

Analysis of the utilization of information technology to improve the performance efficiency of administrative services at the Gumuruh Village Office

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Abstract

The implementation of information technology within local government bureaucracies plays a crucial role as a primary instrument to transform conventional service models into a governance framework based on efficiency, accuracy, and transparency. The Gumuruh Village Office functions as a baseline public service institution interacting with residents' daily needs. This research aims to evaluate the effectiveness, constraints, and temporal contribution of information technology infrastructure adopted for processing population administrative documents at the Gumuruh Village Office.

A qualitative approach with an analytical descriptive methodology was conducted. Primary data were gathered through direct observations of administrative workflows and in-depth interviews with key informants, including the Head of Village (Lurah), section heads, and operational staff. Secondary data were collected from institutional profiles and performance records. Data validity was tested using source and technique triangulation, analyzed interactively through data reduction, data display, and conclusion verification.

Empirical findings indicate that IT utilization significantly enhanced document processing speed, reduced human error, and established digital archiving. However, performance efficiency remains constrained by limited digital competence among senior staff (>45 years), internet network fluctuations, and unintegrated reporting systems. Structured digital literacy training and network upgrades are recommended for sustainable public service optimization.

Keywords: Information Technology; Administrative Services; Performance Efficiency; Gumuruh Village; Qualitative Method; E-Government.

1. Introduction

Public services organized by local government apparatuses serve as a primary indicator in assessing the successful implementation of good governance. As a local government organizational unit at the lowest structural level directly interacting with the community, the village (kelurahan) office plays a crucial, strategic, and decisive role. The village office is not merely a supplementary administrative institution, but rather the front line, the main gateway, and the representation of the government in the eyes of citizens. All forms of population legality affairs, processing of business certificates (SKU), family cards, to the fulfillment of basic civil rights originate and are processed within these village-level service spaces. Therefore, demands for the performance, accountability, transparency, and efficiency of service delivery at the village level continue to increase significantly over time, in line with the dynamics of population growth and the increasing complexity of the socio-economic needs of urban communities.

However, examining the empirical reality in the field, traditional or conventional public administrative service models that still rely on paper-based systems often trigger acute, complex, and convoluted bureaucratic problems. This manual work pattern tends to be highly time-consuming, increases the potential for physical files to pile up on desks, and

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amplifies the risk of human error in the population data entry process. The process of searching for old archives takes hours; citizen queues snake in the waiting room; and uncertainty regarding document completion times presents a bleak portrait of conventional public services that often trigger negative sentiment and lower the public satisfaction index toward the government apparatus's performance. This slow and rigid bureaucracy not only harms the community in terms of time efficiency but also hinders the rotation of the local economy, particularly for residents who require administrative certificates for urgent matters, such as applying for business capital or fulfilling health insurance requirements.

Entering the era of digital transformation and the Industrial Revolution 5.0, the utilization of Information Technology (IT) has shifted from being an optional supporting tool to a fundamental core necessity in restructuring public organizations. The adoption of information technology in the government sector, theoretically known as electronic government (e-government), serves as a solution-oriented instrument to reduce long bureaucratic chains, cut unnecessary operational costs, and break through the physical limitations of space and time [1]. Structurally, the village functions as the endpoint node of a larger interconnected government digital network architecture. The success of services at the Gumuruh Village Office depends heavily on data flow bridging local servers with the integrated data center managed macro-economically by the Department of Communication and Informatics (Diskominfo) and the Department of Population and Civil Registry (Disdukcapil) at the city level [2,3]. Nationally, digital bureaucracy strengthening obtains strong juridical justification through Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (SPBE), mandating business process integration to establish clean, effective, and transparent public services [4].

Academic discourse regarding efficiency demands a comprehensive understanding of how public organizations manage input limitations to yield optimal social-administrative outputs [5,6]. In street-level bureaucracies, efficiency mutates into a multidimensional concept covering temporal, procedural, and organizational efficiency [5]. Performance is evaluated strictly across five service quality dimensions: Reliability, Responsiveness, Assurance, Empathy, and Tangibles [6,7]. The objective of this study is to analyze strategic planning, operational implementation, temporal efficiency, and systemic constraints of IT adoption at the Gumuruh Village Office.

2. Materials and Methods

2.1. Research Object and Site

The object of this qualitative descriptive case study is understood as a dynamic ecosystem of official activities [8]. The research object focuses on the information technology utilization management process, data validation, and work procedure transformation within the front office integrated service space of the Gumuruh Village Office, Bandung, Indonesia. It analyzes hardware reliability, fiber-optic bandwidth capacity, and database integration alongside the sociological-organizational adaptation of human resources managing digital work cultures [9].

2.2. Research Design and Data Collection Procedure

The research operational flow is systematically organized through a qualitative data management approach [10-12]. The process encompasses field orientation and conceptual preparation, administrative legality fulfillment, sociological rapport building, primary data collection through semi-structured interviews and stopwatch time-motion observations, secondary data collection from institutional profiles and IKM datasets, verbatim data transcription and thematic reduction, data display in narrative paragraphs, source and method triangulation verification, and final reporting compliant with guidelines.

2.3. Research Tools and Ethical Approvals

The primary instrument is the researcher as a human instrument [12]. Technical support tools include digital audio recorders for interview audit trails, smartphone cameras for visual material evidence, manual field logbooks for stopwatch tracking, and software applications for data processing. Research materials consist of semi-structured interview guidelines, observational checklists, and official institutional secondary data files.

3. Results and Discussion

3.1. Strategic Planning and Village IT Infrastructure Readiness

Strategic planning for IT adoption at the Gumuruh Village Office aligns structurally with Bandung City's Smart City initiatives. Physically, hardware readiness at the front office is fully adequate. However, a digital divide exists internally across employee age clusters [9]. Apparatuses above 45 years experience digital culture shock and computer anxiety, creating an organizational inertia where electronic data entry relies heavily on younger honored computer operators possessing IT backgrounds. This creates an over-dependency risk; if the operator is absent, local database verification paces drop, inducing time uncertainties for residents.

3.2. Actual Implementation and Document Processing Time Efficiency Matrix

Actual IT utilization has successfully restructured village business processes, eliminating red tape bureaucracy and manual paper-based filing retrieval [2,5]. Data cross-verification relies on integrated NIK lookup modules. Quantitative synchronization with the official IKM 2026 questionnaire dataset (155 resident respondents) reveals high public appreciation: 74.19% (115 respondents) strongly agree and 25.16% (39 respondents) agree that IT accelerates administrative duration. Furthermore, 69.03% strongly agree that computerization eases structural loops. Automated template generation prevents redundant typing and zeroed human error rates in document naming or addressing.

Specific temporal efficiency impacts monitored via loket front-office stopwatch observations are presented in Table 1 below:

Table 1 Comparison of administrative document processing time before and after IT implementation

No	Administrative Service Type	Manual Duration (Before IT)	Digital Duration (After IT)	Time Efficiency (%)
1	Certificate of Domicile (SKD)	45 Minutes	10 Minutes	77.78%
2	Family Card (KK) Referral Letter	60 Minutes	12 Minutes	80.00%
3	Certificate of Low Income (SKTM)	90 Minutes	15 Minutes	83.33%
4	Business Certificate (SKU)	50 Minutes	12 Minutes	76.00%
	Average Duration & Total Efficiency	61.25 Minutes	12.25 Minutes	79.28%

The data proves that digital transformation cuts bureaucratic loops by over 70% average duration [5]. Structural de-bureaucratization is achieved as consecutive manual signature loops from section heads up to the secretary are replaced via centralized digital identification authorization and real-time mobile E-Signature access by the Village Head, ensuring document validity from anywhere without physical desk constraints.

4. Conclusion

Gumuruh Village IT adoption meets material hardware adequacy criteria at all front-office spaces but faces internal sociological digital-divide constraints. Senior staff display computer anxiety, inducing extreme over-dependence on honored computer operators to safeguard entry volumes [9]. Actual IT utilization significantly restructures village administration, optimizing temporal efficiency parameters. Integrated NIK validation blocks human-error risks and eliminates paper-bound file retrieval loops [2,5]. Stopwatch calculations confirm that digital tracking cuts application cycles by above 70% across core products: SKU drops from 50 to 12 minutes, SKTM drops from 90 to 15 minutes, SKD drops from 45 to 10 minutes, and KK modifications drop from 60 to 12 minutes. Triangulated datasets from 155 respondents show overwhelming public approval, with over 74% strongly agreeing on accelerated speed.

Recommendations

- Prioritizing operational change-management budget expansions to execute intensive computer literacy bootcamps for senior civil servants to dissolve internal divide imbalances [9].
- Requesting official technical upgrades from Bandung City Diskominfo to scale local internet bandwidth, paired with designing strict written contingency plans to guide tactical manual rollbacks during city server outages.

- Establishing a physical self-service digital kiosk within the waiting lounge managed by local youth volunteers to guide elderly segments through QR scanning and online form completion.
- Automating cross-sectional digital logbooks between desks to completely bypass remaining manual back-office reporting workflows.

Compliance with ethical standards

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Disclosure of conflict of interest

All authors declare no financial or non-financial conflict of interest regarding the publication of this manuscript.

Statement of ethical approval

The present research work does not contain any studies performed on animals or human subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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