

**Digital literacy as a catalyst for barangay development:
An impact study in Paracelis, Mountain Province**

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ABSTRACT

This study examined the impact of digital literacy on barangay development in Paracelis, Mountain Province, focusing on administrative efficiency, transparency and accountability, and the challenges encountered in implementing digital literacy programs. A descriptive-correlational research design was employed involving 54 barangay officials and personnel selected from different barangays in the municipality. Data were collected using a researcher-made questionnaire and analyzed using frequency counts, percentages, weighted means, and independent samples t-test. Results revealed that digital literacy programs were generally implemented at a high level. Female respondents perceived the implementation of digital literacy programs as "Always" implemented, while male respondents rated them as "Often" implemented. Both groups strongly agreed that digital literacy significantly enhanced transparency and accountability in barangay governance. Female respondents strongly agreed that digital literacy greatly improved administrative efficiency, whereas male respondents moderately agreed. Challenges encountered in implementing digital literacy programs were assessed as moderately serious, particularly limited technical support, unreliable internet connectivity, resistance to technological change, and insufficient ICT infrastructure. The t-test analysis revealed a significant difference between male and female respondents regarding the impact of digital literacy on administrative efficiency but found no significant difference in their perceptions of its contribution to transparency and accountability. The findings affirm that digital literacy serves as a catalyst for improving grassroots governance through enhanced administrative performance, increased transparency, and improved public service delivery. Strengthening ICT infrastructure, expanding digital capability-building initiatives, and institutionalizing standardized digital governance systems are recommended to sustain digital transformation in barangays.

Keywords: Digital literacy, barangay development, administrative efficiency, transparency, accountability, local governance.

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INTRODUCTION

Digital transformation has become a defining feature of modern public administration. Governments worldwide continue to integrate information and communication technologies into governance to improve efficiency, transparency, accountability, and citizen participation. As the smallest political units in the Philippines, barangays serve as the frontline providers of government services, making digital literacy among barangay officials essential for effective governance.

The Philippine government, through the Department of Information and Communications Technology (DICT), has continuously promoted digital literacy initiatives to enhance the competencies of local government personnel. These initiatives seek to improve digital service delivery, electronic record management, online communication, and public access to government information. However, disparities in infrastructure, internet connectivity, technical skills, and resource availability remain major challenges, particularly in geographically isolated municipalities such as Paracelis, Mountain Province.

Digital literacy extends beyond the ability to operate computers. It encompasses the knowledge and competence necessary to effectively access, evaluate, create, communicate, and manage digital information. In local governance, these competencies contribute to more efficient administrative operations, transparent financial management, faster communication, improved documentation, and increased community participation.

Although several studies have investigated digital literacy in educational institutions and urban local government units, limited empirical evidence exists regarding its influence on barangay development in rural and mountainous municipalities. This study addresses this gap by examining the implementation and impact of digital literacy programs among barangay officials in Paracelis, Mountain Province.

Specifically, the study determined the respondents' profile, assessed the implementation of digital literacy programs, examined their perceived impact on administrative efficiency and transparency and accountability, identified implementation challenges, and determined whether significant differences existed between male and female respondents.

METHODOLOGY

The study utilized a descriptive-correlational research design to determine the perceived impact of digital literacy on barangay development.

The respondents consisted of 54 barangay officials and personnel from selected barangays in Paracelis, Mountain Province. They included barangay captains, secretaries, treasurers, kagawads, and administrative staff who actively participated in barangay governance and had experience using digital technologies.

A structured researcher-made questionnaire served as the primary data collection instrument. The questionnaire comprised five parts: respondents' profile, extent of implementation of digital literacy programs, perceived impact on administrative efficiency, perceived impact on transparency and accountability, and challenges encountered in implementation.

Prior to data gathering, permission was obtained from the concerned local government authorities. Respondents were informed of the purpose of the study and voluntarily participated after providing informed consent. Confidentiality and anonymity were maintained throughout the research process.

The collected data were analyzed using frequency counts, percentages, weighted means, rankings, and independent samples t-test to determine significant differences between male and female respondents at the 0.05 level of significance.

Ethical considerations

The researcher ensured that the study adhered to the fundamental ethical principles governing research involving human participants. Prior to the conduct of the study, permission to administer the survey was obtained from the Municipal Local Government Unit of Paracelis, Mountain Province, and the concerned barangay officials. Respondents were informed of the purpose, objectives, significance, and procedures of the study before their participation.

Participation in the study was entirely voluntary. Each respondent was provided with an informed consent form explaining that they had the right to decline participation or withdraw from the study at any stage without any penalty or adverse consequences. No respondent was subjected to coercion, intimidation, or undue influence during the conduct of the research.

The researcher strictly observed the principle of confidentiality. The identities of the respondents were not recorded in the questionnaire, and no personally identifiable information was disclosed in any part of the study. All responses were treated with the highest level of confidentiality and were used solely for academic and research purposes. The data gathered were encoded, analyzed, and presented only in aggregated form to ensure that individual respondents could not be identified.

RESULTS AND DISCUSSION

The respondents were predominantly female, accounting for 72.22% of the participants. Most respondents belonged to the 21–30 age group, were high school graduates, occupied key barangay positions, had one to five years of service, and had attended barangay-level or provincial ICT-related training.

The implementation of digital literacy programs was generally high. Female respondents rated program implementation as "Always," while male respondents rated it as "Often." Participation in ICT seminars, use of digital recordkeeping tools, and availability of digital facilities received the highest ratings, indicating that barangays have increasingly adopted digital technologies in daily governance.

Regarding administrative efficiency, female respondents strongly agreed that digital literacy significantly improved the timeliness and accuracy of administrative work, communication with government agencies, transparency of public information, delivery of public services, and citizen participation. Male respondents moderately agreed with these improvements, although they consistently acknowledged the positive influence of digital literacy.

Both male and female respondents strongly agreed that digital literacy substantially enhanced transparency and accountability. Digital technologies improved documentation, project monitoring, public access to information, and citizen trust in barangay governance.

Despite these positive outcomes, respondents identified several moderately serious implementation challenges. These included limited technical support, unreliable internet connectivity, inadequate ICT infrastructure, resistance to technological change, cybersecurity concerns, and insufficient budget allocations for digital programs. These findings indicate that while digital literacy initiatives have been successfully introduced, sustaining digital transformation requires continuous investment in infrastructure, technical assistance, and personnel training.

The independent samples t-test revealed a statistically significant difference between male and female respondents regarding administrative efficiency, suggesting that female

respondents perceived greater administrative benefits from digital literacy. Conversely, no significant difference was found in perceptions regarding transparency and accountability, indicating a shared recognition of digital technologies as effective tools for promoting open and accountable governance.

The findings support existing literature emphasizing that digital literacy enhances government efficiency, strengthens transparency, facilitates public participation, and improves service delivery. However, successful digital governance also depends on adequate infrastructure, continuous professional development, institutional support, and sustainable ICT policies.

CONCLUSION

Digital literacy has become an essential catalyst for strengthening barangay governance in Paracelis, Mountain Province. The implementation of digital literacy programs has contributed positively to administrative efficiency, transparency, accountability, and public service delivery. Although perceptions differed between male and female respondents regarding administrative efficiency, both groups recognized the value of digital technologies in improving governance.

Persistent challenges, including limited ICT infrastructure, inadequate technical support, insufficient funding, and unstable internet connectivity, continue to hinder the full realization of digital transformation at the barangay level. Addressing these barriers through sustained investments, regular ICT capability-building programs, standardized digital governance systems, and stronger institutional support will further enhance barangay development and improve local public service delivery.

The study concludes that digital literacy is not merely a technological competency but a strategic enabler of responsive, transparent, and effective grassroots governance, making it a vital component of sustainable local development in rural communities.

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