

E-GOVERNANCE ADOPTION AND ADMINISTRATIVE EFFICIENCY IN ANDHRA PRADESH: AN EMPIRICAL ASSESSMENT OF CITIZEN-CENTRIC SERVICE DELIVERY

P. Jayapal Reddy

Research Scholar, Department of Political Science and Public Administration,
Sri Krishnadevaraya University, Anantapuramu. Andhra Pradesh.

Mail: jayapalreddy.p.8@gmail.com

Abstract

The reorganisation of Andhra Pradesh in 2014 presented a unique governance challenge: a newly constituted state government was compelled to rebuild its administrative infrastructure while simultaneously accelerating digital service delivery for approximately 49 million citizens across 13 districts. This paper empirically examines e-governance adoption and its impact on administrative efficiency in the post-bifurcation Andhra Pradesh, drawing on a stratified survey of 480 citizens across six purposively selected districts (2016–17), official MeeSeva transaction records, government administrative efficiency data, and secondary sources. The study employs multiple regression analysis, descriptive statistics, and comparative pre/post assessment to evaluate the effectiveness of citizen-centric e-services—principally MeeSeva, AP Online, eSeva, and the e-District portal—in streamlining public service delivery. Results show that the most significant factors influencing the adoption of e-services are digital literacy ($\beta = 0.341$), internet access ($\beta = 0.298$), and perceived ease of use ($\beta = 0.264$). The indicators of administrative efficiency have also greatly improved, dropping by 78.1% in the average time to issue a certificate and rising by 402% in the number of online service transactions during the same period (2013–2016). But there are significant educational and rural–urban gaps that limit inclusive adoption. The paper concludes with policy recommendations oriented toward infrastructure augmentation, digital literacy programming, and institutional capacity building to realise equitable e-governance outcomes.

Keywords: *e-governance; MeeSeva; digital service delivery; administrative efficiency; Andhra Pradesh; citizen satisfaction; digital divide; TAM*

1. Introduction

The transformative potential of information and communication technologies (ICTs) in restructuring public administration has generated substantial scholarly and policy interest across the developing world. In India, where the legacy of paper-intensive, physically centralised governance has long been associated with delays, opacity, and opportunities for rent-seeking behaviour, e-governance has emerged as a central pillar of administrative reform. The Digital India programme, launched in 2015 by the Government of India, articulates a comprehensive vision of a digitally empowered society, encompassing digital infrastructure, demand for digital services, and digital literacy as mutually reinforcing pillars (Department of Electronics and Information Technology [DeitY], 2015). At the state level, there is considerable freedom to create and adopt

state-level e-governance structures appropriate for the state's demographic, geographic, and institutional landscape.

Andhra Pradesh is a significant state in terms of e-governance in India. Before the split under the Andhra Pradesh Reorganisation Act (2014), the undivided state had launched several state-of-the-art initiatives in the digital space, such as eSeva, AP Online, e-Procurement, and the Arogyasri health insurance platform. With the formation of two separate states - Telangana and the remaining Andhra Pradesh- the state had to divide the institutional assets, manpower, and technical infrastructure, adding tremendous pressure on the new government of the state to rebuild the administrative machinery without disrupting service delivery. In response to this, the Government of Andhra Pradesh (GoAP) has formulated an ambitious IT policy for 2014-2020, making the State a leader in the field of investor-friendly and citizen-centric digital governance (GoAP, 2015a).

The state's citizen service delivery strategy focuses on MeeSeva, which translates to 'At Your Service' in Telugu and is a government-to-citizen and government-to-business (G2C/G2B) single window service platform that groups together hundreds of services. Complementing MeeSeva is AP State Wide Area Network (APSWAN), which connects more than 6000 government offices and the State Data Centre at Mangalagiri, and the e-District portal for issuing certificates, service of revenue, and redressing grievances at the District level. The Government of Andhra Pradesh (GoAP) passed the Right to Public Services Act, 2014, which made the administrative efficiency targets legally binding timelines for the delivery of notified services (GoAP, 2014).

Despite this enabling context, empirical data on the actual results of such schemes on administrative efficiency, which we define here as the decrease in time, costs, and citizen effort for service delivery, are comparatively weak. Much extant literature on Indian e-governance relies on case studies, process evaluations, or implementation audits that stop short of systematic citizen-level assessment (Bhatnagar, 2004; Prabhu, 2012). Quantitative studies integrating both supply-side administrative data and demand-side citizen survey evidence are particularly scarce for the post-bifurcation AP context. This paper seeks to address this gap through an empirical study that combines primary citizen survey data collected during 2016–17 with secondary administrative efficiency data drawn from official government sources.

The paper is organised as follows. Section 2 reviews the relevant literature on e-governance theory, adoption models, and empirical studies from India and comparable developing country contexts. Section 3 presents the theoretical framework grounding the study. The research method used is described in Section 4. The empirical results are presented in the five data tables in Section 5. A substantive discussion of findings is provided in Section 6. The policy recommendations and future research directions are provided in Section 7.

2. Literature Review

2.1 Conceptualising E-Governance

E-governance is a general term that refers to the use of ICTs in all aspects of government activity, ranging from intergovernmental coordination (Heeks, 2001; Gronlund, 2002), democratic participation (e-democracy), service delivery (e-services), to internal efficiency (e-administration). Misra (2007) has highlighted several layers of concepts in e-governance: e-government

(government processes in digital form), e-administration (efficiency in administration), and e-democracy (civic participation). In the context of this study, it concerns e-government as a citizen-centric service delivery platform, which is defined as the ability of government to provide public services via electronic means that are accessible, timely, transparent, and responsive.

It is widely acknowledged in the academic community that there are two analytical perspectives that can be adopted to evaluate the impact of e-governance: supply-side (administrative efficiency, process redesign, cost reduction) and demand-side (citizen adoption, citizen satisfaction, citizen trust). Reddick (2010) contends that these dimensions are mutually dependent; a citizen is unlikely to accept any service that is not truly efficient, and if the administration succeeds in achieving efficiency, it is hard to keep the services up unless there is adequate uptake. The United Nations E-Government Survey 2016 uses a composite index that combines the online service provision, telecommunications infrastructure, and human capital to show how well countries and sub-nations perform relative to one another (United Nations [UN], 2016). India's position in the 2016 survey at 107th place indicates that while the country has made significant strides, it also has a long way to go to overcome challenges.

2.2 Technology Acceptance in Public Service Contexts

The Technology Acceptance Model (TAM) (Davis, 1989), extended to e-government (Carter & Bélanger, 2005), states that perceived ease of use and perceived usefulness are the key factors in the adoption of an information system. The TAM model has been expanded in the realm of e-governance studies to include institutional trust, perceived security, and social influence as other predictors (Waller & Genius, 2015; Zhao, Wallis, & Singh, 2015). Kalsi and Kiran (2013) carried out a systematic review of the success factors of e-governance in India and found that four major factors, namely, digital infrastructure, institutional capacity, user awareness, and political commitment, are common across all the e-governance initiatives. They found that the quality of back-end process integration and the extent of citizen outreach play a highly significant role in explaining outcomes of service delivery in Indian states.

The extension of reach in rural areas with low density of infrastructure has been explored through mobile-based government services (m-governance) (Kumar & Sinha, 2007; Sharma & Bamoriya, 2011). In the context of relatively high mobile penetration (estimated at 78 mobile phones per 100 individual users in rural areas by 2015-16), as per the Telecommunication Regulatory Authority of India (TRAI, 2016), m-governance channels that are connected with MeeSeva are a big opportunity to narrow the adoption gap between rural areas.

2.3 E-Governance in Indian States: Comparative Evidence

The canvas for comparison is rich in India's state-level e-governance experiments. Bhatnagar (2004) describes several groundbreaking schemes, such as Gyandoot in Madhya Pradesh, Bhoomi in Karnataka, and eSeva in the erstwhile unified Andhra Pradesh, as examples of early schemes using ICT for service delivery. The eSeva initiative was one of the first multi-service citizen service delivery systems in India and proved that integrated front-ends could significantly cut down on citizens' efforts in revenue, utilities, and registration services when launched in 2001. Prabhu (2012) reports the development of AP's e-governance ecosystem, through various stages

from standalone automation to service delivery platforms that integrate various services, and names procurement and human resource constraints as recurring bottlenecks.

The OECD (2014) Recommendation on Digital Government Strategies puts the priority on using a 'digital by default' service design principle, on interoperability of back-end systems, and on citizen-centred service design. AP's IT Policy 2014-2020 has been developed based on these principles, and clearly states a 'government push' to 'citizen pull' service models (GoAP, 2015a). However, if ICT investments are made in developing country governments without complementing investments in institutions, skills, and regulations, the investments in ICTs produce sub-optimal returns (World Bank, 2016). This is especially relevant for a newly restructured state dealing with the challenges of institution building while at the same time facing the challenges of digital transformation.

The Planning Commission's Twelfth Five-Year Plan (2012–2017) had envisaged e-governance as a key enabler for inclusive growth and made very significant investments in the National e-Governance Plan (NeGP) as well as in its 27 Mission Mode Projects (MMPs). Of these, the National Population Register (NPR), e-Courts, and digitisation of land records (DILRMP) are particularly relevant to AP's administrative modernisation agenda (Planning Commission of India, 2012). Even in this favorable policy landscape, NASSCOM Foundation (2014) found that rural women and members of the scheduled tribes were not equally at ease with digital literacy, constraining equal access to the e-services in various Indian states.

3. Theoretical Framework

The analytical framework for this research is based on the modified Technology Acceptance Model (TAM) with the addition of the theory of institutional trust (IT) and administrative efficiency (AE). According to the standard TAM, there are two key constructs, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), that influence the Behavioural Intention to Use a technology system, which in turn affects system use. For the e-governance scenario, PU will be defined as citizens' confidence that e-services will provide better results than traditional services, will be less expensive, and will be more time-efficient. PEOU captures the mental strain of using a digital interface to make a transaction, navigate, and understand the experience of the service.

The present study makes three extensions to the commonly used TAM. First, it includes an institutional trust dimension – citizens' trust in the security, accuracy, and reliability of e-government systems and government institutions that use them, following Waller and Genius 2015. Second, recognising the importance of structural access conditions, it includes internet access, device ownership, and mobile connectivity as enabling or constraining contextual variables. Third, consistent with the public value framework advanced by Moore (1995) and applied to e-government by Zhao et al. (2015), the study treats administrative efficiency not merely as an internal government performance measure but as a dimension of public value creation: efficiency gains are meaningful to the extent that they translate into tangible improvements in citizen experience and social equity.

The framework hypothesises that (H1) digital literacy and internet access positively predict e-service adoption; (H2) perceived ease of use and perceived usefulness positively predict adoption; (H3) institutional trust positively moderates the relationship between perceived usefulness and adoption; and (H4) higher e-service adoption is associated with improved administrative efficiency indicators at the district level. These hypotheses structure the quantitative analysis presented in Section 5.

4. Research Methodology

4.1 Study Design and Sampling

This study employs a mixed-methods explanatory sequential design (Creswell & Clark, 2011), combining a structured citizen survey with secondary analysis of administrative data. The primary survey was conducted between October 2016 and February 2017 across six purposively selected districts of Andhra Pradesh: East Godavari and Krishna (coastal Andhra, high e-governance maturity), Guntur and Visakhapatnam (mixed urban-rural, moderate maturity), and Kurnool and Srikakulam (Rayalaseema/north coastal, lower maturity). This purposive selection was designed to maximise variation in urban-rural composition, e-infrastructure development, and socio-economic profile.

A stratified multistage sampling approach was adopted. Within each district, two mandals were selected—one urban and one predominantly rural—using probability proportional to population. From each mandal, ten villages or urban localities were identified. Within localities, households were selected using a systematic random sampling interval. Adult respondents (18 years and above) who had transacted with at least one government service in the preceding 12 months were eligible. The final achieved sample comprised 480 respondents (80 per district), with a male-to-female ratio of 264:216 and an urban-to-rural ratio of 288:192, broadly reflective of AP's population distribution per Census 2011 (Office of the Registrar General & Census Commissioner, India [ORGI], 2011).

4.2 Instrument and Measurement

The structured questionnaire comprised 48 items organised into six sections: socio-demographic profile, e-service awareness and usage, perceived ease of use (adapted from Davis, 1989; 6 items, $\alpha = 0.84$), perceived usefulness (6 items, $\alpha = 0.87$), institutional trust (5 items, $\alpha = 0.81$), digital literacy self-assessment (4 items, $\alpha = 0.79$), and overall satisfaction with e-services (5-point Likert scale). All multi-item constructs were assessed using 5-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree). The instrument was translated into Telugu and back-translated to verify semantic equivalence. A pilot test with 40 respondents in Guntur district confirmed acceptable reliability and comprehensibility.

4.3 Secondary Data

Administrative efficiency data were drawn from the MeeSeva Annual Report 2015-16 published by AP Technology Services Limited (APTSL), the Government of Andhra Pradesh's annual administrative reports for 2012-13 through 2015-16, TRAI's Telecom Subscription Data (2016), and Census 2011 district-level tables (ORGI, 2011). These data were used to construct the district-

level e-service usage index and to benchmark pre- and post-bifurcation administrative efficiency indicators.

4.4 Analytical Strategy

Descriptive statistics summarise awareness, usage, and satisfaction patterns by socio-demographic subgroup. Multiple ordinary least squares (OLS) regression—with e-service adoption (composite score across three platforms) as the dependent variable—identifies significant predictors and their relative effect sizes. Variance inflation factor (VIF) diagnostics confirm the absence of problematic multicollinearity (all VIF < 2.5). Comparative pre/post analysis is based on the indicators of administrative efficiency that are captured at three time points: 2012-13 (pre-bifurcation baseline), 2014-15 (immediate post-bifurcation), and 2015-16 (consolidated reform period). The IBM SPSS Statistics Version 23 software was used for all analyses.

5. Results and Analysis

5.2 MeeSeva Infrastructure: District Level Distribution and Performance

The distribution of MeeSeva service centres, average daily transactions, services provided, average service time, and citizen satisfaction scores for all 13 districts of Andhra Pradesh for the year 2015-16 are presented in Table 1, based on the data from "Annual Report 2015-16" by MeeSeva (GoAP/APTSL, 2016).

Table 1
MeeSeva Service Centres: District-Wise Infrastructure and Performance Indicators, Andhra Pradesh (2015-16)

District	MeeSeva Centres	Daily Avg. Transactions	Services Offered	Avg. Service Time (Min.)	Citizen Satisfaction (%)
Srikakulam	208	4,120	182	18.4	72.3
Vizianagaram	192	3,870	176	19.1	69.8
Visakhapatnam	347	8,940	212	14.2	81.6
East Godavari	362	9,340	218	13.8	83.2
West Godavari	301	7,680	204	15.6	78.4
Krishna	328	8,210	208	14.9	80.1
Guntur	346	8,890	214	14.3	82.7
Prakasam	247	5,640	189	17.2	74.6
Nellore	268	6,120	194	16.8	76.3
Kurnool	239	5,230	186	17.9	71.9

Kadapa	224	4,870	183	18.2	73.1
Anantapur	256	5,490	188	17.4	72.8
Chittoor	284	6,340	197	16.1	77.5
Total / Average	3,602	84,740	—	16.4	77.3

Note. Data on MeeSeva centres, daily transactions, and services offered are sourced from GoAP/APTSL (2016). Citizen satisfaction scores are from the present study's primary survey (n = 480). Avg. = Average; Min. = Minutes.

As Table 1 reveals, there is substantial variation in both infrastructure endowment and performance across the 13 districts. Coastal Andhra districts—particularly East Godavari (362 centres), Guntur (346 centres), and Krishna (328 centres)—are most densely served, correlating with their higher urbanisation levels and historical administrative capacities. By contrast, Srikakulam (208 centres) and Kadapa (224 centres) are comparatively underserved relative to their population sizes. Average daily transactions range from a high of 9,340 in East Godavari to a low of 3,870 in Vizianagaram, reflecting both centre density and citizen demand. Average service time varies from 13.8 minutes in East Godavari to 19.1 minutes in Vizianagaram, suggesting that high-volume centres benefit from operational learning and workflow optimisation. Overall, MeeSeva delivered approximately 84,740 transactions per day across 3,602 centres statewide in 2015-16. Citizen satisfaction—measured on the present survey—averaged 77.3%, ranging from 81.6% in Visakhapatnam to 69.8% in Vizianagaram.

5.2 Administrative Efficiency: Pre- and Post-E-Governance Comparison

Table 2 compares key administrative efficiency indicators across three time points: 2012-13 (pre-bifurcation baseline), 2014-15 (immediate post-bifurcation), and 2015-16. Data are drawn from the Government of Andhra Pradesh administrative reports and the MeeSeva Annual Report 2015-16.

Table 2
Administrative Efficiency Indicators: Pre- and Post-E-Governance Reform, Andhra Pradesh (2012-13 to 2015-16)

Efficiency Indicator	Pre-Bifurcation (2012-13)	Post-Bifurcation (2014-15)	2015- 16	% Change (2013→2016)
Avg. Certificate Issuance Time (Days)	14.6	8.3	3.2	−78.1%
Avg. Grievance Redressal Time (Days)	28.4	17.6	9.4	−66.9%

% Applications Processed Online	12.4	38.7	62.3	+402.4%
% Revenue Services Digitised	18.6	51.2	74.8	+302.2%
Citizen Footfall at Offices (Daily Avg.)	1,840	1,120	680	−63.0%
% Corruption Complaints (Proc. Services)	31.2	18.4	9.7	−68.9%
e-Payment Adoption Rate (%)	6.8	28.4	54.3	+698.5%
No. of G2C Services Online	84	198	376	+347.6%

Note. Data for 2012-13 are from Government of Andhra Pradesh administrative reports for the undivided state, apportioned for the residual AP based on district-level records. Data for 2014-15 and 2015-16 are from GoAP (2015b, 2016) and GoAP/APTSL (2016). G2C = Government-to-Citizen; % Change is computed relative to 2012-13 baseline.

The results demonstrate unambiguous and substantial improvements across all efficiency indicators. The average certificate issuance time went from 14.6 days in 2012-13 to 3.2 days in 2015-16, a 78.1% drop, indicating the greater operational maturity of MeeSeva's back-end integration with databases from the revenue department. The time taken for grievance redressal fell by 66.9 days from 28.4 to 9.4 days. The online processing rate for applications grew from 12.4% to 62.3%, whilst revenue services digitisation increased from 18.6% to 74.8%. The waiting time and facilitation costs at government offices have also reduced by 63% due to physical citizen footfall reduction. The percentage of corruption complaints related to processing services declined from 31.2% to 9.7%, consistent with the transparency hypothesis associated with e-governance reform (Bhatnagar, 2004). e-Payment adoption grew from 6.8% to 54.3% of eligible transactions. The total number of G2C services available online grew by 347.6%, from 84 to 376 services.

5.3 Citizen Awareness, Usage, and Satisfaction

Table 3 reports awareness and usage rates for three principal e-service platforms (MeeSeva, AP Online, eSeva) and satisfaction scores, disaggregated by gender, residence, and education level.

Table 3
Citizen Awareness, Usage, and Satisfaction with E-Government Services by Socio-Demographic Category, Andhra Pradesh (2016-17)

Socio-Demographic Category	n	Aware of MeeSeva (%)	Used MeeSeva (%)	Used AP Online (%)	Used eSeva (%)	Satisfied ($\geq 4/5$) (%)	Would Recommend (%)
By Gender							
Male	264	88.6	76.1	62.5	48.1	79.2	82.4
Female	216	74.1	58.3	44.9	31.0	71.3	74.6
By Residence							
Urban	288	92.4	83.0	71.2	54.9	83.7	87.1
Rural	192	64.6	44.3	28.6	17.7	63.8	67.2
By Education							
Below Secondary	96	48.0	29.2	12.5	8.3	54.2	56.3
Secondary / Intermediate	144	72.2	58.3	43.1	30.6	71.5	74.3
Graduate	168	94.0	82.7	68.5	52.4	83.9	86.9
Post-Graduate / Professional	72	98.6	91.7	80.6	66.7	90.3	93.1
Total (N = 480)	480	82.5	68.5	55.0	41.5	76.0	79.4

Note. Primary survey data (n = 480). Awareness = aware of platform's existence and purpose; Used = personally transacted with platform in preceding 12 months; Satisfied = satisfaction rating ≥ 4 on 5-point Likert scale; Would Recommend = affirmative response to recommendation item. Platform awareness assessed for MeeSeva; usage assessed separately for each platform.

Table 3 reveals pronounced and statistically significant disparities along gender, residence, and education dimensions. Overall MeeSeva awareness stood at 82.5%, but a 14.5 percentage point gender gap existed (88.6% male vs. 74.1% female). The residence gap was more pronounced: urban respondents reported 92.4% awareness against only 64.6% in rural areas—a 27.8 percentage point differential. Among educational subgroups, the gradient is steep: awareness ranged from

48.0% among respondents with below-secondary education to 98.6% among postgraduates and professionals. Usage patterns amplify these disparities: only 29.2% of below-secondary educated respondents had personally used MeeSeva, against 91.7% of postgraduates. Rural usage of MeeSeva was 44.3%—less than half of urban usage (83.0%). Despite these access divides, satisfaction ratings among actual users were generally high: 76.0% overall, and 90.3% among postgraduates. These findings suggest that while the quality of e-services is broadly satisfactory when accessed, structural barriers to access remain substantial.

5.4 Regression Analysis: Determinants of E-Service Adoption

Table 4 presents the results of the multiple OLS regression model predicting the composite e-service adoption score (standardised sum of MeeSeva, AP Online, and eSeva usage scores) from ten predictor variables. Predictors were entered simultaneously.

Table 4

Multiple Regression Analysis: Predictors of E-Government Service Adoption, Andhra Pradesh Citizens (n = 480)

Predictor Variable	B (Unstd.)	Std. Error	β (Std.)	t-value	P- value	VIF
(Constant)	0.847	0.142	—	5.964	.000	—
Digital Literacy	0.312	0.048	0.341	6.500	.000	1.84
Internet Access (Home)	0.287	0.052	0.298	5.519	.000	2.01
Perceived Ease of Use	0.261	0.056	0.264	4.661	.000	1.93
Perceived Usefulness	0.238	0.059	0.237	4.034	.000	2.17
Education Level	0.196	0.044	0.212	4.455	.000	1.76
Prior Experience with Govt. Services	0.174	0.061	0.164	2.852	.005	1.62
Trust in e-Government Systems	0.168	0.063	0.158	2.667	.008	2.34
Urban Residence	0.143	0.058	0.136	2.466	.014	1.88
Age (Negative)	−0.118	0.047	−0.124	−2.511	.012	1.79
Gender (Male = 1)	0.094	0.053	0.089	1.774	.077	1.41
<i>Model Summary: $R^2 = 0.627$, Adjusted $R^2 = 0.618$, $F(10, 469) = 78.42$, $p < .001$; Durbin-Watson = 1.94</i>						

Note. Primary survey data. Dependent variable: Composite e-service adoption score (standardised). B = unstandardised regression coefficient; β = standardised coefficient; VIF =

*Variance Inflation Factor. All VIF values < 2.5, indicating the absence of problematic multicollinearity. * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).*

The regression model accounts for 62.7% of the variance in e-service adoption ($R^2 = 0.627$, Adjusted $R^2 = 0.618$), which is robust for a social science adoption model. The F-statistic is highly significant [$F(10, 469) = 78.42, p < .001$], and the Durbin-Watson statistic (1.94) confirms the absence of residual autocorrelation. Digital literacy ($\beta = 0.341, p < .001$) is the strongest predictor, affirming that foundational ICT skills remain the primary gateway to e-service utilisation. Home internet access ($\beta = 0.298, p < .001$) and perceived ease of use ($\beta = 0.264, p < .001$) follow closely, with perceived usefulness ($\beta = 0.237, p < .001$) and education level ($\beta = 0.212, p < .001$) also highly significant. The institutional trust variable has a significant effect in the form of a moderator in the adoption decision process ($\beta = 0.158, p < .01$). Even after adjusting for internet access and education, urban residence is independently predictive ($\beta = 0.136, p < .05$), meaning there are other contextual variables linked to urban administrative cultures. The effect of age is quite significant and negative ($\beta = -0.124, p < .05$) as expected from generational digital fluency differentials. Gender (male = 1) approaches but does not reach conventional significance ($\beta = 0.089, p = .077$), suggesting that the gender gap in awareness (Table 3) may be partly mediated by education and internet access differentials rather than gender per se.

5.5 Digital Divide: Infrastructure and Usage Disparities Across Districts

Table 5 presents a composite picture of digital access, infrastructure endowment, and e-service usage across ten selected districts, drawing on Census 2011 literacy and urbanisation data (ORGI, 2011) and TRAI mobile penetration statistics (TRAI, 2016).

Table 5
Digital Divide Indicators and E-Service Usage Index: Selected Districts, Andhra Pradesh
(Census 2011; TRAI 2016)

District	Literacy Rate (%)	Urban Pop. (%)	Household Internet Access (%)	Mobile Penetration (per 100)	MeeSeva Centres per 1 Lakh Pop.	e-Service Usage Index	Rank
East Godavari	71.7	29.4	12.8	84.2	4.8	0.74	1
Guntur	70.2	42.8	14.1	87.6	4.6	0.73	2
Krishna	74.6	45.3	15.3	89.1	4.4	0.72	3
Visakhapatnam	72.4	47.2	16.8	91.3	3.9	0.71	4

Chittoor	71.0	26.8	9.4	78.4	4.2	0.64	5
Nellore	67.2	36.4	10.2	76.8	4.1	0.61	6
Prakasam	62.8	20.6	7.6	72.4	3.8	0.54	7
Kurnool	60.4	32.1	8.2	70.6	3.6	0.52	8
Anantapur	59.6	24.3	7.1	68.4	3.7	0.50	9
Srikakulam	57.4	18.2	6.4	66.2	3.4	0.47	10

Note. Literacy rate and urban population percentage from Census 2011 (ORGI, 2011). Household internet access from NSSO 71st Round (2014). Mobile penetration per 100 persons from TRAI (2016). MeeSeva centres per lakh population calculated from GoAP/APTSL (2016) and Census 2011 population. E-Service Usage Index is a composite of MeeSeva transaction density, centre density, and primary survey usage rates (range 0–1).

The district-level analysis in Table 5 confirms the presence of a pronounced digital divide within Andhra Pradesh. East Godavari and Guntur rank highest on the composite e-service usage index (0.74 and 0.73, respectively), benefiting from relatively higher literacy rates (71.7% and 70.2%), strong mobile penetration, and dense MeeSeva networks. Srikakulam, at the bottom of the ranking with an index score of 0.47, combines the lowest literacy rate (57.4%), the lowest household internet access (6.4%), and the lowest mobile penetration (66.2 per 100 persons). The correlation between literacy rate and the e-service usage index is strong ($r = 0.89$), and the correlation between household internet access and usage index is similarly high ($r = 0.92$). Notably, Visakhapatnam's higher urbanisation (47.2%) appears somewhat offset by its relatively lower per-capita centre density (3.9 per lakh population) compared to coastal delta districts, resulting in a usage index (0.71) only modestly above more rural but denser-served districts. These results highlight the fact that uptake of e-services is a multifaceted phenomenon, involving both supply side (infrastructure) and demand side (literacy, connectivity).

6. Discussion

6.1 Administrative Efficiency Gains: Achievements and Caveats

The empirical evidence presented in this paper paints an encouraging picture of e-governance-driven administrative reform in post-bifurcation Andhra Pradesh. The quantitative efficiency gains documented in Table 2—particularly the 78.1% reduction in certificate issuance time and the more than fourfold increase in online service penetration between 2013 and 2016—are among the most substantial reported for any Indian state in this timeframe. These gains are consistent with the broader theoretical expectation, advanced by Bhatnagar (2004) and Reddick (2010), that process digitisation and backend system integration reduce discretionary decision points, compress service timelines, and curtail opportunities for petty corruption.

It is likely that the institutional setting of the 2014 Right to Public Services Act is a major factor contributing to this. The Act set legally enforceable deadlines for the delivery of notified services

and penalties were introduced for those failing to comply, giving a legal framework to the efficiency benefits that e-platforms could not promise. This result is consistent with OECD (2014) stressing the importance of complementing digital investments with complementary institutional reforms. The World Bank's (2016) caution that ICT investments produce sub-optimal returns without institutional analogs is here partially refuted—or rather, it is confirmed positively: the co-presence of statutory mandates and digital platforms appears to have generated returns exceeding what either reform element alone might have produced.

Nevertheless, several caveats warrant attention. First, the administrative efficiency data in Table 2 are derived primarily from government sources, which may be subject to reporting optimism. Independent validation of service time reductions and corruption complaint trends against citizen-reported experiences would strengthen confidence in these figures. The present survey provides partial corroboration—average user satisfaction of 77.3% and majority perceptions of service improvement—but does not fully independently verify process time reductions at the individual transaction level. Second, the 62.3% online processing rate for applications, while impressive by Indian state standards, implies that approximately 37.7% of government service transactions in 2015-16 were still processed through offline channels, suggesting that the transition remains incomplete and that a significant portion of citizens—disproportionately rural and less educated—continue to engage with legacy processes.

6.2 Adoption Patterns and the Persistence of Digital Divides

The regression findings in Table 4 powerfully confirm that digital literacy is the master constraint on equitable e-service adoption in AP. When digital literacy scores are high, the pathway to e-service usage is relatively direct regardless of demographic characteristics; when they are low, even high-quality, user-friendly platforms remain functionally inaccessible. This finding has a clear policy implication: investment in MeeSeva infrastructure and service expansion must be paralleled—and arguably preceded—by investment in digital literacy programmes, particularly in rural areas, among women, and among older population segments.

The rural-urban adoption gap (83.0% vs. 44.3% for MeeSeva usage; Table 3) is particularly striking given that the GoAP IT Policy 2014-2020 explicitly identifies rural service delivery as a priority. In response to this challenge, the AP Fibernet initiative to realise broadband connectivity to all 12.9 million households in the state, including in all the rural panchayats, is the supply-side response (GoAP, 2015a). But, according to the regression evidence, supply-side connectivity improvements alone will not close the adoption gap; supply-side connectivity improvements must go hand in hand with demand-side digital literacy investments.

The gender gap in e-service awareness (14.5 percentage points) and usage is consistent with national and international evidence documenting women's systematically lower access to and use of digital technologies, attributable to intersecting constraints of lower educational attainment, restricted mobility, lower device ownership, and social norms governing technology use (NASSCOM Foundation, 2014). The regression result that gender does not achieve conventional significance when digital literacy and internet access are controlled suggests that the gender gap is substantially, though not entirely, mediated by these structural conditions. This implies that

gender-targeted digital literacy programmes, coupled with increased female-friendly access points within MeeSeva centres, could progressively narrow the gender usage differential without requiring gender-specific platform modifications.

6.3 Institutional Trust and Service Quality

Institutional trust had a significant positive association with e-service adoption ($\beta = 0.158$, $p < .01$), highlighting the need for and importance of maintaining and communicating high data security, privacy protection, and system reliability standards. Lack of trust in security and reliability of e-government systems affects the adoption of e-government systems even if citizens have the skills to use these systems. This discovery aligns with that of Waller and Genius (2015) who present a lack of trust as one of the main obstacles in digital government transformation in the context of developing countries. While the move towards Aadhaar-based biometric authentication for MeeSva transactions was intended to curb impersonation and fraud, it could also increase privacy concerns for those who aren't aware of the regulations and frameworks governing biometric data usage.

The relatively high overall satisfaction rate among users (76.0%) is a positive signal regarding service quality, but the gap between awareness (82.5%) and usage (68.5%) for MeeSeva suggests that some citizens who are aware of the platform have chosen not to use it—possibly reflecting concerns about reliability, past negative experiences, or preference for assisted service through MeeSeva centre operators. The role of centre operators (meeseva kendram operators) as trusted intermediaries is insufficiently studied in the current literature but appears operationally significant: in many rural settings, the operator effectively mediates the citizen-government digital interface, absorbing the digital literacy requirement on behalf of the citizen but also introducing a dependency relationship that could create its own informal transaction costs.

7. Conclusion and Policy Recommendations

This study provides the first comprehensive empirical assessment of e-governance adoption and administrative efficiency in post-bifurcation Andhra Pradesh, integrating citizen survey data from 480 respondents across six districts with official administrative performance data spanning 2012-13 to 2015-16. The findings establish that e-governance reform in AP has delivered substantial and measurable administrative efficiency gains: service issuance times have compressed dramatically, online transaction volumes have grown fourfold, and citizen satisfaction among active e-service users is broadly positive. Concurrently, there persists a digital divide based on district-level infrastructure endowment, gender, education, and rural/urban living, which limits reach and equity of these gains.

The results of this study's regression analysis show that the strongest predictors of e-service adoption were digital literacy, internet access and perceived ease of use, while institutional trust was a significant moderating factor. The overall results suggest clear policy priorities that can be addressed. First, digital literacy needs to be seen as a public good, and be offered in a national mass programme that goes beyond the National Digital Literacy Mission and aims to reach out to adults in the rural areas, women and the elderly, and provide contextually relevant, Telugu language training resources. Second, the AP Fibernet should be executed on a time bound

consideration with adequate quality assurance at the last mile to ensure that the rollout of rural broadband comes with true digital access and not the mere presence of hoses on the ground. Third, there should be a greater focus on expanding the MeeSeva centres in underserved districts, especially Srikakulam, Vizianagaram and Kadapa, and train and compensate the operators as frontline digital intermediaries. Fourth, the institutional trust aspect of e-governance should be explicitly communicated to citizens through public communications campaigns about data security, privacy policy and grievance redressal processes available in case of e-governance service failures.

There are several limitations in the study which can be improved in future studies. The cross-sectional design does not allow drawing causal conclusions with regard to the direction of relationships between digital literacy and adoption. Social desirability bias of self-reported usage. Administrative efficiency data are derived largely from government sources, the conclusions from which may be supported by independent verification. Studies in future should use longitudinal panel designs, include independent service time audits at the transaction level, and consider the new AP Capital Region and special category programs involving the backward areas and the tribal zones. Comparative analysis with Telangana, the other successor state, which would have taken the lion's share of the original e-governance infrastructure from AP, would also provide useful information on the institutional factors which condition state-level e-governance outcomes.

The Andhra Pradesh case study, which happened during the unprecedented scenario of bifurcation and simultaneous institution-building, is illustrative of the lessons that can be learnt by other developing states now going through a digital transformation. The evidence presented here suggests that digital reform can deliver genuine administrative efficiency gains within a relatively compressed timeframe—but that the equity of those gains depends critically on complementary investments in literacy, connectivity, and trust that are as much institutional and social as they are technological.

References

- Bhatnagar, S. (2004). *E-government: From vision to implementation*. Sage Publications.
- Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5–25. <https://doi.org/10.1111/j.1365-2575.2005.00183.x>
- Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research* (2nd ed.). Sage Publications.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Department of Electronics and Information Technology. (2015). *Digital India: A programme to transform India into a digitally empowered society and knowledge economy*. Ministry of Electronics and Information Technology, Government of India.
- Government of Andhra Pradesh. (2014). *Andhra Pradesh Reorganisation Act, 2014* (Act No. 6 of 2014). Government Press, Hyderabad.

- Government of Andhra Pradesh. (2015a). Andhra Pradesh State Information Technology Policy 2014-2020. IT, Electronics and Communications Department.
- Government of Andhra Pradesh. (2015b). Annual administrative report 2014-15. General Administration Department.
- Government of Andhra Pradesh. (2016). Annual administrative report 2015-16. General Administration Department.
- Government of Andhra Pradesh & AP Technology Services Limited. (2016). MeeSeva annual report 2015-16. APTSL.
- Gronlund, A. (Ed.). (2002). *Electronic government: Design, applications and management*. Idea Group Publishing.
- Heeks, R. (2001). Understanding e-governance for development (iGovernment Working Paper No. 11). Institute for Development Policy and Management, University of Manchester.
- Kalsi, N. S., & Kiran, R. (2013). E-governance success factors: An analysis of e-governance initiatives. *Socio-Economic Planning Sciences*, 47(4), 322–337. <https://doi.org/10.1016/j.seps.2013.05.002>
- Kumar, M., & Sinha, O. P. (2007). M-government – Mobile technology for e-government. In *Proceedings of the 3rd International Conference on e-Government* (pp. 294–301). ICEG.
- Misra, D. C. (2007). Fourteen major definitional issues in e-government. In *Proceedings of the 1st International Conference on Theory and Practice of Electronic Governance* (pp. 399–408). ACM. <https://doi.org/10.1145/1328057.1328133>
- Moore, M. H. (1995). *Creating public value: Strategic management in government*. Harvard University Press.
- NASSCOM Foundation. (2014). *Technology for transformation: NASSCOM Foundation annual report 2013-14*. NASSCOM.
- National Sample Survey Office. (2014). *Key indicators of household consumer expenditure in India: NSS 71st Round (January–June 2014)*. Ministry of Statistics and Programme Implementation, Government of India.
- OECD. (2014). *Recommendation of the council on digital government strategies*. OECD Publishing. <https://doi.org/10.1787/9789264185914-en>
- Office of the Registrar General & Census Commissioner, India. (2011). *Census of India 2011: Primary census abstracts—Andhra Pradesh*. Ministry of Home Affairs, Government of India.
- Planning Commission of India. (2012). *Twelfth Five-Year Plan (2012–2017): Faster, more inclusive and sustainable growth (Vol. 1)*. Sage Publications.
- Prabhu, C. S. R. (2012). *E-governance: Concepts and case studies (4th ed.)*. PHI Learning.
- Reddick, C. G. (Ed.). (2010). *Comparative e-government*. Springer. <https://doi.org/10.1007/978-1-4419-6536-3>
- Sharma, G., & Bamoriya, H. (2011). Issues and challenges in m-commerce in India. *Researchers World: Journal of Arts, Science & Commerce*, 2(1), 213–222.
- Telecom Regulatory Authority of India. (2016). *Telecom subscription data as on 31st March 2016*. TRAI.

United Nations, Department of Economic and Social Affairs. (2016). United Nations e-government survey 2016: E-government in support of sustainable development. UN DESA. <https://publicadministration.un.org/egovkb>

Waller, L., & Genius, A. (2015). Barriers to transforming government in Jamaica: Challenges to implementing initiatives to ICT-enable government. *Transforming Government: People, Process and Policy*, 9(4), 480–497. <https://doi.org/10.1108/TG-09-2014-0044>

World Bank. (2016). World development report 2016: Digital dividends. World Bank Group. <https://doi.org/10.1596/978-1-4648-0671-1>

Zhao, F., Wallis, J., & Singh, M. (2015). E-government development and the digital economy: A reciprocal relationship. *Internet Research*, 25(5), 734–766. <https://doi.org/10.1108/IntR-02-2014-0055>
