

Competitiveness index of municipal local government units (LGUs) in the province of Nueva Vizcaya: Capacities, opportunities, and insights from 2022 to 2024

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Abstract

This study analyzes the competitiveness of Nueva Vizcaya's municipalities using the Department of Trade and Industry (DTI)-Cities and Municipalities Competitiveness Index (CMCI) from 2022 to 2024, focusing on the five key pillars: economic dynamism, government efficiency, infrastructure, resiliency, and innovation. While DTI-CMCI offers a structured assessment framework, existing research lacks a deeper exploration of the contextual challenges faced by local government units (LGUs). The results indicate significant improvements in the province's competitiveness, with the ranking improving from 58th in 2022 to 38th in 2024. In 2024, nine municipalities surpassed the 50th percentile, compared to eight in the previous years. However, upland municipalities consistently ranked lower, reflecting ongoing development disparities. The study reveals that municipal classification had minimal impact on most competitiveness pillars. However, resiliency showed notable variation, with higher-class municipalities demonstrating better preparedness due to more significant access to financial and technical resources. The study emphasizes the critical role of strategic governance and identified key insights to improve local governance and public administration: the need for integrated infrastructure planning, promoting inclusive and localized economic strategies, citizen-centered and tech-driven government efficiency, strengthening community-based resilience approaches, innovation through digital transformation and stakeholders collaboration, needs-based and participatory infrastructure development, institutionalized partnerships, and evidence-based planning for accountability and service impact. These insights highlight the importance of coordinated efforts across sectors, decentralizing economic planning, leveraging technology for efficiency, and fostering collaboration among local and national agencies. Data-driven decision-making and community involvement are critical for addressing local challenges, improving service delivery, and promoting sustainable, equitable growth.

Keywords: economic dynamism, government efficiency, infrastructure, innovation, resiliency

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1. Introduction

The economy of a local or national government is shaped by its capacity to generate revenue, manage expenditures, and foster sustainable growth through diverse sectors such as agriculture, manufacturing, services, and technology. A healthy economy enables governments to invest in infrastructure, education, and healthcare, which in turn support long-term development and improve the quality of life for citizens. Economic policies at the local and national levels—such as tax incentives, trade regulations, and investment programs—play a pivotal role in stimulating entrepreneurship, attracting foreign investment, and maintaining financial stability. As economies evolve, governments must adapt to shifting labor markets, technological advancements, and global supply chains to remain economically viable and resilient.

Internationalization and globalization have significantly impacted the competitiveness of local and national governments on the world stage. In a globalized environment, governments must actively engage in international trade, forge strategic partnerships, and participate in multinational agreements to enhance their economic standing. Local and national authorities are increasingly tasked with creating favorable business climates to attract global investors, while also ensuring that domestic industries are competitive through innovation and education. Global competitiveness is now measured not just by Gross Domestic Product (GDP), but also by a region's ability to integrate into the global market, adapt to economic trends, and promote inclusive, sustainable growth that aligns with international standards and practices.

The economy, in general, is an indicator of progress. Basically, the economic status of an institution, be it basic or sophisticated, measures its degree of comparability and competitiveness between and among others. Also, an economy which is progressive is basically one key goal of any country; and competitiveness is multi-faceted as there is no universal meaning is given to expound its concepts. It has several aspects and perspectives. Abner-Puerta, (2022). In the contemporary, as fueled by keen competition across borders, internationalization is an ultimate vision in most organizations. Global comparability and international competitiveness are regarded by human organizations, local and national. A locally conducted study by Nantes et al., (2021) posited that global competitiveness serves as the basis of having local and regional competitiveness. Competitiveness, as defined by dictionaries is becoming better from a good standing, desiring to be more successful, and becoming comparable with others. Others outline competitiveness as being productive, advanced, and superior not only locally, but also globally.

In a broader view, global competitiveness studies have become a part of not only in marketing and in the international business, but also in strategic management fields; and the global competitiveness literature has established to be a developing, yet critical component in international marketing research. Chabowski et al. (2017). The World Economic Forum (2016) defines competitiveness as “the set of institutions, policies and factors that determine the level of productivity of a country.” As such, it can be inferred that competitiveness is a determinant of progress, success, and economic stability. On another viewpoint, what makes a country competitive is on how it actually promotes its people’s well-being. An economy is said to be competitive when it is productive. Also, productivity leads to growth, which eventually leads to income levels, with the hope that it is at the risk of sounding simplistic, improved well-being.

The Sustainable Development Goals (SDGs) seek to address a variety of global economic, social, and environmental issues that affect societies all over the world Andreoni-Miola, (2016). It also lays forth a framework for fostering global, national, and local competitiveness through a number of interconnected goals aimed at making the world more inclusive, sustainable, and resilient. Achieving these objectives can help to

stimulate economic growth, improve social well-being, and promote environmental sustainability, all of which are critical for boosting competitiveness at all levels.

Promoting sustainable industrial growth and innovation on a global scale enables a country to participate in global markets. SDG 9 (Industry, Innovation, and Infrastructure) focuses on infrastructure development, fostering innovation, and enhancing industrial competitiveness, which directly impacts global market performance. By investing in advanced infrastructure and promoting technological advancements, countries can improve their productivity, attract foreign investments, and increase their share in global trade. For national competitiveness, SDG 8 (Decent Work and Economic Growth) promotes inclusive economic growth, job creation, and entrepreneurship. National competitiveness is determined by the ability to provide quality jobs, increase productivity, and foster a business-friendly climate. SDG 7 (Affordable and Clean Energy) provides access to clean and inexpensive energy, which is essential for maintaining industrial competitiveness and economic growth. Businesses benefit from dependable energy infrastructure, which lowers operating expenses and raises national productivity. SDG 16 (Peace, Justice, and Strong Institutions) states that a country's competitiveness depends on its strong institutions and efficient governance which assesses local governments' ability to combat corruption, uphold the rule of law, and create an atmosphere that is conducive to business. Creating inclusive, secure, resilient, and sustainable cities is the main goal of SDG 11 (Sustainable Cities and Communities). Local governments can enhance their quality of life and competitiveness by investing in affordable housing, green infrastructure, and effective public transportation.

Meanwhile, Schwab (2018) has conceptualized twelve (12) pillars of competitiveness. These are: Institutions; Infrastructure; ICT Adoption; Macroeconomic Stability; Health; Skills; Product Market; Labor Market; Financial System; Market Size; Business Dynamism; and Innovation Capability. In the Philippines, the Department of Trade and Industry (DTI) established the Cities and Municipalities Competitiveness Index (CMCI) survey to measure and evaluate the Local Government Units (LGUs) capacity to deliver quality services and sustain economic development. According to Capulong (2022), the CMCI survey is undertaken annually to assess the competitiveness of cities and municipalities. This ranking is based on five essential components: economic dynamism, government efficiency, infrastructure, resilience, and innovation, with ten metrics in each. The survey is carried out by Regional Competitiveness Committees (RCCs), which are made up of representatives from the public and business sectors, as well as the academic sectors.

Since economy needs to be holistic in its approach to attaining competitiveness, one pillar or one core component is as important as the others. Hence, a robust performance in one pillar or component cannot make up for a faint performance in another pillar. Meaning, for an entity or a unit to intensify competitiveness, it should make sure that no area is neglected. World Economic Forum, (2018, 2019). According to Virjan et al. (2023), competitiveness and economic growth are closely interconnected. They are reciprocally reinforcing each other; hence, amplified competitiveness boosts economic growth, which in turn can intensify competitiveness. Competitiveness is the mechanism of economic growth for it prompts businesses to increase their productivity, apportion resources to modernization, innovation, research, and development, and improve the quality of their products and/or services. In addition, competitiveness is the competence of a country or a company to produce goods and generate services that can be competitive at the global market while economic growth refers to the intensification in the quantity of goods produced and services delivered over time. Virjan et al. (2023).

Concluding, competitiveness is an important impetus of advancement and for the improvement of organizational performance, both from the micro to macroeconomic entities. However, according to the World Economic Forum (2016), there is something that competitiveness doesn't tell. Accordingly, in a generic perspective, the world is improving at measuring things, but apparently, there are always drawbacks in any kind of benchmarking exercise. Despite great efforts, there haven't been found a fail-safe means of including the environmental record of a country into its recorded competitiveness status. Also, there is no to minimal effort of measuring the degree of competitiveness that makes people happy. Furthermore, it not established yet that a certain country that is competitive is tantamount to mean that it is best able to face the future. In fact, some

countries are capitalizing for the inception of the Fourth Industrial Revolution (FIR) in so many ways not yet instituted nor tested reliable forms of measuring. Therefore, there is a need for careful and detailed analysis of competitiveness and its interconnections with other essential elements.

Although the Department of Trade and Industry-Cities and Municipalities Competitiveness Index (DTI-CMCI) provides a comprehensive framework for evaluating and assessing municipal competitiveness, there are gaps in understanding the contextual challenges faced by local government units (LGUs) not only in Nueva Vizcaya but across the country. Existing research focuses on quantitative rankings but does not provide an in-depth analysis of the different pillars or factors that maintain or foster competitiveness. Pagulayan et al. (2019) criticized the obviousness that despite the efforts of and the partner institutions in gathering and encoding the data, there are questionable data that exist which implies that there is still a need to do more work to guarantee accuracy of data gathering and to ensure care in handling data to at least reduce if cannot totally eliminate data inaccuracies. For them, developing a computer software/program incorporating artificial intelligence (AI) and machine learning can help detect or flag-down possible errors in data. Also, they asserted that for proper validation and database addition purposes, raw data used in the ranking CIs must also be sent back to the concerned city/municipality.

Furthermore, Pagulayan et al. (2019) recommend the institutionalization of an initiative or a Memorandum of Agreement (MOA)/Memorandum of Understanding (MOU) between and among academe, LGU, and DTI, thus extending partnership in the storage, handling, and analysis of data. They also highlighted the need for the provision of training in data processing and use of statistical/analytical tools among of key personnel of regional DTI and partner academic institutions, very much necessary to tender the LGUs the finest conceivable strategies for their development plans. Despite these recommendations, there is currently a lack of research on how local governments might use their resources and opportunities to solve these concerns in a sustainable manner.

The Province of Nueva Vizcaya performs well and has demonstrated consistent improvement its competitiveness ranking as reflected in DTI-CMCI from 2022 to 2024. In 2022, the province ranked 58th with a score of 28.73, advanced to 56th place with a score of 30.11 in 2023, and made a significant leap to 38th place with a score of 36.92 in 2024. This study intends to analyze the 2022, 2023, and 2024 CMCI results of Nueva Vizcaya by tracking its competitiveness in terms of economic dynamism, government efficiency, infrastructure, resiliency, and innovation, and to determine challenges, capacities, and opportunities of the municipalities in fostering and maintaining their competitiveness index, as well as to provide an additional input of knowledge into local governance and public administration.

2. Related Literature

This study's research framework integrates multiple theoretical perspectives to comprehensively contextualize the core components of the Cities and Municipalities Competitiveness Index (CMCI)—namely, economic dynamism, government efficiency, infrastructure, resiliency, and innovation—as vital determinants of municipal competitiveness in Nueva Vizcaya. These components serve as analytical lenses through which the developmental performance and strategic capacity of municipal local government units (LGUs) can be understood. Economic dynamism is rooted in Endogenous Growth Theory (Romer, 1990), which asserts that long-term economic growth is primarily driven by internal factors such as human capital accumulation, innovation, and entrepreneurship. This theory is relevant for examining how local investment, workforce capabilities, and entrepreneurial activities contribute to sustained municipal growth. Moreover, Schumpeter's Theory of Innovation (1934) supplements this view by highlighting how innovation and creative destruction catalyze economic transformation, particularly in rural and semi-urban municipalities.

In explaining government efficiency, the study adopts the lens of New Public Management (NPM) Theory (Hood, 1991), which emphasizes decentralization, performance measurement, customer-oriented services, and accountability in public administration. NPM's principles provide a valuable framework for assessing how municipal governments streamline bureaucratic processes, enhance transparency, and improve service

delivery—all of which are central to improving CMCI rankings. Complementing this is Institutional Theory (Scott, 2001), which highlights the role of formal structures, governance norms, and institutional capacities in shaping the performance of LGUs.

Infrastructure development is analyzed through Modernization Theory (Rostow, 1960), which posits that physical infrastructure is a prerequisite for societal and economic advancement. The availability of roads, transportation, energy systems, water services, and digital connectivity directly impacts a municipality's productivity and inclusivity. Additionally, Systems Theory (Von Bertalanffy, 1968) supports the notion that infrastructure functions as an interconnected subsystem within a broader socio-economic development model, reinforcing the need for integrative planning across sectors. The dimension of resiliency draws heavily from Sustainable Development Theory (Brundtland Report, 1987), which underscores the balance between economic growth, social equity, and environmental stewardship. Resiliency is further examined using the Ecological Systems Theory (Bronfenbrenner, 1979), which considers the multi-layered interactions between individuals, communities, and institutional environments in enhancing disaster preparedness, climate change adaptation, and risk mitigation strategies.

Innovation is contextualized using National Innovation Systems Theory (Lundvall, 1992), which focuses on the institutional frameworks that enable technological learning, research collaboration, and policy support for innovation. It emphasizes the importance of local government units in fostering a culture of knowledge creation, cross-sector partnerships, and adaptive policymaking to respond to emerging challenges and opportunities. This research is also grounded in Porter's Theory of Competitive Advantage (Porter, 1990), which argues that regions can achieve economic superiority by developing unique resources and capabilities that support the production of high-value goods and services. Porter highlights factors such as infrastructure, skilled labor, business sophistication, and innovation as central to enhancing productivity. His Diamond Model offers a structured approach to assess how local conditions, demand patterns, related industries, and institutional support systems influence municipal competitiveness.

Additionally, the study incorporates Regional Development Theory (Myrdal, 1957; Perroux, 1955), which explores spatial economic disparities, agglomeration effects, and the role of policy interventions in shaping regional trajectories. This theory enables an understanding of how urban-rural linkages, resource distribution, and inter-LGU cooperation contribute to regional integration and inclusive growth. It complements Porter's theory by recognizing structural imbalances and emphasizing the importance of collective strategies for lagging municipalities. To further deepen the competitiveness analysis, Resource-Based Theory (RBT) (Barney, 1991) is applied. RBT posits that an organization—or in this context, a municipality—can achieve sustained competitive advantage through the effective acquisition, development, and deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources. According to Utami and Alamanos (2023), LGUs with strategically managed human resources, natural capital, and institutional knowledge are better positioned to outperform peers in governance, service delivery, and innovation.

Taken together, these theoretical foundations provide a multidimensional and integrative lens for examining municipal competitiveness in Nueva Vizcaya. They support the development of an evidence-based, locally contextualized research framework capable of guiding performance assessment, capacity-building initiatives, and strategic planning. By synthesizing economic, administrative, ecological, and innovation-centered theories, the study contributes to the evolving discourse on local governance effectiveness and sustainable territorial development in the Philippine context.

3. Methodology

Research Design. This study adopted a mixed-method research design utilizing an explanatory sequential analysis to investigate the competitiveness of municipal local government units (LGUs) in Nueva Vizcaya for 2022–2024. It examined the capacities, opportunities, and challenges faced by municipalities in achieving

sustainable development. Specifically, it analyzed the competitiveness index across five critical components: economic dynamism, government efficiency, resiliency, infrastructure, and innovation. The study was presented in two phases. The quantitative phase collected and analyzed data to measure competitiveness and identify trends, disparities, and performance gaps among LGUs. Specifically, it examined the performance of Nueva Vizcaya municipalities across five critical pillars: economic dynamism, government efficiency, infrastructure, resiliency, and innovation. These data were organized and processed using Excel and analyzed using descriptive statistics, trend analysis, and correlation or regression methods. This phase aimed to identify patterns, disparities, and performance gaps among LGUs, serving as the foundation for further exploration.

This was followed by a qualitative phase, wherein in-depth interviews, focus group discussions, and case studies were conducted to explore the factors shaping these trends. Based on the results from the first phase, a purposive sample of municipalities—representing high-performing, average, and low-performing LGUs—was selected. Key informants from these municipalities, including mayors, planning officers, LEIPOs, and other local stakeholders, were invited to participate in key informant interviews and focus group discussions. These interactions were guided by a semi-structured interview protocol designed to explore underlying factors influencing LGU competitiveness, including governance practices, developmental challenges, innovation efforts, and community engagement. Data from these interviews were transcribed and subjected to thematic analysis to identify recurring themes and explanatory narratives. This approach ensured that the quantitative results were enriched with contextual insights, providing a comprehensive understanding of local governance and development dynamics.

Research Environment. This study focused on the local government units (LGUs) in Nueva Vizcaya province, examine the capabilities on public service provision and economic and social development. The different geographic features in the province from agricultural and hill areas to developing town regions partly determine the distribution of resources, construction of infrastructure, and local government activities. This difference calls for an appreciation of how various municipalities deal with governance and management of services. The province consists of 15 municipalities, each with its distinct socioeconomic profile and organizational set-up. The municipalities differ in terms of population density, economic activity, and infrastructure. Agricultural municipalities such as Bagabag, Diadi, Dupax del Norte, Dupax del Sur, Villaverde and Quezon have large areas of agricultural land and agribusiness operations, while urbanizing municipalities such as Aritao, Bambang, Bayombong, and Solano are commercial and administrative hubs. Mountain municipalities, such as Alfonso Castañeda, Ambaguio, Kasibu, Kayapa, and Santa Fe have their own unique set of challenges related to geographic isolation and thin infrastructure, which impact the delivery of services and economic development. This varied topography necessitates context-specific governance that is attuned to local needs while being attuned to provincial and national policy regimes. The years 2022, 2023 and 2024 is marked by transformative policy reform and post-pandemic recovery, which form a key context of this study. Concurrently, national alignment with the United Nations SDGs further underscores the necessity for adaptive and responsive local governance. These background conditions form a rich context for exploring how municipal LGUs in Nueva Vizcaya re-adjust to new challenges and opportunities to ensure sustainable development.

Data Analysis. The results of the interviews and focus group discussions were thoroughly analyzed by the researcher to generate meaningful insights and to identify strategic, vision-driven opportunities for enhancing local governance and development outcomes

4. Results and Discussion

Problem 1. What are the capacities and opportunities of the respondent-municipalities to improve their competitiveness index along the five core components?

The respondent-municipalities were asked about their capacities and opportunities to improve their competitiveness index along the five core components, and the following are their responses.

On Economic Dynamism

...pagtutok sa pagbuo ng Local Economic Development and Investment Promotion Office (LEDIPO) upang itaguyod ang suporta sa MSMEs.

...pagpapalawak ng partnership sa mga local cooperatives para sa microfinancing programs sa barangay level.

...pagsasagawa ng regular na financial literacy seminars katuwang ang DTI, DA, at bangko, lalo na sa mga rural barangay.

...pagbibigay ng insentibo o tax relief sa mga bagong rehistradong micro-enterprises.

...pagbuo ng loan facilitation desks sa mga munisipyo upang tulungan ang mga negosyante sa loan application processing.

...pagsasagawa ng business planning workshops para matulungan ang mga residente na maging handa sa pagnenegosyo.

...pagtutok sa youth entrepreneurship sa pamamagitan ng livelihood training programs sa mga paaralan at SK councils.

...pagkakaroon ng LGU-supported start-up incubation hubs para sa tech-based o agribusiness innovations.

...paglikha ng municipal-level livelihood assistance programs na may revolving fund scheme.

...pagtutok sa sektor ng kababaihan at IPs sa pagbibigay ng entrepreneurial grants at mentoring.

...pagtutulongan ng LGU at mga GAs tulad ng DOST, DTI, at TESDA para sa business skills upgrading.

*...patuloy na nagsusulong ng **digital transformation sa proseso ng business registration at iba pang transaksyon** upang mapabilis, mapagaan, at maging mas transparent ang pagbibigay ng serbisyo sa mga mamamayan at negosyante.*

...pagsuporta sa One Town, One Product (OTOP) at branding efforts upang mapalawak ang merkado ng lokal na produkto.

...pag-oorganisa ng Municipal Business Fairs upang maipakilala ang mga produkto ng MSMEs sa mas malaking audience.

...paggamit ng digital platforms para sa pag-market ng local products at pag-access ng financing tools online.

The efforts undertaken by various local government units (LGUs) to enhance economic dynamism reflect a growing commitment to foster a more inclusive and vibrant local economy. The establishment of Local Economic Development and Investment Promotion Offices (LEDIPO) signals a structured and strategic approach in supporting micro, small, and medium enterprises (MSMEs), which form the backbone of local economies. By institutionalizing LEDIPO, LGUs are creating a dedicated mechanism for policy direction, investment promotion, and MSME development, which can lead to long-term, sustainable growth.

A key aspect of these initiatives is the strengthening of partnerships with local cooperatives to expand access to microfinancing, especially at the barangay level. This allows aspiring entrepreneurs, particularly those in

remote or underprivileged areas, to access startup capital with less stringent requirements. Complementing these financing opportunities are the financial literacy seminars conducted in collaboration with the Department of Trade and Industry (DTI), Department of Agriculture (DA), and local banks. These seminars empower residents by enhancing their understanding of budgeting, investing, and credit management—essential skills for enterprise success.

To further motivate the formalization of businesses, LGUs are offering tax incentives and relief to newly registered micro-enterprises. This reduces the initial burden of compliance and encourages more informal businesses to register. The creation of loan facilitation desks also streamlines the borrowing process, assisting entrepreneurs in navigating often complicated application procedures. Capacity-building programs like business planning workshops and start-up incubation hubs—especially for tech-based and agribusiness ventures—are fostering innovation and preparing entrepreneurs for the competitive market. Youth entrepreneurship is also given emphasis through school-based livelihood training and SK-led initiatives, ensuring that entrepreneurial skills are instilled early and that young people are engaged in economic development. Moreover, sectoral inclusivity is addressed through focused support for women and indigenous peoples (IPs) via entrepreneurial grants and mentorship programs. This opens up opportunities for economic participation from groups that have traditionally been underrepresented in local economies.

Partnerships with national agencies such as the Department of Science and Technology (DOST), DTI, and TESDA further enrich the local entrepreneurial ecosystem. These collaborations bring in technical expertise and funding, enabling business skills upgrading and innovation adoption. Digital transformation is also at the forefront of economic dynamism efforts, particularly in streamlining business registration and other government transactions. By simplifying procedures and promoting transparency, LGUs are creating a more investor-friendly environment. Additionally, support for the One Town, One Product (OTOP) program and digital marketing platforms enhances the visibility and marketability of local goods, expanding their reach beyond local boundaries.

Opportunities for further enhancement include scaling up digital infrastructure in rural areas to ensure inclusive access, institutionalizing innovation hubs in all municipalities, and developing local investment portfolios that highlight area-specific advantages to attract external investors. Strengthening data-driven planning and regional economic linkages can also maximize the full potential of economic dynamism across the province.

On Government Efficiency

...pagpapalawak ng mga rural health units (RHUs) at pag-deploy ng additional health workers sa geographically isolated and disadvantaged areas (GIDAs).

...pagpapalakas ng mobile health services tulad ng medical missions, dental vans, at vaccination drives sa upland barangays.

...pagpapatupad ng feeding programs at hygiene education sa mga pampublikong paaralan para sa child health and nutrition.

...pagbibigay ng libreng school supplies at uniforms sa mga batang mula sa mahihirap na pamilya.

...pagtayo ng barangay learning hubs na may internet access at e-learning materials, lalo na sa mga IP communities.

...pagpapalawak ng scholarship programs sa pamamagitan ng local school boards at partnerships sa higher education institutions.

...pagpapatuloy ng cash-for-work programs para sa mga nawalan ng trabaho, lalo na sa panahon ng kalamidad.

...pagbibigay ng livelihood starter kits sa solo parents, senior citizens, at PWDs.

...pagpapatayo o rehabilitasyon ng daycare centers at pagbibigay ng ECCD programs.

...pagpapalakas ng community-based monitoring systems (CBMS) para matukoy ang mga nangangailangang sektor:

...paglalagay ng grievance mechanisms sa barangay level para sa mabilisang tugon sa reklamo at pangangailangan.

...pagbuo ng inter-agency coordination teams para sa emergency response at social welfare interventions.

...pagpapalawak ng digital platforms para sa online application ng social services tulad ng birth certificate, burial/funeral aid, at medical assistance.

...pagkakaroon ng community dialogues at consultations upang mas maintindihan ang tunay na pangangailangan ng mga residente.

...pagsuporta sa localized disaster response programs na may kasamang psychosocial support, lalo na sa mga biktima ng kalamidad.

To enhance government efficiency, many local government units (LGUs) have implemented multi-sectoral strategies aimed at improving service delivery, particularly in underserved communities. One notable initiative is the expansion of rural health units (RHUs) and the deployment of additional health workers in geographically isolated and disadvantaged areas (GIDAs). This move ensures that essential medical services become more accessible to remote populations. Complementing this, LGUs have strengthened mobile health services—such as medical missions, dental vans, and vaccination drives—especially in upland barangays, helping to close gaps in preventive and primary care. In support of child health and nutrition, feeding programs and hygiene education have been actively rolled out in public schools, while the distribution of free school supplies and uniforms helps ease the financial burden on families from low-income backgrounds. Education access has also improved through the establishment of barangay learning hubs equipped with internet and e-learning materials, benefiting learners in far-flung areas, especially those from indigenous communities. Scholarship programs have been broadened through partnerships with higher education institutions and local school boards, creating more opportunities for academic advancement.

Livelihood and employment support remains central to LGU efficiency initiatives. Programs such as cash-for-work, especially for those affected by calamities, and the provision of starter livelihood kits to solo parents, PWDs, and senior citizens offer immediate and long-term economic support. Moreover, the construction and rehabilitation of daycare centers, along with the delivery of Early Childhood Care and Development (ECCD) programs, address the needs of working parents and foster early learning. To inform policy and service delivery, LGUs have enhanced community-based monitoring systems (CBMS), allowing for more accurate identification of vulnerable sectors. Efficient governance has also been supported by grievance mechanisms at the barangay level, facilitating quick responses to community concerns, and by the creation of inter-agency coordination teams for emergency response and social welfare delivery.

Digitalization plays a critical role, with LGUs expanding online platforms for services such as birth registration, medical and burial assistance, which streamlines processes and reduces physical queues. Community dialogues and consultations are conducted regularly to ensure programs are aligned with actual community needs, and localized disaster response efforts now often include psychosocial support, particularly for trauma-affected individuals. Opportunities to further improve government efficiency lie in fully integrating data systems across departments, investing in capacity-building for frontline workers, and expanding digital infrastructure to support e-governance in remote areas. Additionally, performance tracking systems and incentive-based accountability

frameworks can help institutionalize service excellence and citizen-centered governance.

On Resiliency

...pagpapatayo ng mga rainwater harvesting facilities sa mga barangay upang makatulong sa water conservation at climate resilience.

...pagbuo ng localized early warning systems (EWS) gamit ang community-based monitoring para sa bagyo, landslide, at baha.

...pagpapalawak ng green buffer zones sa gilid ng mga ilog upang maiwasan ang soil erosion at pagbaha.

...pagsasagawa ng hazard mapping at risk profiling ng bawat barangay upang gawing basehan ng DRR-CCA planning.

...pag-oorganisa ng barangay-based disaster brigades na may regular na drills at training sa first aid at search-and-rescue.

...pagtutok sa resilient infrastructure tulad ng elevated evacuation centers at flood-resilient public buildings.

...pagkakaroon ng integrated risk management plan na pinagsama ang DRRM, LCCAP, at CLUP (Comprehensive Land Use Plan).

...paglalagay ng vegetative and structural flood control measures tulad ng gabion walls, tree belts, at drainage canal rehabilitation.

...pakikipag-ugnayan sa mga NGO at international aid groups para sa reforestation at climate-resilient agriculture projects.

...pagbuo ng Climate Resilient Agriculture programs upang matulungan ang mga magsasaka na mag-adapt sa nagbabagong klima.

...pagpapatupad ng solid waste management initiatives na may kasamang komunidad upang mapangalagaan ang kalikasan.

...pagpapalakas ng DRR education sa mga paaralan upang itanim ang kultura ng kahandaan sa mga kabataan.

...pagbibigay ng incentives sa mga barangay na matagumpay sa pagpapatupad ng environmental sustainability projects.

...pagsasama ng private sector sa emergency response planning at resilience infrastructure development.

...pagkakaroon ng Provincial Resilience Scorecard upang masukat ang antas ng kahandaan at kakayahan ng bawat LGU.

To enhance resilience, the LGU has proactively implemented a range of localized and integrated strategies designed to strengthen both environmental sustainability and disaster preparedness. Among these is the construction of rainwater harvesting facilities in barangays to promote water conservation, especially critical during dry seasons and in mitigating the impacts of climate change. Community-based monitoring systems have been leveraged to develop localized early warning systems (EWS) for typhoons, landslides, and flooding, empowering residents to respond swiftly and effectively during emergencies.

Green buffer zones have been expanded along riverbanks to reduce soil erosion and minimize flooding, while hazard mapping and risk profiling are conducted in each barangay to inform disaster risk reduction and climate change adaptation (DRR-CCA) planning. Barangay-based disaster brigades have been organized and trained in first aid and search-and-rescue operations, ensuring that communities are prepared at the grassroots level.

Investments in resilient infrastructure, such as elevated evacuation centers and flood-resilient public buildings, demonstrate the LGU's commitment to long-term climate adaptation. An integrated risk management plan that consolidates the DRRM, LCCAP, and Comprehensive Land Use Plan (CLUP) has been developed to ensure cohesive planning across sectors. Structural and vegetative flood control measures, including gabion walls, tree belts, and rehabilitated drainage canals, further enhance physical resilience to climate hazards.

Collaborations with NGOs and international aid groups support reforestation efforts and the promotion of climate-resilient agriculture, while programs tailored to farmers help them adapt to changing weather patterns. Solid waste management initiatives that include community participation contribute to environmental protection and sustainability. DRR education has also been strengthened in schools to instill a culture of preparedness among the youth.

The LGU recognizes successful barangays by offering incentives for effective environmental sustainability projects, and it actively involves the private sector in emergency response planning and resilience-building infrastructure. Moreover, the establishment of a Provincial Resilience Scorecard allows for the measurement and tracking of each LGU's readiness and capacity for resilience.

Opportunities for improvement include expanding the coverage and real-time capability of early warning systems, ensuring the functional integration of risk data into local governance, and increasing funding for climate-smart infrastructure in remote barangays. Continued capacity-building for local leaders and enhanced public-private partnerships can also elevate the province's overall resilience.

On Innovation

...pagsisimula ng LGU digitalization roadmap na nakahanay sa Philippine Digital Transformation Strategy ng DICT.

...pagtatalaga ng ICT or Digital Transformation Focal Persons sa bawat opisina para sa mas mabilis na koordinasyon.

...pagbuo ng localized mobile apps o digital platforms para sa business permit processing, job matching, at citizen feedback.

...pagtutok sa e-Government procurement systems (e-GP) para sa mas transparent na transaksyon.

...pagsasagawa ng community-based digital literacy training para sa senior citizens, IPs, at women's groups.

...pagkakaroon ng mga Wi-Fi hubs sa mga pampublikong lugar gaya ng plaza, palengke, at barangay halls.

...pagpapalawak ng e-learning initiatives sa pakikipagtulungan sa mga local colleges at SUCs tulad ng NVSU.

...paggamit ng cloud-based data storage para sa mas maayos at ligtas na records management.

...pagpapatupad ng real-time incident reporting systems para sa disaster response at peace and

order monitoring.

...pagpapasigla ng tech-based entrepreneurship programs gaya ng hackathons at innovation pitching contests.

...pagtutok sa paggamit ng digital payment platforms para sa local taxes, fees, at market rentals.

...pagbuo ng Data Privacy Offices sa mga LGU upang tiyakin ang seguridad ng digital transactions.

...pakikipag-ugnayan sa DICT, DOST, at TESDA para sa funding at training support sa digital projects.

...pagpapalaganap ng AI-assisted tools para sa profiling, resource allocation, at citizen analytics.

...pagbuo ng smart barangays bilang pilot areas ng digital governance, na may sensors, CCTV integration, at feedback kiosks.

The LGU has undertaken a robust suite of innovation-driven initiatives aligned with national digital transformation goals, demonstrating a strong commitment to modernizing public service delivery and fostering inclusive technological advancement. A cornerstone of these efforts is the LGU digitalization roadmap, strategically crafted in harmony with the Philippine Digital Transformation Strategy of the DICT. This roadmap is operationalized through the designation of ICT or Digital Transformation Focal Persons in each office to ensure seamless coordination and efficient implementation of digital projects.

To streamline public services, the LGU has developed localized mobile applications and digital platforms catering to key functions such as business permit processing, job matching, and citizen feedback. Moreover, the adoption of e-Government procurement systems (e-GP) promotes transparency and accountability in local transactions. Digital inclusivity is also prioritized, with community-based digital literacy trainings conducted for senior citizens, indigenous peoples (IPs), and women's groups. The LGU has enhanced public connectivity by installing Wi-Fi hubs in plazas, markets, and barangay halls, while partnering with local institutions like NVSU to expand e-learning initiatives and support digital education. Cloud-based systems have been adopted for secure and efficient records management, and real-time incident reporting tools are now being used for disaster response and peace and order monitoring.

To encourage local innovation, tech-based entrepreneurship programs, including hackathons and innovation pitching contests, are actively promoted. Digital payment platforms have also been introduced for more convenient and traceable collection of local taxes, fees, and market rentals. Recognizing the importance of data protection, Data Privacy Offices have been established to secure digital transactions. Strong partnerships with DICT, DOST, and TESDA provide both funding and technical training for these projects. The LGU is also exploring AI-assisted tools for data profiling, resource allocation, and citizen analytics, further enhancing evidence-based governance. Notably, the creation of “smart barangays”—piloted in selected communities—integrates technologies such as sensors, CCTV networks, and digital kiosks to model the future of grassroots digital governance. Opportunities for further innovation include scaling smart barangay initiatives across more communities, integrating blockchain technology for land titling and public records, establishing local innovation hubs in partnership with SUCs and tech incubators, investing in tech-upskilling for LGU employees and barangay officials, and expanding citizen co-creation mechanisms using digital platforms to crowdsource policy solutions.

On Infrastructure

...pagtutok sa convergence programs kasama ang DPWH at NIA para sa farm-to-market roads

at irrigation systems.

...pagpasa ng Local Infrastructure Investment Plans (LIIP) bilang bahagi ng Annual Investment Program (AIP).

...pagbuo ng Municipal Infrastructure Development Councils upang masiguro ang community participation sa planning.

...pagsasagawa ng periodic infrastructure audits upang matukoy ang mga priority areas para sa improvement o rehabilitation.

...pakikipagtulungan sa DILG at DBM sa ilalim ng Seal of Good Local Governance (SGLG) upang makakuha ng Performance Challenge Fund (PCF).

...pagpapasa ng ordinansa sa PPP Code o local PPP framework upang mas mapadali ang pagpasok ng private sector sa mga proyekto.

...pag-allocate ng counterpart funding para sa national infrastructure grants gaya ng Support to Barangay Development Program (SBDP).

...pagtutok sa road interconnectivity projects para mapadali ang access mula sa upland barangays patungo sa town centers.

...pagtatayo ng evacuation centers na multi-purpose upang magamit sa panahon ng kalamidad at community services.

...pagpapalakas ng digital infrastructure sa pamamagitan ng DICT Free Wi-Fi Program at broadband expansion sa schools at LGU offices.

...pag-develop ng public terminals at market infrastructure na may tamang sanitation, parking, at access design.

...pagbuo ng green infrastructure projects tulad ng rain gardens, slope protection systems, at drainage improvements.

...pagtutok sa barangay-level infrastructure projects na may participatory budgeting approach.

...paggamit ng geographic information systems (GIS) para sa infrastructure mapping at planning.

...pakikipagtulungan sa local contractors at cooperatives para sa labor-based, equipment-supported (LBES) infrastructure implementation, na nakikinabang rin ang mga lokal na manggagawa.

The LGU has actively pursued infrastructure development through a range of coordinated actions that enhance connectivity, resilience, and local economic opportunities. Central to these efforts is participation in convergence programs with agencies such as the Department of Public Works and Highways (DPWH) and the National Irrigation Administration (NIA), particularly for the construction of farm-to-market roads and irrigation systems that directly support agricultural productivity. The LGU has institutionalized infrastructure planning through the passage of Local Infrastructure Investment Plans (LIIP), integrated into the Annual Investment Program (AIP), ensuring alignment with development priorities.

To guarantee inclusive planning, Municipal Infrastructure Development Councils were established, enabling community participation in project identification and monitoring. Periodic infrastructure audits help the LGU determine priority areas for maintenance, improvement, or rehabilitation. Partnerships with the Department of

the Interior and Local Government (DILG) and the Department of Budget and Management (DBM) under the Seal of Good Local Governance (SGLG) framework have also enabled the LGU to access the Performance Challenge Fund (PCF) to support critical infrastructure projects.

To encourage private sector investment, a local Public-Private Partnership (PPP) Code was enacted, providing a framework for streamlined collaboration. The LGU has also committed counterpart funding to national initiatives such as the Support to Barangay Development Program (SBDP), enhancing its capacity to receive and implement grants. Road interconnectivity projects have been prioritized, especially in upland barangays, to improve access to municipal centers. Multipurpose evacuation centers have been built for use during disasters and for community services.

Digital infrastructure has been strengthened through collaboration with the DICT, particularly via the Free Wi-Fi Program and broadband expansion in schools and LGU offices. Investments have also been made in public terminals and market facilities with proper sanitation, access design, and parking to support commerce and mobility. Green infrastructure, such as rain gardens, slope protection systems, and upgraded drainage, is being developed to improve climate resilience. Barangay-level infrastructure projects are implemented using a participatory budgeting approach to reflect local needs.

Further opportunities for infrastructure development include the expansion of smart infrastructure systems (e.g., sensor-based flood monitoring), more inclusive use of Geographic Information Systems (GIS) for planning, and deeper engagement with cooperatives and local contractors through labor-based, equipment-supported (LBES) methods. These not only improve efficiency but also provide livelihood to local workers, fostering community ownership and sustainability.

Problem 2. Based on the explanatory sequential analysis results, what insights could be developed as an additional knowledge in local governance and public administration?

Based on the results of an explanatory sequential analysis—which typically involves first collecting and analyzing quantitative data followed by qualitative data to explain or elaborate on the quantitative findings—eight (8) valuable insights were identified by the researcher to enrich knowledge in local governance and public administration:

Need for Integrated Infrastructure Planning. One of the key insights is the pressing need for integrated infrastructure planning in local governance. Fragmented development efforts—particularly in road networks, digital access, and market infrastructure—have limited the reach and impact of government programs. The explanatory sequential analysis revealed that without harmonized plans linking infrastructure to education, health, transport, and economic development, gains remain isolated. Strengthening the role of Municipal Development Councils and aligning plans with the Comprehensive Land Use Plan (CLUP) and Annual Investment Program (AIP) can enhance cross-sectoral impact. Encouraging citizen participation and tapping geographic information systems (GIS) will help LGUs prioritize infrastructure based on real-time data. This underscores the value of multi-stakeholder planning, data-driven decision-making, and convergence with national agencies like DPWH, DICT, and NIA. Institutionalizing integrated infrastructure planning can catalyze inclusive and sustainable growth, especially in geographically isolated areas.

Promoting Economic Dynamism Requires Inclusive and Localized Strategies. Findings from the study emphasize that fostering economic dynamism in LGUs is most effective when it is inclusive, context-sensitive, and rooted in grassroots realities. Initiatives such as supporting micro, small, and medium enterprises (MSMEs), partnering with cooperatives, and targeting vulnerable sectors like women, youth, and indigenous peoples (IPs) reflect a shift toward people-centered economic governance. Financial literacy campaigns, livelihood training, and loan facilitation desks at the barangay level are practical strategies that empower local communities to participate actively in economic growth. These initiatives also encourage entrepreneurial resilience, especially in rural and marginalized areas. From a public administration perspective, this insight reinforces the value of

decentralizing economic planning and building multi-sectoral partnerships with national agencies like DTI, TESDA, and DA. Furthermore, it opens opportunities for institutionalizing local economic development councils and using digital tools for marketing and innovation, ensuring that economic growth becomes both sustainable and equitable.

Improving Government Efficiency Must Be Citizen-Centered and Technology-Driven. The results reveal that enhancing government efficiency involves a combination of citizen-focused services and digital transformation. LGUs that invested in digital platforms for social service delivery—such as online applications for birth certificates, financial aid, and scholarship programs—have improved both accessibility and transparency. Additionally, the expansion of mobile health services, barangay learning hubs, and grievance mechanisms demonstrates a move toward responsive and participatory governance. Efficient LGUs have also demonstrated success through inter-agency coordination for disaster response, education, and livelihood support. From a governance standpoint, this insight suggests that institutional reforms should focus on process streamlining, user experience, and proactive service delivery. Opportunities include investing in Management Information Systems (MIS), community-based monitoring tools, and capacity-building programs for frontline workers. Ultimately, making services simpler, faster, and more responsive strengthens public trust and government legitimacy, particularly when services reach the most vulnerable sectors effectively.

Strengthening Local Resilience Demands Integrated and Community-Based Approaches. Resilience is no longer just about disaster response; it encompasses environmental sustainability, infrastructure readiness, and community engagement. The study shows that LGUs that excel in resilience focus on multi-pronged strategies—constructing rainwater harvesting systems, early warning systems, hazard mapping, and green buffer zones to combat climate-related risks. Establishing barangay-based disaster brigades, promoting climate-resilient agriculture, and building elevated evacuation centers reflect proactive, community-anchored disaster preparedness. Additionally, integrating DRRM (Disaster Risk Reduction and Management), LCCAP (Local Climate Change Action Plan), and CLUP (Comprehensive Land Use Plan) helps LGUs align risk planning with broader development goals. This insight underscores the importance of synergy among stakeholders—LGUs, NGOs, the private sector, and national agencies—in building resilient communities. For public administrators, opportunities lie in enhancing local capacity through technical training, incentivizing barangays with sustainability projects, and utilizing Provincial Resilience Scorecards to monitor and evaluate resilience-building progress.

Innovation Can Thrive Through Digital Transformation and Multi-Stakeholder Collaboration. Innovation in local governance is best realized when driven by digital transformation, inclusive participation, and strategic partnerships. The study highlights LGUs that have implemented digital roadmaps, localized mobile apps, and e-government procurement platforms, showing significant gains in transparency and efficiency. Initiatives such as citizen feedback apps, real-time disaster reporting systems, and data privacy protocols demonstrate how digital tools enhance responsiveness and data-driven decision-making. Community-based digital literacy training, particularly for women, IPs, and senior citizens, plays a critical role in inclusive digital innovation. Moreover, collaborating with DICT, DOST, TESDA, and local colleges like NVSU brings technical expertise and funding support. From a public administration lens, fostering innovation involves institutionalizing digital governance units, promoting tech-based entrepreneurship through hackathons, and piloting smart barangays. These strategies point to the need for adaptive leadership, policy coherence, and long-term planning that enables LGUs to become laboratories for grassroots innovation and digital resilience.

Infrastructure Development Should Be Needs-Based and Participatory. A key insight from the study is that infrastructure planning and development must align with actual community needs and involve citizen participation. LGUs that established Municipal Infrastructure Development Councils and adopted participatory budgeting approaches have ensured that projects like farm-to-market roads, evacuation centers, and public markets respond to real and urgent needs. Utilizing infrastructure audits and Geographic Information Systems (GIS) for planning supports more data-informed and equitable allocation of resources. Collaborations with

DPWH, NIA, and national funding programs like the SBDP show the importance of vertical integration in infrastructure development. Moreover, passing local PPP ordinances facilitates private sector participation in large-scale projects. For public administrators, opportunities exist in enhancing digital infrastructure, implementing labor-based equipment-supported (LBES) projects, and expanding green infrastructure like rain gardens and slope protection systems. These approaches not only boost economic productivity and disaster preparedness but also reflect good governance through inclusivity and transparency.

Local Governance Thrives on Institutionalized Partnerships and Policy Coherence. The study shows that effective local governance is deeply rooted in well-coordinated partnerships and a strong policy environment. LGUs that successfully work with national agencies (e.g., DTI, DA, DICT, DBM, and DILG), academic institutions, cooperatives, and civil society organizations demonstrate greater capacity to deliver impactful programs. Institutionalizing inter-agency coordination teams, local economic development councils, and digital governance focal groups ensures smoother program implementation and monitoring. This insight emphasizes that local government performance improves when there is policy coherence—from planning and budgeting to service delivery and monitoring. The adoption of integrated plans like DRRM, LCCAP, and CLUP showcases how policy alignment can foster sustainability and resilience. Public administrators are thus encouraged to invest in stakeholder mapping, formal MOUs, and integrated reporting systems. Such efforts deepen collaboration, reduce program duplication, and increase resource efficiency—factors that are essential in building agile, accountable, and forward-looking LGUs.

Evidence-Based Planning Strengthens Public Accountability and Service Impact. A final insight emphasizes that data-driven governance enhances public trust and policy outcomes. LGUs that utilize Management Information Systems (MIS), Community-Based Monitoring Systems (CBMS), and real-time digital platforms for planning and evaluation demonstrate higher levels of service accuracy, targeting, and transparency. For instance, the integration of citizen analytics, digital feedback tools, and performance dashboards enables timely adjustments in programs like health services, education support, and disaster response. Evidence-based planning also helps LGUs access national grants, meet Seal of Good Local Governance (SGLG) benchmarks, and strengthen budget prioritization. From the perspective of public administration, the adoption of monitoring and evaluation tools is not merely technical—it reflects a culture of learning, accountability, and continuous improvement. Future opportunities include investing in local data science capabilities, conducting regular policy impact reviews, and institutionalizing open data platforms to promote participatory governance. Through this, LGUs can build smarter, more responsive, and citizen-centered governance systems.

5. Conclusions

1. LGUs encounter several challenges in fostering a competitive environment, including limited financial resources, inadequate infrastructure, bureaucratic inefficiencies, and difficulties sustaining economic growth that hinder these municipalities' ability to capitalize on development opportunities fully.
2. Despite the challenges, opportunities exist to enhance the competitiveness index through capacity-building initiatives, policy reforms, public-private partnerships, and strategic investments in innovation and infrastructure. These strategies can significantly improve the community's quality of life, strengthen institutional frameworks and governance mechanisms, and enhance municipal competitiveness.
3. The study provides valuable insights into the role of strategic governance in fostering municipal competitiveness. These insights highlight the importance of coordinated efforts across sectors, decentralizing economic planning, leveraging technology for efficiency, and fostering collaboration among local and national agencies. Data-driven decision-making and community involvement are critical for addressing local challenges, improving service delivery, and promoting sustainable, equitable growth.

Recommendations

- Given the varying competitiveness index across municipalities, LGUs should conduct regular performance evaluations in economic dynamism, government efficiency, resiliency, infrastructure, and innovation. Municipalities can implement targeted programs to enhance local governance and public service delivery by identifying specific areas for improvement.
- Since higher-class municipalities tend to have stronger resiliency, lower-class municipalities should receive priority access to funding, technical assistance, and capacity-building programs for disaster preparedness and climate adaptation. The national government and private sector may provide financial and logistical support for emergency response planning, infrastructure resilience projects, and early warning systems to solve the challenges in disaster preparedness between and among municipalities.
- To overcome limited financial resources, inadequate infrastructure, and bureaucratic inefficiencies, LGUs should attract more investments, secure grants, and optimize local tax collection, implement public-private partnerships to solve infrastructure deficits and encourage private-sector participation in local economic development. Simplifying regulatory procedures will also enhance business competitiveness and investment inflows.
- Since innovation remains challenging, LGUs should expand research and development (R&D) funding, promote digital literacy programs, and facilitate partnerships with universities and tech-driven businesses. LGUs should prioritize transportation, digital connectivity, and public utilities, ensuring that urban and rural areas have equitable development opportunities.
- LGUs must also institutionalize strategic governance practices, such as evidence-based policymaking, civic engagement, and participatory governance. Municipalities can enhance economic sustainability, service efficiency, and competitiveness by leveraging technology, data transparency, and stakeholder collaboration.

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