure. The platform has already demonstrated core capabilities common to many pension-paying organisations: case processing, sanctioning, authorisation, disbursement, accounting, reconciliation, document access, life-certificate integration and grievance handling.

The adoption by the State Government of Goa and Cochin Port Authority is therefore more than an administrative event. It shows that a mature government-built platform can be reused by other public institutions instead of every organisation building a separate pension system. Such reuse has at least five advantages:

- reduced duplication of development effort,
- common service standards,
- faster implementation,
- stronger cybersecurity baselines and
- cumulative learning across organisations.

However, reuse must be carefully governed. A pension platform cannot be copied mechanically from one organisation to another because pension rules, legacy data, accounting classification and administrative hierarchies vary. The DPI model therefore requires a configurable core, not a rigid one-size-fits-all product.

SAMPANN as a platform-as-a-service model has the core pension engine which is configurable for different pension rules, user management supports multiple organisational hierarchies, accounting and reporting is institution-specific while retaining platform integrity. Grievance channels are locally responsive but centrally observable. Onboarding includes data migration, rule mapping, testing, training, helpdesk preparation and pensioner communication.

What SAMPANN Contributes to DPI Theory and Public Financial Management

SAMPANN's principal contribution is the integration of social-security service delivery with public financial control. Many citizen-facing digital platforms emphasise convenience, while many financial-management systems emphasise control. SAMPANN shows that the two can be designed together. Direct disbursement improves pensioner convenience and reduces intermediary dependence. e-PPO and document access improve transparency and reduce physical-document risk. Payment integration improves traceability. Grievance tracking improves accountability. Analytics improves managerial oversight.

The case also clarifies that DPI in social security must be more than a payment rail. A pension is a lifecycle entitlement: it begins before retirement, changes with commutation and gratuity, continues monthly, responds to Dearness Relief, may convert into family pension, depends on annual life certification, generates tax documents and may require revision decades later. A payment-only system cannot manage this lifecycle. SAMPANN's value lies in connecting the entitlement workflow to payment and post-payment service.

The empirical indicators strengthen this argument. Processing data show high shares of settlements within short time bands. Grievance data show a steep decline in average resolution time across the years. VRS data show the system's ability to manage a concentrated mass-retirement workload. Scale indicators show high transaction volume and recurring savings. Together, these indicators support the claim that SAMPANN improves not only digitisation but also service quality, efficiency and accountability.

Policy Implications

The SAMPANN experience suggests the following policy implications for pension and recurring-payment systems:

- Full-lifecycle design should be preferred over payment-only digitisation. Pension administration includes entitlement creation, verification, revision, disbursement, accounting, grievance handling and document preservation.
- Direct accountability should be built into the system. Where the sanctioning and disbursing authority can observe the complete workflow, pensioners are less likely to be trapped between agencies.

- Empirical dashboards should become part of platform governance. Processing time, grievance resolution, pendency, transaction value, payment returns, life-certificate status and helpdesk load should be monitored as service-quality indicators.
- Fraud-risk management should be embedded from the design stage. Authentication, user management, bank-account verification, audit trails and analytics should be treated as core pension infrastructure.
- Assisted digital access is essential. Elderly and family pensioners require helplines, camps, physical support and non-digital grievance channels that feed into the same digital tracking system.
- Platform reuse should be encouraged, provided rule configuration, data migration, cybersecurity, institutional ownership and pensioner communication are carefully managed.
- Project governance must continue beyond Go-live. A pension platform needs continuous enhancement, cybersecurity testing, user training, grievance review, data-quality improvement and service-level monitoring.

Limitations and Scope for Further Research

This paper is based on a practitioner case-study method supported by project-record indicators. The data strengthen the empirical basis of the study, but they do not constitute an econometric estimate of the causal impact of SAMPANN. Future research can strengthen this study by using longitudinal transaction data, pensioner satisfaction surveys, comparative analysis with bank-based pension disbursement, audit outcomes, grievance-resolution timelines and cost-benefit measurement across organisations adopting SAMPANN.

Conclusion

SAMPANN demonstrates how pension administration can be redesigned as DPI for social security. Its importance lies not merely in the digitisation of pension payments, but in the creation of a full-lifecycle pension ecosystem that integrates pension case processing, sanction, authorisation, disbursement, accounting, document access, life-certificate management and grievance redressal within a single digital architecture. In doing so, SAMPANN converts pension delivery from a fragmented, intermediary-dependent arrangement into a direct, transparent and accountable public service platform.

As a DPI case study, SAMPANN reflects the core principles of foundational digital infrastructure. It provides a reusable pension-management layer, operates through integration with public digital systems, supports direct benefit delivery, strengthens auditability and creates a common digital record for pensioners and administrators. Its design shows that social-security DPI cannot be limited to a payment rail. Pension is a continuing entitlement that requires verification, revision, documentation, grievance handling, accounting and lifecycle support. SAMPANN's contribution is that it brings these functions together in one trusted ecosystem.

The empirical evidence further strengthens this conclusion. Project records show that SAMPANN operates at significant scale, with Lakhs of pensioners onboarded, Crores of transactions processed, substantial recurring disbursement value and recurring savings through reduced dependence on intermediary agencies. Case-settlement data for January 2026 to May 2026 show that most settled cases were completed within short time bands. Grievance data for 2021–2026 show a sharp reduction in average resolution time, indicating improvement in service responsiveness. The BSNL VRS 2019 experience also shows that the platform was able to handle a concentrated retirement event at scale. Together, these indicators support the central finding of this paper: SAMPANN has improved service quality, administrative efficiency and institutional accountability in pension delivery.

SAMPANN 2.0 represents the next stage of this DPI evolution. Its proposed features—stronger authentication, centralised user management, automatic arrear calculation, payment-resilience measures, document-access integration, grievance-channel unification, analytics, SLA monitoring, cybersecurity controls and scalable onboarding of other organisations—move the system from digitisation to intelligent service assurance. This transition is important because a mature pension DPI must not only process transactions; it must continuously protect pensioner interests, public funds and institutional trust.

The larger lesson from SAMPANN is that the future of social-security governance in India will depend on trusted, reusable and accountable digital infrastructure. A pensioner-centric system must provide certainty, transparency, accessibility and dignity. A government-centric system must provide control, auditability, fiscal discipline and fraud resilience. SAMPANN brings these objectives together and therefore offers a valuable model for designing DPI in other social-security and recurring public-payment systems.

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Author's Profile

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He currently serves as the Project Head of SAMPANN, the Comprehensive Digital Pension Management System of the Department of Telecommunications, where he oversees system development, implementation, operations, cybersecurity, and pension service delivery across India. He has played a key role in the migration of nearly 3.2 lakh pensioners to SAMPANN, the implementation of SAMPANN 2.0, and the development of AI based grievance redressal and chatbot solutions. His earlier assignments include telecom non-tax revenue assessment, pension administration, internal audit, legal matters, and Social Impact Assessment of USOF schemes. Through his work in digital transformation and public finance, he continues to contribute to citizen centric governance and technology enabled public service delivery.