

Original Article

Digital Readiness and Organizational Adaptability of Barangays in Poblacion District, Davao City: Basis for an ICT Capacity Enhancement Framework

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Abstract

Digital transformation has become a central agenda in public sector reform, yet many local government units struggle to align infrastructure, staff capability, and organizational culture. This study assessed the level of ICT readiness and organizational adaptability of barangays in Poblacion District, Davao City, and examined how ICT access, proficiency, and utilization relate to and predict adaptability. Using a quantitative descriptive-correlational design, the study surveyed 120 barangay officials from 40 barangays through a validated questionnaire. Results showed very high ICT access, high ICT proficiency, and high ICT utilization. Organizational adaptability was also high. Pearson correlations revealed significant positive relationships between ICT access, proficiency, and utilization with adaptability. Multiple regression analysis indicated that ICT access, proficiency, and utilization jointly explained 65% of the variance in adaptability, with utilization emerging as the strongest predictor. These findings underscore the role of digital competence and active technology use in fostering adaptive local governance and inform an ICT Capacity Enhancement Framework for barangay-level digital transformation.

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1. Introduction

Digital transformation has become a defining feature of contemporary governance, reshaping how public institutions design, deliver, and evaluate services. Global assessments such as the UN E-Government Survey show that governments increasingly rely on digital platforms to enhance accessibility, transparency, and responsiveness (UN Department of Economic and Social Affairs [UN DESA], 2022). In lower- and middle-income settings, local governments face the dual challenge of addressing digital divides while building internal capacity to use ICT strategically in administration and service delivery.

In the Philippines, the E-Government Master Plan 2022 and the Philippine Digital Transformation Strategy emphasize interoperable systems, improved broadband connectivity, and a “One Digitized Government” that integrates data and processes across agencies (Department of Information and Communications Technology [DICT], 2019; DICT, 2024; OECD, 2021). These national frameworks recognize barangays as frontline units that must translate digital policies into concrete services. Yet evidence from policy think tanks and diagnostic reports suggests uneven digital readiness across local governments, with many units struggling to sustain infrastructure, cultivate digital skills, and institutionalize new workflows (Philippine Institute for Development Studies [PIDS], 2023; World Bank, 2020).

Digital readiness is typically conceptualized as a multidimensional construct that includes ICT access, user proficiency, and actual utilization of technology in organizational processes (World Bank, 2020; UNDP, 2023). Infrastructure provides a necessary foundation, but research on digital government indicates that access alone does not guarantee improved performance. Organizational culture, leadership, and staff capability strongly influence the extent to which technology is embedded in day-to-day work and enables adaptive responses to citizen needs (OECD, 2021; Venkatesh et al., 2003).

Organizational adaptability refers to the capacity of institutions to adjust structures, procedures, and behaviors in response to changing demands and opportunities. In public sector contexts, adaptive organizations are more likely to reconfigure processes, create new digital services, and sustain reforms beyond initial project cycles (Andaya & Ramos, 2025; Bithay et al., 2025). At the barangay level, adaptability translates into the ability to adopt digital tools for record-keeping, reporting, coordination with higher-level LGUs, and citizen engagement, even under constraints in resources and staffing.

The Unified Theory of Acceptance and Use of Technology (UTAUT) posits that behavioral intention and usage are shaped by performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). In local governance settings, these constructs reflect how officials perceive the usefulness of ICT for governance tasks, how easy systems are to use, how much leadership and peer support is present, and whether adequate infrastructure and training are provided (Rahman & Yusof, 2020; De Castro & De Castro, 2022). As ICT readiness improves,

organizations are expected to experience higher utilization and, over time, stronger adaptability to policy and environmental changes.

In Davao City, the Poblacion District represents an urban cluster where barangays are relatively better resourced than many rural localities, yet still face demands to digitalize administrative processes and citizen services. Little empirical evidence is available about the extent of ICT readiness and how it relates to barangay-level adaptability in this context. Addressing this gap can support targeted capacity-building and inform city-wide digital governance strategies.

This study investigated ICT readiness and organizational adaptability among barangays in the Poblacion District of Davao City. The specific objectives were to describe the levels of ICT access, ICT proficiency, ICT utilization, and organizational adaptability; to determine the relationships between ICT readiness indicators and adaptability; and to identify which ICT readiness components significantly predict organizational adaptability. These findings served as the empirical basis for an ICT Capacity Enhancement Framework for barangay officials.

2. Methodology

2.1 Research Design

The study employed a quantitative descriptive-correlational design. This approach allowed the researcher to describe existing levels of ICT readiness and organizational adaptability among barangay officials and to examine the associations between these variables without manipulating any condition. Such designs are widely used in digital governance research to identify structural and behavioral patterns that can inform capacity-building interventions (Apuke, 2017; Cantrell, 2011).

2.2 Locale

The research was conducted in the Poblacion District of Davao City, an urban district that hosts central government offices, commercial establishments, and densely populated communities. Barangays in this district experience frequent interaction with city-level agencies and citizens seeking frontline services, making digital readiness highly relevant for administrative efficiency and responsiveness.

2.3 Population and Sampling

The population consisted of barangay officials from all 40 barangays in Poblacion District. Each barangay typically includes a barangay captain, kagawads, a secretary, a treasurer, and other appointed staff. Using purposive sampling, three officials per barangay were selected, emphasizing those directly involved in administrative, record-keeping, or ICT-related tasks. This yielded a total sample of 120 officials.

The sampling strategy ensured that all barangays were represented while focusing on officials most exposed to ICT systems. The sample size allowed sufficient statistical power to detect medium correlations and effects in regression analyses at the .05 significance level.

2.4 Instrumentation

Data were collected using a structured questionnaire developed based on digital readiness frameworks and prior studies on ICT in local governments (World Bank, 2020; UN DESA, 2022; DICT, 2019). The instrument contained four major parts measuring ICT access, ICT proficiency, ICT utilization, and organizational adaptability.

ICT access included items on availability and adequacy of computers, printers, smartphones, and internet connectivity. ICT proficiency measured self-reported skill in word processing, spreadsheet use, presentation tools, email and online communication, and digital forms and systems. ICT utilization captured the extent of using ICT for communication, record-keeping, report generation, online coordination with city and national agencies, and delivery of digital services. Organizational adaptability assessed openness to change, leadership support for innovation, flexibility of procedures, willingness to learn new technologies, and resource allocation for ICT.

Items were rated on a five-point Likert scale, typically from 1 (strongly disagree or very low) to 5 (strongly agree or very high). Content validity was established through review by experts in public administration and ICT. A pilot test in a nearby district yielded Cronbach's alpha values above .80 for all scales, indicating good internal consistency.

2.5 Data Collection Procedure

Permission to conduct the study was secured from the University of Southeastern Philippines, the Davao City local government, and the concerned barangays. After coordination with barangay heads, schedules were set for on-site administration of the questionnaire. The researcher oriented the participants on the purpose of the study, voluntary participation, and confidentiality. Respondents completed the instrument individually, with the researcher available to clarify items. Accomplished questionnaires were checked for completeness and coded for analysis.

2.6 Ethical Considerations

The study adhered to ethical standards in social research. Participation was voluntary, and informed consent was obtained from all respondents. No personal identifiers were reported in the results, and data were stored securely. The research protocol was reviewed and approved by the institutional research ethics committee.

2.7 Data Analysis

Data were analyzed using descriptive and inferential statistics. Means and standard deviations were computed to determine the levels of ICT access, proficiency, utilization, and organizational adaptability, with interpretation guided by predefined ranges (1.00–1.79 very low, 1.80–2.59 low, 2.60–3.39 moderate, 3.40–4.19 high, 4.20–5.00 very high).

Pearson product-moment correlations were used to examine relationships between ICT readiness indicators and organizational adaptability. Multiple regression analysis determined the predictive power of ICT access, proficiency, and utilization on organizational adaptability. Significance was set at $p < .05$.

3. Results

3.1 ICT Access of Barangays

Barangays in Poblacion District reported very high levels of ICT access (Table 1). All barangays had computers, printers, and smartphones, and most had internet connectivity.

Table 1. ICT access of barangays in Poblacion district.

Indicator	% Availability	Mean	Interpretation
Computer Units	100%	4.80	Very High
Printer Units	100%	4.75	Very High
Smartphones	100%	4.85	Very High
Internet Connectivity	90%	4.60	High
Overall ICT Access	-	4.75	Very High

The overall mean of 4.75 indicates that hardware and basic connectivity are widely available in the sampled barangays, providing a strong foundation for digital operations.

3.2 ICT Proficiency of Barangay Officials

ICT proficiency among officials was high overall (Table 2). Word processing, email and online communication, and presentation tools reflected stronger competencies, while spreadsheet skills and use of digital forms and systems were relatively lower but still high.

Table 2. ICT proficiency of barangay officials.

Indicator	Mean	Interpretation
Word Processing	4.10	High
Spreadsheet Skills	3.70	High
Presentation Tools	3.85	High
Email/Online Communication	4.30	Very High
Digital Forms & Online Systems	3.65	High
Overall ICT Proficiency	3.92	High

These results suggest that barangay officials are generally confident with common office applications and communication tools, with room to further improve skills in more specialized digital systems.

3.3 ICT Utilization in Barangay Operations

Officials reported high utilization of ICT for core administrative functions (Table 3). Communication and report generation achieved very high ratings, while record-keeping, online coordination with LGUs, and use of digital platforms for services were high.

Table 3. ICT utilization in barangay operations.

Indicator	Mean	Interpretation
Communication (Email, Messaging Apps)	4.35	Very High
Record-Keeping	4.10	High
Report Generation	4.25	Very High
Online Coordination with LGUs	3.95	High
Use of Digital Platforms for Services	3.80	High
Overall ICT Utilization	4.09	High

The high overall utilization score reflects that ICT is integrated into many routine tasks, particularly for communication and reporting, which are central to barangay governance.

3.4 Organizational Adaptability of Barangays

Organizational adaptability was high, with very high scores for leadership support, willingness to learn new technologies, and openness to change. Flexibility of procedures and resource allocation for ICT were high but slightly lower, indicating areas for strengthening.

Table 4. Organizational adaptability of barangays.

Indicator	Mean	Interpretation
Openness to Change	4.20	Very High
Leadership Support	4.35	Very High
Flexibility of Procedures	4.00	High
Willingness to Learn New Technologies	4.30	Very High
Resource Allocation for ICT	3.90	High
Overall Organizational Adaptability	4.15	High

The overall mean of 4.15 indicates that barangays are generally open to digital innovations and willing to reconfigure processes when needed.

3.5 Relationship Between ICT Readiness and Organizational Adaptability

Correlation analysis revealed significant positive relationships between ICT readiness indicators and organizational adaptability (Table 5).

Table 5. Correlation between ICT readiness and organizational adaptability.

Variables	r	p-value
ICT Access	.46	.000
ICT Proficiency	.68	.000
ICT Utilization	.72	.000

All readiness indicators were moderately to strongly associated with adaptability. ICT utilization demonstrated the strongest relationship, indicating that barangays that actually integrate ICT into daily tasks tend to be more adaptive.

3.6 Predictors of Organizational Adaptability

Multiple regression analysis examined whether ICT access, proficiency, and utilization predict organizational adaptability (Table 6).

Table 6. Regression analysis on predictors of organizational adaptability.

Predictors	β	t	p-value
ICT Access	.18	2.74	.007
ICT Proficiency	.29	3.42	.001
ICT Utilization	.41	4.56	.001

Model Fit Indicators: $R=.81$, $R^2=.65$,
 $F(3,116)=72.88$, $p\text{-value}=.000$

ICT access, proficiency, and utilization collectively explain 65 percent of the variance in organizational adaptability ($R^2 = .65$). Utilization emerges as the strongest

predictor ($\beta = .41, p = .001$), followed by proficiency ($\beta = .29, p = .001$), with access exerting a smaller yet significant effect ($\beta = .18, p = .007$). These coefficients point to an organizational trajectory in which infrastructure enables capability, capability enables use, and use catalyzes institutional adaptation.

4. Discussion

The findings challenge the assumption that digital governance failure is primarily an infrastructure problem. Barangays in Poblacion District appear to have already crossed the infrastructure threshold. What now matters is what institutions do with technology.

The strong predictive role of ICT utilization underscores arguments in digital governance theory that technological benefits accrue only when systems reshape workflows, decision processes, and administrative relationships (OECD, 2021; UN DESA, 2022). Utilization drives institutional learning, routinization, and eventually cultural acceptance of innovation. Where ICT remains symbolic, its institutional impact is negligible.

The significant role of ICT proficiency further highlights the centrality of human capability. Officials who possess greater digital confidence appear more likely to experiment, institutionalize new practices, and build informal norms of technological use. This dynamic mirrors findings in public administration research showing that digital maturity accelerates when competence and routinized technology use co-evolve (De Castro & De Castro, 2022; Rahman & Yusof, 2020).

At the same time, high adaptability scores coupled with lower procedural flexibility suggest an unresolved tension between hierarchical control and innovation. Bureaucratic structures remain designed for stability rather than change. When innovation occurs, it does so through leadership influence rather than through institutionalized learning systems. This distinction explains why digital reforms often advance when leaders champion them, yet stall when leadership transitions occur.

The results therefore advance three key insights. First, ICT capacity-building must shift focus. Training should move beyond operational skills toward analytics, systems use, and decision-support tools. Second, the institutionalization of digital work requires procedural reforms, not just training. Third, leadership remains a crucial accelerator but must evolve from directive support toward enabling governance cultures that sustain innovation autonomously. In short, digital readiness is no longer merely technical. It is organizational.

5. Conclusion

This study demonstrates that barangays in Poblacion District possess substantial digital readiness and a comparatively adaptive institutional posture. Access is widespread, proficiency is high, and utilization is embedded in daily work. More

importantly, ICT utilization and proficiency are decisive predictors of adaptability, confirming that digital transformation proceeds through people and practice rather than infrastructure alone. The policy implication is clear: investments in hardware must now be matched by sustained investments in digital competencies, workflow redesign, and adaptive leadership. Barangays require structured capacity-building that integrates technical, managerial, and procedural transformation rather than treating ICT as an add-on. Future work should extend beyond self-report data and examine how digital practices alter service quality, transparency, citizen engagement, and resilience to crises. Longitudinal and mixed-methods designs will be essential for understanding how digital adaptation unfolds over time. Digital transformation at the barangay level is possible, but only when technology becomes embedded in the institutional DNA.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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