The effect of a windmill establishment on the socio-economic status of local communities: A public administration perspective

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Abstract

This study examined the impact of the Pililla Windmill Farm on community welfare and stakeholder engagement using a descriptive-correlational design and survey data from local residents. Findings showed that the project contributed to employment, livelihood opportunities, tourism, local business growth, and community development through corporate social responsibility (CSR) initiatives and stakeholder programs. Positive effects were also observed in health, entrepreneurship, and skills training. However, respondents noted limited improvements in agricultural support, infrastructure, and long-term livelihood stability. Results further revealed that demographic factors such as education, sex, occupation, and proximity influenced perceptions of the project's benefits, while views on environmental protection and CSR effectiveness were generally consistent across groups. A significant positive relationship was found between the socioeconomic benefits of the windmill farm and perceptions of effective public administration. The study recommends strengthening livelihood, tourism, agricultural, and infrastructure programs while sustaining inclusive stakeholder engagement and CSR initiatives to further improve community welfare.

Keywords: Enhanced Pililla Windmill Farm; community welfare; stakeholder engagement; public administration; socioeconomic benefits; livelihood; tourism; CSR; infrastructure; agriculture; survey research

1. Introduction

The global development agenda has shifted due to the quick transition to renewable energy, with wind power emerging as one of the most economical and environmentally friendly substitutes for fossil fuels. The Sustainable Development Goals (SDGs), especially Goal 7, which promotes affordable and clean energy for everyone, depend heavily on renewable energy, according to the UN (2023). The Philippines' commitment to sustainable energy transitions is demonstrated by the Department of Energy's (DOE, 2023) report that renewable energy sources make up roughly 29% of the nation's overall power generation mix. Wind energy projects, like those in Rizal and Ilocos Norte, are prime examples of how renewable infrastructure promotes community development and local economic growth in addition to ensuring national energy security. The true socioeconomic impacts of these initiatives, particularly from the standpoint of public administration, are still not well understood, despite their increasing prevalence.

The construction of the Pililla Wind Farm (PWF) in the municipality of Pililla, Rizal, has emerged as a key component of the area's sustainable development. The 54-megawatt project, which was opened in 2015 and is run by Alternergy Wind One Corporation, has 27 wind turbines that together provide electricity to about 66,000 households (Alternergy, 2022). In addition to producing electricity, the location has grown to be a popular ecotourism destination, drawing between 150,000 and 200,000 tourists a year before the epidemic (Department of Tourism, 2020). The increase in tourism has helped local companies, such as food vendors, gift shops, and transportation providers. However, a critical evaluation is necessary to determine how long these advantages will last, how they will be distributed across different demographic groups, and how they will affect governance, policy, and community welfare.

Studies already conducted show that renewable energy initiatives can have a range of socioeconomic effects. For example, Gonzales and Rola (2021) discovered that whereas wind energy projects in Northern Luzon enhanced infrastructure and jobs, they also sparked questions about stakeholder participation and equity. In a similar vein, Magdayao (2022) pointed out that local governments are essential in making sure that renewable energy initiatives complement community demands and the production of public value. The degree to which the windmill establishment has raised the socioeconomic standing of the people of Pililla, Rizal, whose income, occupation, and degree of education vary greatly, as well as how governmental managers handle these impacts, are still up for debate. These factors highlight the necessity of examining the relationship between governance ability and socioeconomic change.

Local development projects like the PWF must be assessed from the standpoint of public administration not just in terms of financial returns but also in terms of how they affect government efficacy, policy frameworks, stakeholder engagement, and community welfare. Whether renewable energy projects actually further the objectives of sustainable local development depend on how well public value creation, inclusive governance, and participatory decision-making are integrated. Therefore, examining the Pililla case offers a chance to comprehend how public administrators might create and carry out policies that promote community involvement and fairly divide rewards.

By analyzing the socioeconomic and demographic factors affecting the public administration viewpoint of local communities in Pililla, Rizal, this study situates itself within this framework. It takes into account the ways in which socioeconomic advantages - like job possibilities, revenue creation, the growth of tourism, and better infrastructure - intersect with age, gender, education, occupation, and income levels. The goal of the study is to find patterns in the correlations between these variables so that local governance methods and policy changes that support equitable growth and sustainable development can be informed.

The Local Government Code of 1991 (Republic Act No. 7160), which gives municipalities the authority to carry out development initiatives that are responsive to their residents, and the decentralization and local governance framework in the Philippines make addressing these issues more pertinent. As social and technological undertakings, wind energy projects necessitate collaboration between the community, private investors, and the government. Thus, the PWF is a microcosm of how local governments can use efficient public administration to strike a balance between community welfare, environmental stewardship, and economic advancement.

By offering actual data on the socioeconomic effects of renewable energy projects from a governance perspective, this study ultimately aims to close a research gap. This study intends to support equitable, transparent, and sustainable development activities by systematically evaluating the relationship between the demographic profile, socioeconomic benefits, and public administration perspectives. It is anticipated that the results will be used as a guide by researchers, politicians, and local authorities who support community-centered renewable energy governance.

1.1. Background of the Study

Since the PWF was established, the municipality of Pililla, Rizal, which is situated along the eastern side of Laguna de Bay, has changed from a sleepy agricultural hamlet to one of the CALABARZON region's newest ecotourism destinations. The project, which was created by Alternergy Wind One Corporation, was opened in 2015 as Luzon's first wind energy facility outside of the Ilocos region. 54 megawatts of renewable energy are generated by its 27 wind turbines, which are dispersed over Barangay Halayhayin's undulating hills and fed into the Luzon grid (Alternergy, 2022). About 66,000 homes receive power from this capacity, which lessens the area's reliance on fossil fuels (Department of Energy, 2023).

In addition to providing energy, the PWF has come to represent environmentally friendly growth in the province of Rizal. Every year, hundreds of thousands of people visit the location, which stimulates the local economy by supporting tourism-related enterprises like food vendors, transportation providers, and gift stores. Additionally, by enhancing nearby access roads and infrastructure, the project has aided in the growth of infrastructure. The windmill farm produced substantial local economic activity and millions of pesos in tourism earnings, according to the Department of Tourism (2020). How these advantages translate into long-

term socioeconomic improvement for locals in various demographic groupings is still up for debate.

From a governance perspective, the Pililla local government unit (LGU) is essential to guaranteeing the equitable distribution of the socioeconomic advantages of the windmill project. LGUs are required by the Local Government Code of 1991 (RA 7160) to advance sustainable development and the general welfare. In order to guarantee community welfare, inclusive involvement, and stakeholder collaboration in renewable energy management, the Pililla LGU is in charge of creating local policies and projects. However, despite apparent advancements, there is a dearth of empirical evidence evaluating how locals see the efficacy of the legislative framework, governance, and stakeholder involvement around the windmill establishment.

1.2. Theoretical Framework

This study is anchored on the following theories: Public Value Theory emphasizes that the role of government and public institutions is to create value for society through effective governance, responsive policies, and programs that improve citizens' welfare (Moore, 1995). Public administrators are expected to balance efficiency, equity, and democratic
participation in delivering public goods.

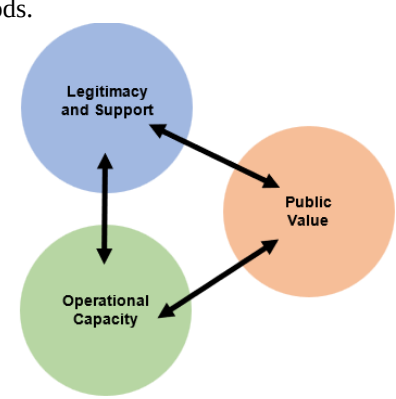

Figure 1. Public Value Theory

In the context of Pililla, Rizal, the establishment of the windmill farm can be viewed as a public value initiative that enhances energy security, stimulates local development, and promotes environmental sustainability. From a Public Administration perspective, the local government's ability to translate these socio-economic benefits, such as employment generation, improved infrastructure, and tourism growth, into long-term community welfare is a reflection of how well it creates and sustains public value.
This theory supports the dependent variable (Public Administration perspective), particularly in evaluating how community welfare and stakeholder engagement are shaped by the socio-economic outcomes of the windmill project.

Stakeholder Theory posits that all individuals or groups affected by an organization's actions such as employees, residents, investors, and government agencies, have legitimate interests that must be recognized and addressed. Effective governance requires collaboration and open communication among stakeholders to achieve shared goals.

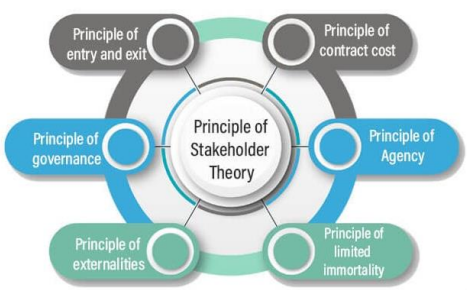

Figure 2. Stakeholder Theory

The PWF project involves multiple stakeholders: the private sector (Alternergy Wind One Corporation) provides capital and operational expertise; the local government creates enabling policies and ensures community participation; and local residents serve as both beneficiaries and active participants in tourism, business, and employment opportunities.

According to Freeman, R. E. (1984), Stakeholder Theory explains how the degree of engagement and collaboration among these groups affects perceptions of governance, accountability, and inclusivity, key elements under the Public Administration perspective (i.e., stakeholder engagement, policy implementation, and community welfare).

Hence, the theory helps in understanding how socio-economic benefits translate into improved community outcomes when all stakeholders are actively involved and represented.

1.3. Conceptual Framework

This section presents the variable to be used in the study.

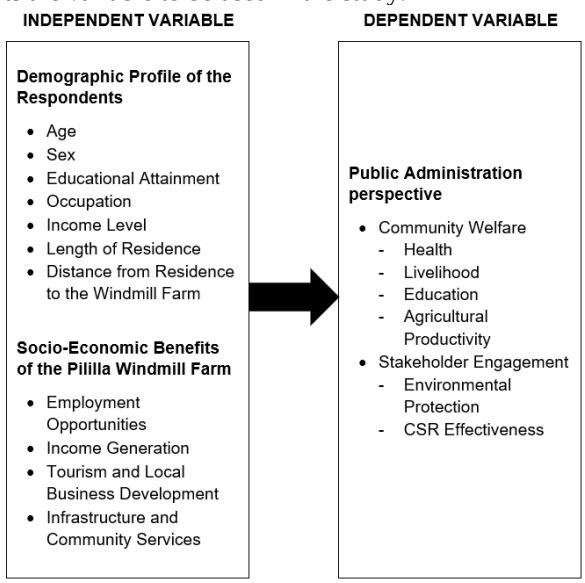

Figure 3. Research Paradigm

Figure 3 shown below is the paradigm of the study. It was based on the Independent and Dependent Variable. Within each component there were specific criteria corresponding to the research questions that the study sought to answer.

The main components of the independent variable box included the demographic profile of the respondents: age, sex, educational attainment, occupation, income level, length of residency, and distance from residence to the Windmill Farm. It also included the socio-economic benefits of the PWF in terms of employment opportunities, income generation, tourism and local business development, and infrastructure and community services.

While on the dependent variable box, it included the public administration perspective as to community welfare: health, livelihood, education and agricultural productivity, and stakeholder engagement: environmental protection, and CSR effectiveness.

The findings of this study lead to policy recommendations to strengthen governance, community welfare, and sustainable development initiatives in Pililla, Rizal.

1.4. Statement of the Problem

This study aimed to determine the effect of windmill establishment on the socio-economic status of local communities in Pililla, Rizal.

Specifically, it sought to answer the following questions:

- What is the demographic profile of the respondents in terms of:
  * age;
  * sex;
  * educational attainment;
  * occupation;
  * income level;
  * length of residence; and
  * distance from residence to the Windmill Farm?
- What is the extent of socio-economic benefits of the Pililla Windmill Farm as perceived by the respondents in terms of:
  * employment opportunities;
  * income generation;
  * tourism and local business development; and
  * infrastructure and community services?
- What is the extent of the effect of the Pillila Windmill Farm on the local communities with respect to public administration in terms of:
  * community welfare; and
    - health;
    - livelihood;
    - education; and
    - agricultural productivity;
  * stakeholder engagement;
    - environmental protection; and
    - CSR effectiveness?
- Is there a significant relationship between the respondents' demographic profile and their assessment of the Public Administration perspective?
- Is there a significant relationship between the socio-economic benefits of the windmill farm and the Public Administration perspective?
- Based on the findings, what policy recommendations can be proposed to strengthen governance, community engagement, and sustainable development initiatives in Pililla, Rizal?

1.5. Research Hypothesis

Based on the questions stated above, the hypotheses were proposed:

- There is no significant relationship between the respondents' demographic profile and their assessment of the public administration perspective in Pililla, Rizal.
- There is no significant relationship between the perceived socio-economic benefits of the PWF and the public administration perspective of local communities in Pililla, Rizal.

1.6. Significance of the Study

An important milestone in the Philippines' quest for sustainable community development and renewable energy was the construction of the PWF. It offers a significant chance to investigate the relationship between local government and socioeconomic transformation as a trailblazing renewable energy project in Rizal Province. This study is important because it examines the effects of windmill formation from a public administration perspective as well as an economic one, emphasizing policy frameworks, community welfare, effective governance, and stakeholder participation. By examining these elements, the study adds to the expanding conversation on how renewable energy projects might act as accelerators for inclusive, open, and participatory municipal government.

Field of Public Administration - By offering empirical data on how renewable energy projects

affect local administrative structures and governance practices, this study adds to the body of previous work. In order to ensure that development programs produce fair socio-economic gains, it emphasizes the importance of policy coherence, efficient implementation, and public engagement. The results can reinforce the theoretical underpinnings connecting sustainable development and public sector performance and guide administrative reforms.

Local Government Units (LGUs) - The study offers important insights into how local development plans might incorporate renewable energy facilities, especially in Pililla and similar communities. The findings could direct the creation of policies, encourage effective resource distribution, and improve stakeholder collaboration. Local administrators can create evidence-based plans to optimize community welfare and guarantee long-term project sustainability by determining the windmill project's socioeconomic and governance outcomes.

Department of Energy (DOE), the National Economic and Development Authority (NEDA), and the Department of the Interior and Local Government (DILG) - The results can be used as a guide when developing rules and regulations that support striking a balance between socioeconomic development and environmental sustainability. Additionally, the study contributes to the creation of national policies for energy resilience and equitable growth by endorsing the Philippine government's commitment to expanding renewable energy under the Renewable Energy Act of 2008 (Republic Act 9513).

Community Stakeholders and Residents of Pililla, Rizal - The study demonstrates how the windmill farm's construction impacts community services, employment prospects, income levels, and tourism potential. Local residents are better equipped to advocate for fair policy decisions, take part in sustainable livelihood activities, and participate more actively in governance processes when they are aware of these effects.

Future Researchers and Academic Institutions - The study is a useful resource for future research on the socioeconomic and governance aspects of renewable energy projects. It can serve as a basis for comparison studies between domestic and foreign renewable energy locations, advancing public administration theory and real-world applications in sustainable development settings.

1.7. Scope and Limitation of the Study

This study was conducted among the 9,806 residents of selected sitios in Barangay Halayhayin, Pililla, Rizal, particularly those near the PWF. The focus was to determine how demographic characteristics and perceived socio-economic benefits influence the Public Administration perspective of the community. The study employed a descriptive-correlational research design using a structured Likert-scale questionnaire. Respondents included local residents, small business owners, and local government employees familiar with community and tourism development programs.

The research was limited to the socio-economic and administrative dimensions of the PWF and did not cover the technical, environmental, or engineering aspects of the wind energy project. The study relied on self-reported perceptions, which may involve response bias. Additionally, the results were confined to the context of Pililla, Rizal and may not fully generalize to other renewable energy projects in different localities.

1.8. Review of Literature and Related Studies

The research review based on a variety of sources, such as books, journals, unpublished materials, and online sources, is presented in this section.

1.8.1. Related Literature

Two fundamental administrative imperatives, improving community welfare and guaranteeing strong stakeholder engagement, form the theoretical basis for examining the impact of a windmill establishment on nearby towns from the standpoint of public administration.

Denhardt and Denhardt (2020) asserts that the administrator's primary role is to realize the public

interest and enhance Community Welfare through fostering a shared sense of citizenship, rather than merely managing efficiently, provides the fundamental theoretical framework for the study. This viewpoint makes it clear that improving the socioeconomic standing of the community is the moral and professional standard by which the local government's management of the windmill project must be judged.

Rawls (2018) stated in his theory of justice to public policy is crucial because it requires administrators to follow distributive justice rules while managing projects that affect public goods. This theoretical framework is crucial to the study's analysis of the windmill's effects' fairness because it guarantees that any monetary gains or localized costs (like visual impact) are distributed fairly throughout the community, providing the moral benchmark for evaluating the socioeconomic status that results.

In its policy guidelines on sustainable development, the United Nations Development Programme (UNDP) (2022) highlights that strong public regulatory frameworks are essential to converting large-scale investments, such as windmills, into real, sustainable local economic benefits. The criteria for assessing the local government's administrative performance are provided by this official publication, which enables the study to ascertain whether sufficient policies were in place to require local hiring, revenue sharing, and other actions required to protect community welfare.

The administrator's practical responsibility to manage negative externalities through instruments like planning, zoning, and permit systems is described in environmental public administration textbooks like Rosenbaum (2019). In order to protect the community's quality of life and non-monetary Community Welfare, the Public Administration must take the necessary regulatory actions to mitigate the windmill's negative effects (such as noise and visual blight). This highlights an important administrative function for the study's scope.

Transparency and accountability are non-negotiable requirements for successful stakeholder engagement, according to the Organization for Economic Co-operation and Development (OECD) (2021) criteria for good governance. This gives the research the worldwide administrative standard to evaluate the honesty and transparency of the local government's consultation and communication on the windmill project.

Fung (2015) worked on participatory governance, which contends that include citizens in discussion and decision-making produces more legitimate and long-lasting public policy outcomes. Using this idea, the study examines whether the Public Administration's approach to the windmill project was merely informative or genuinely collaborative, establishing a connection between improved socioeconomic status outcomes and the level of stakeholder engagement.

According to Gunningham et al. (2018), the idea of the Social License to Operate (SLO) is crucial because it shows that community approval is a non-technical requirement that local stakeholders award or withhold depending on the process's validity. Effective stakeholder engagement is closely linked in this literature to the windmill's long-term viability and operational stability, both of which are critical for guaranteeing a long-term beneficial impact on the socioeconomic situation of the community.

The legal obligation for due process, notice, and the opportunity to be heard for all impacted parties in permitting processes is emphasized in administrative law texts, especially those that address procedural fairness (Breyer et al., 2017). This guarantees that the study takes into account the required legal sufficiency of the local administration's activities, proving that appropriate stakeholder engagement is an essential administrative responsibility rather than a choice.

Innes and Booher (2016) emphasize the administrator's responsibility in fostering communication and handling divergent expectations among various stakeholders (e.g., the developer, residents, environmental groups), with a focus on collaborative planning. Effective stakeholder engagement is essential to converting possible opposition into consensus, which is necessary for the windmill project to produce the desired socioeconomic status benefits. It also offers the administrative method for dispute resolution.

The use of digital tools to expand and deepen stakeholder engagement by overcoming time or geographic constraints is emphasized in recent publications on e-Governance (Criado and Valenzuela, 2020). This gives the study a contemporary administrative statistic that makes it possible to evaluate whether the Public Administration employed technology to guarantee equitable involvement in the windmill decision-making process.

Putnam (2020) stated on his research on social capital and civic participation is pertinent since it

examines how different age groups have differing degrees of confidence in public institutions. This idea has a direct impact on the study because it offers a theoretical framework for comprehending why younger and older respondents may have different levels of trust in the local Public Administration's handling of the windmill project and, as a result, in their reporting of changes in their socioeconomic status.

The issue of gendered risk perception in which women typically report higher perceived risks involving industrial hazards is noted in theoretical public policy discussions on environmental justice, frequently citing Slovic (2016) work. Because it implies that male and female respondents may have fundamentally different baseline perceptions of the windmill's environmental risks, leading to differential assessments of its impact on their household socioeconomic status and community welfare, this is important for the study's gender analysis.

A person's educational attainment is inextricably tied to their capacity to comprehend complex information and assess policy recommendations, according to public administration literature on citizen competence (Dahl, 2017). This idea is crucial because it assesses a respondent's ability to comprehend the complex economic and environmental trade-offs connected to the windmill project, which influences the breadth and precision of their stated changes in socioeconomic position.

A person's occupation impacts their direct reliance on particular local economic sectors, according to general economics and community development theory (Jacobs, 2019). Because it serves as the main conduit between the specific financial and livelihood components of a respondent's individual socio-economic position and the windmill's direct economic improvements (such as land leases and job creation), the occupation variable is crucial to the study.

Sen (2015) stated on his work on capabilities and welfare, vulnerability-focused policy research establishes that an individual's income level impacts their access to resources and resilience to economic shocks. This research offers the theoretical foundation for examining how pre-existing financial that inequities could amplify or lessen the windmill's impact on the general socio-economic condition of various community segments, since lower-income populations are frequently more vulnerable.

According Rogers (2018), age has a major role in people's willingness to accept and adjust to new infrastructure, such as wind turbines, in the context of technological adoption and dissemination. This makes it possible for the study to analyze how various age groups will react to the windmill's operational and physical modifications, which will have a direct impact on how they perceive a shift in their socioeconomic standing depending on whether they generally welcome or reject technological disruption.

The United Nations' 2023 guidelines for inclusive governance emphasize that in order to gather thorough community input, public engagement must purposefully guarantee equitable participation across gender. This gives the study a normative guideline that enables it to assess the fairness of the Public Administration's Stakeholder Engagement process because gender-based differences in participation may account for incomplete or distorted data about the windmill's impact on household-level socioeconomic status.

Inadequate educational attainment can result in a "policy gap" when individuals are unable to fully comprehend or hold authorities accountable for complex policy execution, according to literature on public administration and policy literacy (Peters, 2019). This emphasizes how a respondent's ability to correctly credit changes in their socioeconomic standing to the windmill project as opposed to other outside causes is influenced by Educational Attainment, a mediating variable.

According to the notion of stakeholder segmentation, which was highlighted by Freeman (2015) in management literature, a stakeholder group's occupation or professional connection to the project is the most important characteristic that defines them. This is important from the standpoint of public administration because it allows the study to evaluate how well the local government identified and catered to different occupational groups, which is essential to guaranteeing that the project's benefits are distributed fairly among all socioeconomic groups in the community.

Sociological studies of social stratification, such as those conducted by Stiglitz (2017), show how differences in income level frequently correspond with different levels of faith in large-scale undertakings and economic institutions. Because lower-income people may be more skeptical of the windmill project's potential to improve their own and the community's socioeconomic condition, this theoretical idea aids in the study's interpretation of responses pertaining to anticipated economic advantages.

Citizens with higher educational attainment are more inclined to demand fair and reasonable treatment from public institutions, according to discussions on social equity in public administration (Frederickson, 2018). This variable is pertinent to the administrative element because it may affect a respondent's impression of their ultimate socioeconomic level by influencing their willingness and ability to hold the local government responsible for making sure the windmill project provides equitable benefits.

According to Crenshaw (2017), general concept of intersectionality, demographic factors like age, gender, and income level overlap to produce distinct experiences of privilege and vulnerability rather than existing independently. The study is informed by this literature, which emphasizes that the investigation must examine how the intricate relationship between an individual's claimed socioeconomic position and the windmill establishment is specifically determined by the confluence of several demographic characteristics.

Mankiw (2021) stated that the economic theory of the multiplier effect, which is essential to comprehending the indirect job prospects and future revenue production that go beyond the Proposed Wind Farm's (PWF) initial building phase. This idea offers the theoretical foundation for how the PWF, as a substantial capital investment, is anticipated to improve the community's overall socioeconomic status by creating a spending chain reaction. This enables the study to assess whether the Public Administration effectively managed the project to maximize this desired economic ripple effect.

Public administrators must make sure that new employment possibilities in renewable energy are accessible, of high quality, and provide routes for local workforce development, according to policy documents from the International Labour Organization (ILO) (2022) on green jobs and just transitions. The effectiveness of the local Public Administration's labor strategy is closely linked to the ensuing socioeconomic status of the community, as this literature offers an administrative standard by which the research can assess the quality and equity of the jobs created by the PWF.

The importance of local tax base expansion and revenue sharing from large industrial projects is highlighted in public finance literature on local economic development, which is frequently cited in planning handbooks (Veseth, 2018). This creates the administrative framework for examining how the local government's ability to gather, handle, and use PWF revenue helps the community generate steady, long-term income, which is a crucial aspect of its overall socioeconomic position.

According to Tiebout (2015), the idea of economic base theory, a regional planning principle, describes how an area's export-oriented activities create income. This theory is pertinent because it enables the study to examine whether the PWF establishment functions as a novel "export" (energy sales) or a distinctive attraction, radically altering the economic structure of the community and creating new revenue streams for the growth of local businesses, thus influencing socioeconomic status.

Wind farms may be incorporated into a new type of "green energy" travel experience, according to literature on destination management and niche tourism (World Tourism Organization, 2023) standards. This conceptual foundation enables the study to investigate an unconventional economic advantage and evaluate the Public Administration's strategic capacity to leverage the windmill's presence to promote local company development in the service industry.

Schoenberger (2017) described the fundamentals of small company incubation and supply chain integration, which are essential to fostering local business development. These guides emphasize the public administration's responsibility in ensuring the PWF sources materials and services locally. By outlining the administrative steps necessary to optimize economic trickledown, this directly addresses the study's independent variable and makes it possible to assess how well the Public Administration enforces local procurement to raise socioeconomic status.

Stiglitz (2018) mentioned that theoretical arguments on the role of
government in the supply of public goods prove the necessity of infrastructure (such as roads and grids) and critical community services for market operation and community welfare. This establishes the basic public service standard by which the study evaluates the non-financial benefits of the PWF, connecting administrative responsibility for project fund utilization to the enhancement of the socioeconomic standing of the community through public goods.

According to Kretzmann and McKnight (2019), the idea of asset-based community development (ABCD) centers on using local resources, such as newly constructed or improved infrastructure, to increase

community capacity and self-sufficiency. New PWF-related infrastructure should be seen as a chance for the Public Administration to develop long-term, comprehensive changes to the socioeconomic standing of the community.

Moore (2015) described public value creation as attaining socially desired results, is connected to the effective provision of community services (health, education) in the framework of public management. In order to determine whether the administrative capacity is in place to convert PWF income generation into improved community services, a critical sign of improved socioeconomic status, this literature is essential for analyzing the Public Administration's strategic use of generated revenue.

According to Faludi (2016), the literature on integrated development planning (IDP), a fundamental idea in municipal administration, highlights the necessity for public authorities to coordinate investments to guarantee that new infrastructure complements current plans for community services expansion. This offers a framework for evaluating the local Public Administration's planning efficacy and figuring out whether the advantages of the PWF were carefully incorporated to optimize the beneficial effects on the socioeconomic standing of the community.

Large infrastructure projects frequently require increased digital access, according to the World Bank (2019), notion of the digital divide and its influence on community services. As a vital improvement to community services and a major force behind contemporary socioeconomic opportunity, the study might investigate whether the PWF prompted administrative action to upgrade telecommunications.

1.8.2. Related Studies

Olsson (2020) provided empirical evidence that local government officials value procedural experiences and socio-economic benefits over merely technical variables when making decisions on wind power. This study is extremely pertinent because it directly supports the Public Administration perspective of the research, demonstrating that the logic of local governance and administrative capability are the primary empirical factors that connect a project to favorable Community Welfare and, in turn, the general socioeconomic status of the community.

According to Alonso (2021), municipalities with robust administrative frameworks for managing public finances and pre-existing revenue distribution plans experienced considerably greater benefits from renewable energy taxes on community welfare (as determined by public service spending) than those without such plans. The competence of local public administration in financial planning and management is the critical intervening factor that decides whether the windmill's revenue translates into improved socioeconomic status for the community, as this unpublished document emphasizes.

Simas and Pacca (2020) discovered that although wind farms bring in significant local money, the actual conversion of these monies into noticeable increases in community welfare depends on the administrative regulations and transparency regulating the distribution of benefits. This finding is particularly pertinent because it highlights that the windmill establishment's eventual impact on the socioeconomic position of the neighborhood is determined empirically by administrative decisions pertaining to public funding and benefit distribution, which are fundamental Public Administration tasks.

Müller et al. (2021) stated that localities with weak zoning and land-use administrative regulations had the biggest socio-economic consequences, such as the negative impact on property values. This study is important because it frames the investigation into the public administration's regulatory function in safeguarding the community's socioeconomic standing and community welfare by highlighting the failure of administrative regulatory controls as a cause of localized negative impacts.

Moffat and Tormey (2018) discovered that the perceived fairness and acceptance of these programs were more closely related to the administrative mechanism used to manage the funds than to the monetary amount, highlighting the necessity of open, locally controlled administration. This focuses on the procedural justice component of community welfare, supporting the notion that the community's assessment of the windmill's impact on their socioeconomic situation is mostly empirically driven by the Public Administration's administration of the benefits.

Wüstenhagen et al. (2023) discovered that the level of procedural justice, that is, the equity and

openness of the Stakeholder Engagement process run by public authorities, was the most reliable indicator of wind project success and community approval. This offers solid empirical support for concentrating on stakeholder engagement, demonstrating that the administrative procedure influences social acceptance and, thus, the project's long-term sustainability and beneficial impact on socioeconomic status.

According to Busch and McCormick (2014), overcoming early resistance and obtaining a project's social license to function depended heavily on the active, mediating involvement of local politicians (mayors and council members) in stakeholder engagement. In order to guarantee project acceptance and long-term socioeconomic benefits, this study identifies the key players in the Public Administration framework and focuses the analysis on assessing how well local leaders' administrative actions manage the Stakeholder Engagement process.

Frantzeskaki and Loorbach (2017) found that communities that actively participated in the project's design and management through "co-production" methods reported higher levels of sustainability and ownership. This offers an empirical standard for assessing the effectiveness of the Public Administration's use of stakeholder engagement, enabling the study to establish a connection between improved socioeconomic status outcomes and administrative depth of participation (going beyond consultation).

IEA Wind TCP (2021) showed that the implementation and management of thorough Stakeholder Engagement Plans by local government representatives greatly decreased project delays and the probability of community rejection. This applied research offers concrete proof that attaining project continuity and a long-term beneficial impact on the socioeconomic position of the community requires effective administrative planning for Stakeholder Engagement, a fundamental Public Administration role.

In their empirical analysis of the discrepancy between local rejection and national acceptance of wind energy, Brennan and Van Rensburg (2016) came to the conclusion that inadequate and inconsistent consultation tactics were a significant contributing factor, requiring more stringent administrative control and regulation. This conclusion highlights the crucial regulatory role of the Public Administration in guaranteeing equitable and consistent consultation, which is necessary to achieve positive socio-economic status impacts, and directly relates the failure of the Stakeholder Engagement process to project controversy.

Chen (2022) discovered that communities perceived the Stakeholder Engagement process as more transparent and equitable when local government officials used digital platforms to proactively disseminate project information and collect comments. This adds a current administrative element, enabling the study to look at how the Public Administration uses modern tools to guarantee transparency, which is important in determining how the public views the project's influence on socioeconomic status.

Purnomo et al. (2024) discovered that in order to increase public awareness
of renewable energy projects and lessen conflict, local government-led educational initiatives and open communication were empirically required. In order to ensure that the project's perceived and actual impact on socio-economic status is positive, this study emphasizes the significance of the administrative task of information dissemination and enables the research to examine whether the Public Administration fulfilled this educational duty, thereby influencing community knowledge and participation.

Age was a significant factor in the social acceptance of wind energy (Pfeiffer and Marti, 2022). Older respondents showed higher levels of resistance to visual and noise impacts, which directly affected their perceived socioeconomic status (e.g., loss of property enjoyment). The current study will examine whether the local Public Administration successfully differentiated its mitigation strategies to address the particular concerns of the elderly population regarding the windmill's effect. This finding is important because it empirically links Age to specific adverse impacts.

According to Devine-Wright et al. (2015), risk perception in host communities is influenced by gender, with women expressing greater concern about the health and environmental concerns associated with industrial projects. This empirical finding suggests a possible weakness in the Public Administration's risk communication or mitigation strategy, so the current study must examine gender to ascertain whether the windmill establishment had a differentially negative impact on the reported socioeconomic status and perceived safety of female respondents.

Higher levels of educational attainment were linked to a better comprehension of the intricate policy trade-offs and a more positive perspective of the long-term economic advantages of wind projects (Lopes et

al., 2017). This result implies that Educational Attainment functions as a mediating variable; the study can use this to determine whether the Public Administration's public education efforts were sufficient or whether a communication breakdown caused respondents with lower levels of education to evaluate the windmill's impact on socioeconomic status negatively.

Residents whose major occupation was directly dependent on land, such as smallholder farmers, reported the most unfavorable shift in their socio-economic position owing to land acquisition and altered land usage (Kamau's (2020). The present study must investigate whether the local Public Administration failed to offer sufficient compensation or livelihood restoration programs customized for particular occupational groups impacted by the windmill, as this empirical finding highlights the direct connection between occupation and project vulnerability.

Haji-Mirsadeghi and Wiser (2021) discovered that although lower Income Level groups were initially more likely to support wind projects because they promised temporary construction jobs, they were also more susceptible to unfavorable long-term changes if those advantages did not materialize. This finding is essential for examining Income Level because it draws attention to a vulnerability paradox, directing the investigation into whether the windmill establishment fulfilled its commitment to provide low-income residents with steady income generation and whether the Public Administration handled expectations appropriately.

Younger, better educated individuals were more inclined to use official channels, such public hearings and administrative appeals, to influence policy outcomes related project siting, according to research by Maier et al. (2018) on local protests against infrastructure. By connecting Age and Educational Attainment to the mode of Stakeholder Engagement, this study directly informs the Public Administration perspective. This enables the current study to evaluate the Public Administration's ability to manage these formal engagement channels, which is crucial to guaranteeing procedural justice.

Women were notably underrepresented in formal consultation meetings, according to Walker and Weck's (2017) empirical analysis of public participation in energy planning. This suggests a systemic failure in the Public Administration's gender-based outreach approach. This conclusion, which shows that the windmill's effect on household socioeconomic status may be biased or incomplete because to the systematic removal of female opinions from the official public record, is extremely pertinent to the Stakeholder Engagement component.

Higher educated residents frequently expressed opposition based on abstract concerns (such as national policy), whereas less educated residents concentrated on immediate, tangible impacts related to their own socioeconomic status and property (Wolsink, 2019) that examined "NIMBY" responses. This demonstrates how public resistance is influenced by educational attainment and aids the study in distinguishing between opposition based on policy disputes and opposition based on direct, quantifiable detrimental impacts on the socioeconomic standing of the community.

Kaldellis et al. (2015) discovered that communities where a large percentage of the population worked in tourism saw a dramatic drop in reported satisfaction with the project as a result of noise and visual impact, which directly affected their main source of income. In order to determine whether the Public Administration sufficiently handled the threats that the windmill provided to the local tourism and commercial development sectors, this result provides compelling evidence for the necessity of segmenting the data by occupation.

The poorest 20% (Income Level) of the population reported the greatest perceived gain in their socioeconomic situation as a result of localized infrastructure changes (Baker et al., 2023) on the socioeconomic benefits of a wind farm in a rural U.S. community. This discovery offers empirical proof that the project's public goods can disproportionately benefit lower-income groups, directing the investigation into the administrative efficacy of directing project benefits toward concrete infrastructure and community services for the most vulnerable.

1.8.3. Synthesis

The synthesis demonstrates that the windmill project's ability to improve the socioeconomic standing of the community depends on the local government's administrative decisions rather than being a direct result of the investment.

Community Welfare as an Administrative Output: The main goal is to improve community welfare, according to fundamental public administration theory (Denhardt & Denhardt, 2020) and distributive justice principles (Rawls, 2018). This is supported by empirical research, which demonstrates that the beneficial impact on socioeconomic status only occurs in communities where the Public Administration exhibits strong administrative capacity in revenue allocation, financial management, and effective regulatory control (Alonso, 2021; Simas & Pacca, 2020) (Müller et al., 2021). More important than the amount of money received is the caliber of the administrative system used to manage benefits (Moffat & Tormey, 2018).

Stakeholder Engagement as a Success Determinant: Effective stakeholder engagement is strongly associated with project success, according to research. According to empirical research, the OECD's (2021) transparency criterion is the most accurate indicator of procedural justice and community approval (Wüstenhagen et al., 2023). The project's long-term socioeconomic benefits are undermined by local opposition, which is largely caused by administrative failure to perform fair and consistent consultation (Brennan & Van Rensburg, 2016). In order to accomplish inclusive co-production, local authorities play a crucial role as active mediators (Busch & McCormick, 2014), frequently necessitating the employment of contemporary instruments like e-Governance (Chen, 2022; Criado & Valenzuela, 2020) (Frantzeskaki & Loorbach, 2017).

The community's demographic makeup serves as a crucial mediating factor that affects both the type of public involvement and the achievement of socioeconomic benefits.

Benefits and Vulnerabilities: Not everyone is affected by the windmill in the same way. The most important indicators of susceptibility and benefit realization are residents' occupation and income level. Due to work opportunities, lower-income groups are initially supportive; nevertheless, if continuous income production is not achieved, they become extremely vulnerable (Haji-Mirsadeghi & Wiser, 2021). According to Kamau (2020) and Kaldellis et al. (2015), the public administration must employ tailored mitigation measures since those whose occupations are associated with land (such as farming) or visual amenities (such as tourism) suffer the biggest unfavorable adjustments in socioeconomic status.

Perception and Participation: Risk perception and participation are strongly influenced by age and gender. Women frequently report greater health and environmental concerns (Devine-Wright et al., 2015), while older people are more resilient to physical changes and loss of amenities (Pfeiffer & Marti, 2022). Additionally, a proven shortcoming of public administration is gender disparities in formal administrative consultation (Walker & Weck, 2017).

Literacy and Accountability: Policy literacy is measured by educational attainment. Higher achievement is associated with a better comprehension of the long-term advantages of policies (Lopes et al., 2017) and a greater readiness to hold the government responsible through formal channels (Maier et al., 2018; Frederickson, 2018). On the other hand, lower-income and less educated populations are frequently more likely to feel left out of the administrative process (Fischlein et al., 2016).

The realized Socio-Economic Benefits of the PWF are defined by the Public Administration's capacity to convert private investment into public value.

Optimizing Economic Spillovers: It is clear that the multiplier effect (Mankiw, 2021) has the capacity to create more jobs and revenue (Curtis & Marinescu, 2025). However, only taxes and land leases provide long-term local benefits (Fabra et al., 2025). To optimize local company development and guarantee long-term revenue generation is realized locally rather than flowing out of the community, public administration must proactively implement local content policies (IRENA, 2017) and employment plans (Vattenfall, 2020).

Converting Revenue into Public Value: The administrative use of new tax funds for better community services and infrastructure is the most reliable positive finding (Stiglitz, 2018). Revenues are utilized to pay local infrastructure improvements, lower tax burdens, and assist schools, according to studies (Curtis & Marinescu, 2022; Baker et al., 2023). Through improved community welfare, this administrative role directly affects the socioeconomic standing of the most vulnerable residents and is a gauge of effective

public value creation (Moore, 2015).

2. Methodology

The research methodology that was applied throughout the entire study is presented in this chapter. This includes research procedure, research instrument, population and sampling techniques, research design, and statistical analysis of the data.

2.1. Research Design

A research design enabled the researcher to determine the most effective plan of action for defining the procedures and methods for selecting the kind of data to be gathered and the techniques to be employed in data analysis. Additionally, the design provided a detailed explanation of the relationships between the variables under investigation.

This study utilized a descriptive-correlational research design to determine the relationship between the demographic profile and socio-economic benefits of the PWF and the public administration perspective of local communities in Pililla, Rizal. The descriptive aspect of the study aimed to describe the demographic characteristics of the respondents and assess their perceptions of the socio-economic and governance aspects related to the windmill establishment. Meanwhile, the correlational component sought to establish whether a significant relationship exists between the independent variables (demographic and socio-economic factors) and the dependent variable (public administration perspective).

This design was deemed appropriate because it allows the researcher to gather quantitative data from a large population and analyze relationships between variables without manipulating any condition. As emphasized by Creswell (2018), descriptive-correlational studies are effective for identifying patterns and associations in social science research, particularly in examining perceptions and governance-related factors within community settings.

2.2. Population and Sampling Technique

The respondents of the study were residents of Pililla, Rizal, particularly from the barangays directly affected by the PWF such as Barangay Halayhayin. These communities were selected due to their proximity to the windmill site and their exposure to both its socio-economic benefits and public administration perspective.

Table 1. Population and Sample of the Study

Name of Barangay	Population	Frequency
Halayhayin	9,210	383

Yamane's Formula with 5% margin of error

The respondents included male and female residents aged 18 years and above who have lived in the community for at least three years. This inclusion criterion ensured that participants had sufficient experience and familiarity with the socio-economic and governance impacts of the windmill project. The total number of respondents was determined based on statistical sampling computation, ensuring representation across sex, age, and occupation categories.

2.3. Sampling Technique

The study employed a stratified random sampling technique to ensure proportional representation of

different population segments in Pililla, Rizal. The population was stratified according to barangays and further categorized based on demographic factors such as age group, sex, and occupation. Random samples were then drawn from each stratum using simple random selection methods to minimize sampling bias.

The sample size was computed using Yamane's Formula, expressed as:

$$n = \frac{N}{1 + N(e)^2}$$

where:

n= sample size,

N= total population of residents in the identified barangays, and

e= margin of error (0.05 for 95% confidence level).

This sampling approach was appropriate as it ensured equitable representation from the different sectors of the local community, enhancing the generalizability of the findings.

While the computed sample size using the formula at a 5% margin of error required 383 respondents, the study was able to obtain responses from 266 participants. The shortfall in the number of respondents can be attributed to common field-related constraints such as limited availability of participants due to work and livelihood activities, reluctance to participate, and accessibility challenges in certain areas of Barangay Halayhayin. Time constraints, logistical limitations, and environmental conditions also affected the data collection process.

To account for this deviation, the actual margin of error was recalculated using the formula:

$$e = \sqrt{\frac{N - n}{nN}}$$

Given:

- $N = 9{,}210$
- $n = 266$

The computed margin of error is approximately 6.0%, which remains within an acceptable range for social science and community-based research.

According to John W. Creswell (2018), it is common in field studies to encounter nonresponse and logistical limitations, and researchers may proceed with smaller sample sizes provided that sampling rigor and representativeness are maintained. Similarly, Uma Sekaran et al. (2016) emphasize that the quality of sampling design, particularly the use of probability sampling techniques, is more critical than strictly achieving the computed sample size.

The use of stratified random sampling in this study ensured proportional representation across key demographic variables such as age, sex, and occupation. This approach minimizes bias and enhances the reliability and generalizability of findings. As noted by Louis Cohen, et al. (2018), representativeness and proper distribution of respondents across strata are essential in maintaining the validity of survey research even when sample sizes are reduced.

Moreover, recent methodological guidance suggests that sample sizes exceeding 200 respondents are generally adequate for quantitative analysis in social sciences, particularly when statistical assumptions are met. Alan Bryman (2016) highlights that practical research constraints often necessitate flexible sample sizes, and validity can still be upheld through sound methodological practices.

Given these considerations, the final sample size of 266 respondents remains sufficient to support the objectives of the study. The integrity of the research is preserved through the application of stratified random sampling and proportional allocation, ensuring that the findings are both credible and reflective of the target population despite the reduced number of respondents.

2.4. Research Instrument

The primary tool used in this study was a researcher-made survey questionnaire designed to gather

data relevant to the objectives of the study, "The Effect of Windmill Establishment on the Socio-Economic Status of Local Communities: A Public Administration Perspective." The instrument was structured into three main parts based on the conceptual framework. The first part focused on the demographic profile of the respondents, which included variables such as age, sex, educational attainment, occupation, and income level. This section aimed to describe the general characteristics of the respondents that could influence their perceptions of the socio-economic and administrative effects of PWF.

The second part of the questionnaire measured the socio-economic benefits of the PWF, specifically in terms of employment opportunities, income generation, tourism and local business development, and infrastructure and community services. Respondents were asked to indicate the extent to which they agreed with statements reflecting perceived socio-economic improvements brought about by the establishment of the windmill project.

The third part of the instrument focused on the Public Administration perspective, which included indicators such as policy framework, community welfare, effective governance, local policy implementation, and stakeholder engagement. This section aimed to assess how the respondents perceived the role and effectiveness of public administration in managing and sustaining the windmill project and its benefits to the local community.

All items in the second and third parts of the questionnaire were constructed using a five-point Likert scale, with response options ranging from 5 – Strongly Agree, 4 – Agree, 3 – Moderately Agree, 2 – Disagree, and 1 – Strongly Disagree. This scale allowed the researcher to quantify respondents' perceptions and attitudes toward the socio-economic and administrative effects of the windmill establishment.

Prior to the actual data gathering, the questionnaire underwent content validation by a panel of experts composed of professionals in public administration, economics, and social science research to ensure clarity, accuracy, and relevance of the items. The instrument was also pilot tested among 20 respondents from the host barangay in Pililla, Rizal, to assess its reliability. Using Cronbach's Alpha, the instrument yielded a coefficient above 0.80, indicating a high level of internal consistency. The final validated version of the questionnaire was then administered to the target respondents during the actual data collection phase.

2.5. Research Procedures

The conduct of this study followed a systematic procedure to ensure the reliability, validity, and ethical integrity of the research process. Initially, the researcher sought approval from the Dean of College of Business, Administration, and Accountancy (LSPU-CBAA) and will obtain permission from the concerned Local Government Unit (LGU) of Pililla, Rizal, of the selected communities situated near the PWF. These formal permissions ensured that the study complied with institutional and local requirements. After securing authorization, the researcher developed a researcher-made survey questionnaire based on the conceptual framework and the variables identified in the study, namely the demographic profile, socio-economic benefits, and public administration perspective. The instrument was subjected to content validation by a panel of three experts in the fields of public administration, economics, and social research to ensure that each item accurately represented the constructs being measured. A pilot testing then was conducted among 20 respondents from the host barangay to test the reliability of the questionnaire using Cronbach's Alpha, which yielded a coefficient above 0.80, indicating a high level of internal consistency.

After validation, the researcher proceeded with the data gathering phase. The distribution and retrieval of questionnaires was done personally, with the assistance of barangay officials, to ensure proper dissemination and collection. Each respondent was informed about the nature and objectives of the study, assured of the confidentiality of their responses, and was reminded that participation was voluntary. The data collection process was carried out within a two-week period to ensure completeness and timeliness. Once the accomplished questionnaires were retrieved, the researcher carefully checked and encoded the data for accuracy and completeness. The data was then processed and analyzed using appropriate statistical tools to determine the relationships between the socio-economic benefits derived from the windmill establishment and the public administration perspectives of the local communities.

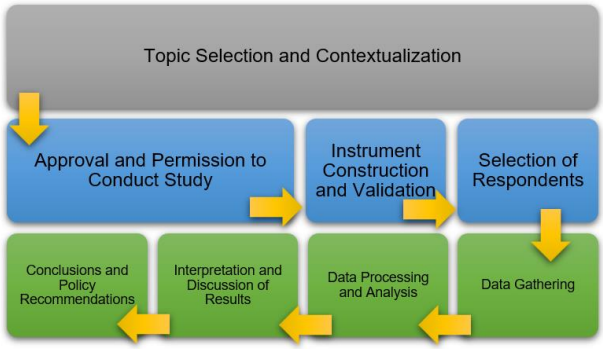

Figure 4. Research Procedures

Finally, the researcher interpreted and synthesized the results in alignment with the study's objectives and conceptual framework. Findings were compared with existing literature and studies to draw meaningful insights and implications for public administration and local governance. The entire research procedure was conducted with adherence to ethical research standards, ensuring respect for human participants, accuracy of data, and objectivity of interpretation.

2.6. Statistical Treatment of Data

The methodical process of arranging, evaluating, and interpreting gathered data using suitable statistical instruments and methods is known as statistical treatment of data.

The following statistical tools were used in treating the data collected.

Research Problem	***Statistical Tool used***
Quantitative Questions	
1. What is the demographic profile of the respondents in terms of: 1.1 age; 1.2 sex; 1.3 educational attainment; 1.4 occupation; 1.5 income level; 1.6 length of residency; and 1.7 distance from residence to Windmill Farm?	**Frequency and Percentage**
2. What is the extent of socio-economic benefits of the Pililla Windmill Farm as perceived by the respondents in terms of: 2.1 employment opportunities; 2.2 income generation; 2.3 tourism and local business development; and 2.4 infrastructure and community services?	**Weighted Mean and Standard Deviation**
3. What is the extent of the effect of the Pilillia Windmill Farm on the local communities with respect to Public Administration perspective in terms of: 3.1 community welfare; and 3.1.1 health; 3.1.2 livelihood; 3.1.3 education; 3.1.4 agricultural productivity; 3.2 stakeholder engagement:	**Weighted Mean and Standard Deviation**

3.2.1 environmental protection; and 3.2.2 CSR effectiveness?	
4. Is there a significant relationship between the respondents' demographic profile and their assessment of the Public Administration perspective?	**Correlation Coefficient (r) Significance Testing (p-value)**
5. Is there a significant relationship between the socio-economic benefits of the windmill farm and the Public Administration perspective?	**Correlation Coefficient (r) Significance Testing (p-value)**

For the Scoring and Interpretation Guide:

Rating Scale	**Interpretation**
4.46-5.00	Very High Implementation
3.91-4.45	High Implementation
3.36-3.90	Moderate Implementation
2.81-3.35	Low Implementation
<2.80	Very Low Implementation

To give interpretation to computed Pearson Product-Moment Correlation Coefficient (r), the following guide is adopted:

Rating Scale	**Interpretation**
± 0.91-1.00	Very High Positive/Negative Correlation
± 0.71-0.90	High Positive/Negative Correlation
± 0.41-0.70	Moderate Positive/Negative Correlation
± 0.21-0.40	Low Positive/Negative Correlation
± 0.01-0.20	Very Low Positive/Negative Correlation

To determine whether the correlation is statistically significant, the computed *r* value was compared with the critical r value from the Pearson correlation table at a 0.05 level of significance (two-tailed test).

- If computed r > critical r, reject the null hypothesis (there is a significant relationship).
- If computed r ≤ critical r, fail to reject the null hypothesis (no significant relationship).

3. Results and Discussion

This chapter presents, analyzes, and interprets the data gathered to determine the significant relationship between the perceived socio-economic benefits of the PWF and the public administration perspective of local communities in Pililla, Rizal.

3.1. Demographic Profile of the Respondents

An important basis for comprehending the context and interpretation of the findings of the study is provided by the demographic profile of the respondents. The distribution of participants by age, gender, income level, occupation, level of education, and years of residency is shown in this section. By looking at these factors, one can have a better understanding of the research population's features and spot any patterns or trends that might affect one's viewpoints, experiences, and reactions. Additionally, by examining demographic variables, the researcher can contextualize the findings, evaluate representativeness, and ascertain whether groups display unique behaviors or result pertinent to the goal of the study.

Table 2 shows the demographic profile of the 266 respondents, including age, gender, occupation, and level of education. These features are crucial for placing the study's conclusions in context because demographic factors frequently affect participation, attitudes, and access to socioeconomic opportunities.

Table 2. Demographic Profile of the Respondents in terms of Age, Gender, Educational Attainment and Occupation

Profile	Frequency	Percentage
Age		
18-25	35	13.20
26-35	47	17.70
36-45	60	22.60
46-55	45	16.90
56 and above	76	28.60
No response	3	1.10
Sex		
Female	138	51.90
Male	121	45.50
Prefer not to say	1	0.40
No Response	6	2.30
Educational Attainment		
Elementary Graduate	36	13.50
JHS Completer	13	4.90
HS Graduate	115	43.20
SHS Graduate	28	10.50
Vocational/Technical	32	12.00
College Level	32	12.00
College Graduate	5	1.90
Postgraduate	3	1.10
No Response	2	0.80
Occupation		
Farmer	43	16.20
Self-employed/Small Business	50	18.80
Private Employee	78	29.30
Government Employee	23	8.60
Student	19	7.10
Unemployed	35	13.20
Others	13	4.90
No Response	5	1.90
Total =	266	100

According to the findings, the majority of respondents are 56 years of age or older (28.60%), followed by those between the ages of 36 and 45 (22.60%). Younger demographics, such as those between the ages of 18 and 25 (13.20%) and 26 and 35 (17.70%), make up a smaller portion of the population.

This distribution implies that the respondent pool is comparatively older, suggesting that people with a wealth of life and professional experience have a significant influence on community attitudes. Particularly in rural or semi-rural areas, older people are frequently more involved in community-based activities and decision-making processes (United Nations Department of Economic and Social Affairs, 2019). Additionally, research has demonstrated that age affects involvement in local development and governance projects, with older people showing greater engagement because of their established social roles and duties (Checkoway, et al 2018).

The comparatively lower percentage of younger respondents, however, might point to possible gaps in youth participation, which is essential for maintaining long-term development initiatives.

Gender-wise, women (51.90%) slightly exceed men (45.50%), while a very tiny percentage chose not to reveal their gender.

With a little female majority, this nearly equal distribution shows inclusion in participation. The increased involvement of women is consistent with research showing that women are frequently more involved in social initiatives and community-based programs, especially in areas like livelihood, health, and education (Molyneux, et al. 2017). Additionally, because women play important roles in home and community decision-making, their participation is increasingly seen as being essential to achieve sustainable development objectives (UN Women, 2020).

The data indicates that gender viewpoints are well-represented in the study,
which enhances the validity of conclusions about socioeconomic development and community involvement.

High school graduates make up the majority of responders (43.20%), followed by those with primary education (13.50%), college education (12.00%), and vocational/technical training (12.00%). College graduates (1.90%) and postgraduates (1.10%) make up a very little portion.

This suggests that the respondents' overall educational attainment is moderate, with the majority having finished their basic education and comparatively few having pursued higher education. This pattern is in line with regional and national data from underdeveloped nations, where access to higher education is still restricted because of geographical and financial limitations (Philippine Statistics Authority, 2022).

One important factor influencing employment prospects, income levels, and involvement in politics is educational attainment. Higher educated people are more likely to contribute to economic productivity and innovation, claim Hanushek, et al. (2020). On the other hand, less education may make it more difficult to find steady work and lower knowledge of development initiatives.

The results suggest that in order to improve employability and community empowerment, education and skill development programs—especially those related to technical and vocational training—need to be strengthened.

According to the occupational distribution, private employees make up the largest group of respondents (29.30%), followed by farmers (16.20%) and self-employed or small company owners (18.80%). Students (7.10%), government
workers (8.60%), and unemployed people (13.20%) are further groupings.

This implies a broad economic basis that includes agriculture, informal enterprise, and official employment. The presence of farmers and independent contractors emphasizes the ongoing significance of agriculture and microenterprise in local livelihoods, while the sizeable percentage of private employees suggests some degree of integration into the formal sector.

The information is in line with research showing that peri-urban and rural communities frequently depend on a combination of formal and informal economic activity (World Bank, 2019). Additionally, the very high unemployment rate highlights continued difficulties with job creation and economic stability. The International Labour Organization (ILO, 2021) states that underemployment and unemployment continue to be major issues in emerging nations, impacting both quality of life and income security.

These results point to the necessity of focused livelihood initiatives, entrepreneurship assistance, and job creation tactics to strengthen the community's economic resilience.

The demographic profile of the respondents, including monthly income, period of residency, and distance from residence, is shown in Table 3. These factors are important for comprehending the respondents' socioeconomic circumstances, degree of community attachment, and availability of services and development initiatives.

With 38.00% earning less than ₱10,000 and 28.20% earning between ₱10,001 and ₱20,000, the data show that a significant majority of respondents are in the lower income groups. This indicates that only 2.60% of respondents make more than ₱40,000 per month, whereas over 66% of respondents make ₱20,000 or less.

Table 3. Demographic Profile of the Respondents in terms of Monthly Income, Length of Residency, and Distance from Residence

Profile	Frequency	Percentage
Monthly Income		
below 10,000	101	38.00
10,001 - 20,000	75	28.20
20,001 -30,000	38	14.30
30,001 - 40,000	25	9.40
Above 40,000	7	2.60
No Response	20	7.50
Length of Residency		
0-5 years	26	9.80
6-10 years	30	11.30
11-15 years	27	10.20
16-20 years	33	12.40
21 years and above	145	54.50
No Response	5	1.90

Distance from Residence		
within 1 km	74	27.80
1-5 km	71	26.70
6- 10 km	71	26.70
more than 10 km	40	15.00
No Response	10	3.80
Total =	266	100

According to this distribution, most respondents came from low-income households, which reflects their limited financial resources and possible susceptibility to economic shocks. This result is consistent with national data showing that a large percentage of people in rural and developing regions belong to lower income groups (Philippine Statistics Authority, 2021).

Access to healthcare, education, and employment possibilities is significantly influenced by one's income level. The World Bank (2020) states that households with lower incomes are more likely to face poverty-related limitations and have less access to basic services. Additionally, people with low incomes may put their urgent survival requirements ahead of civic involvement, which can have an impact on participation in community development activities (Asian Development Bank, 2019).

The results emphasize the necessity of inclusive economic interventions to improve the community's socioeconomic standing, such as livelihood initiatives, financial aid, and skill development.

The majority of respondents (54.50%) have resided in the area for 21 years or more, followed by those who have lived there for 16–20 years (12.40%). Just 9.80% of people have been in the neighborhood for 0–5 years.

This suggests that the majority of respondents have long-term acquaintance with the socioeconomic conditions, governing institutions, and development initiatives of the community, indicating a high degree of residential stability. Long-term residents are more likely to take part in local decision-making processes and are frequently more involved in community activities (Putnam, 2016).

Furthermore, research indicates that the duration of residency is positively correlated with social cohesion and a sense of community, both of which are critical components of effective program execution and policy adoption (Alesina, et al. 2018). Long-term inhabitants often have more in-depth local knowledge, which can
improve participatory planning and governance's efficacy.

Even though they are fewer in number, the presence of more recent
residents indicates the necessity of inclusive systems that guarantee their integration and involvement in community initiatives.

The respondents are split rather evenly in terms of distance, with 27.80% residing within 1 km and 26.70% in the 1–5 km and 6–10 km categories, respectively. In the meantime, 15% live more than ten kilometers away.

This distribution shows that while a sizable percentage of respondents reside close to the research area's center or focal point, a sizable amount are situated at moderate to greater distances. Distance has a significant impact on information sharing, program participation, and service access.

According to research, access to government services, healthcare, and education is greatly impacted by one's location to service hubs (Glaeser, 2020). People who live further away frequently experience transportation issues, higher expenses, and a decline in their involvement in community events. Geographical accessibility continues to be a major obstacle to inclusive development, especially in rural and geographically dispersed areas, according to the World Bank (2019).

The results suggest that while accessibility might be fairly manageable for people who live closer, specific tactics—like decentralized service delivery, mobile outreach initiatives, and better transportation infrastructure—are required to guarantee fair access for people who live further away.

Table 4 presents the computed mean responses on the extent of socio-economic benefits of the Pililla Windmill Farm in terms of employment opportunities as perceived by the respondents. The overall weighted mean of 4.18, interpreted as “High Implementation,” indicates that respondents generally perceive the windmill farm as having a highly positive impact on employment opportunities within the community. This

suggests that the project significantly contributes to local job generation and workforce development.

Table 4. Socio-Economic Benefits of the Pililla Windmill Farm in terms of Employment Opportunities

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes that the windmill farm has created new job opportunities for local residents.	4.50	0.88	Very High Implementation
2. believes that local workers were prioritized in hiring.	4.03	0.92	High Implementation
3. sees increased demand for skilled labor due to windmill operations.	3.87	1.06	Moderate Implementation
4. perceives that windmill-related jobs provide stable employment.	4.18	1.01	High Implementation
5. believes that training or capacity-building activities were provided by the windmill project.	4.33	1.00	High Implementation
Overall Mean	4.18		High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Among the specific indicators, the statement that the windmill farm has created new job opportunities for local residents obtained the highest mean of 4.50 (*SD* = 0.88), with a verbal interpretation of "Very High Implementation." This implies that job creation is the most evident and widely recognized benefit of the windmill project. Similarly, the provision of training or capacity-building activities was also highly rated, with a mean of 4.33 (*SD* = 1.00), indicating that respondents strongly acknowledge the project's role in enhancing the skills and competencies of the local workforce.

Furthermore, respondents agreed that windmill-related jobs provide stable employment (*M* = 4.18, *SD*=1.01) and that local workers were prioritized in hiring (*M* = 4.03, *SD* = 0.92). These findings suggest that beyond job creation, the project also contributes to employment security and inclusivity, particularly for community members. However, the statement regarding the increased demand for skilled labor due to windmill operations received the lowest mean of 3.87 (*SD* = 1.06), although still interpreted as "Moderate Implementation." This may indicate that while there is recognition of increased labor demand, the perception of opportunities for highly skilled positions is relatively less pronounced compared to other employment benefits.

The impact of renewable energy projects, especially wind farms, to local employment and economic growth is well known. The International Renewable Energy Agency (2022) claims that the renewable energy industry has grown to be a significant global employer, employing millions of people in a variety of roles, including construction, operation, and maintenance. In the local communities where such projects are constructed, wind energy in particular creates both direct and indirect employment prospects.

In a similar vein, according to the Global Wind Energy Council (2021), wind power projects generate jobs in long-term operations and maintenance as well as during the construction period. These positions, which enable long-term employment in host communities, frequently involve technical, administrative, and support functions. This corroborates the conclusion that respondents firmly believe windmill farms create additional employment prospects.

Renewable energy initiatives provide capacity building and skill development in addition to creating jobs. The International Labour Organization (2018) states that workforce upskilling is necessary for the shift to green energy, which calls for training programs and measures to improve local workers' skills. These programs increase employability and allow communities to have a more active role in developing industries. This is consistent with the study's high evaluation of training and capacity-building initiatives.

Furthermore, research indicates that renewable energy initiatives might offer comparatively steady and long-term jobs. According to the World Bank (2020), ongoing operational requirements of energy infrastructure projects, such as wind farms, contribute to job stability. It also points out that many of these positions would call for specialized technological abilities, which could prevent some local workers from applying if they lack the necessary training.

Overall, the findings demonstrate that the Pililla Windmill Farm is perceived to have a substantial

and positive influence on employment opportunities in the area. The project not only generates jobs but also supports workforce development and provides relatively stable employment, thereby contributing to the socio-economic advancement of the local community.

Table 5 indicate that respondents generally perceive the Pililla Windmill Farm as providing a high level of socio-economic benefits in terms of income generation, as reflected by the overall weighted mean of 3.96 ("High Implementation").

Among the specific indicators, the highest-rated benefit is the increase in local income through windmill-related business ventures (M = 4.14, SD = 1.01), suggesting that tourism-driven economic activities have had the most visible impact on the community. This is followed by the perceived boost in economic circulation (M = 4.00, SD = 1.00) and improved accessibility to income opportunities (M = 3.96, SD = 0.97), indicating that the project contributes to both direct and indirect financial gains for residents. Meanwhile, slightly lower yet still positive ratings on increased household income (M = 3.91, SD = 1.05) and the emergence of additional livelihood activities (M = 3.82, SD = 1.00) imply that while benefits are evident, they may not be uniformly experienced across all households.

Table 5. Socio-Economic Benefits of the Pililla Windmill Farm in terms of Income Generation

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. considers that household income increased due to windmill establishment.	3.91	1.05	High Implementation
2. believes that more livelihood activities emerged in the community.	3.82	1.00	Moderate Implementation
3. observes that business ventures related to windmill tourism increased local income.	4.14	1.01	High Implementation
4. thinks that the windmill project boosted economic circulation within the community.	4.00	1.00	High Implementation
5. believes that income opportunities became more accessible for residents.	3.96	0.97	High Implementation
Overall Mean	3.96		High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Research indicates that tourism can boost household income, however the advantages are not necessarily shared equally. According to an ecotourism study of PMC, although tourism greatly boosts employment and local income, structural constraints including a lack of capital, infrastructure, and skills may prohibit families from sharing the benefits equally. This confirms the study's conclusion that although income increases are noticeable, they might not be felt consistently.

Tourism promotes the growth of a variety of livelihood activities, including local product sales, transportation services, and small companies. According to research on nature-based tourism, visitor spending supports local enterprises and generates both direct and indirect economic benefits, including the creation of new livelihood opportunities. However, the degree of community involvement and the resources at hand frequently determine the scope of these opportunities.

Overall, the body of research demonstrates that tourism-related initiatives, such as windmill farms, greatly enhance local income growth, economic circulation, and livelihood diversification. However, the distribution of these advantages could differ based on things like participation levels, talents, and resource availability. The study's conclusion that the Pililla Windmill Farm increases economic opportunities while emphasizing the need for inclusive and sustainable development strategies is substantially supported by these data.

Table 6 reveal that respondents perceive the Pililla Windmill Farm as contributing to a high extent of socio-economic benefits in terms of tourism and local business development**,** as indicated by the overall weighted mean of 4.18 ("High Implementation"). Notably, the strongest perceived impact lies in the improvement of sales among existing local stores and vendors (M = 4.45, SD = 0.91, "High Implementation"), followed closely by the increase in tourist arrivals (M = 4.44, SD = 0.87, "High Implementation"), suggesting that the windmill farm has effectively stimulated local commerce through heightened visitor activity.

Table 6. Socio-Economic Benefits of the Pililla Windmill Farm in terms of Tourism and Local Business Development

Indicator	M	SD	Interpretation
The respondent…			
1. sees an increase in the number of tourists visiting the area.	4.44	0.87	High Implementation
2. believes that new local businesses were established due to tourism activities.	4.07	0.98	High Implementation
3. observes improved sales among existing local stores and vendors.	4.45	0.91	High Implementation
4. considers that tourism created opportunities for cultural promotion.	4.06	0.94	High Implementation
5. believes that tourism-driven development improved the economic reputation of Pililla.	3.86	1.09	Moderate Implementation
Overall Mean	4.18		High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Furthermore, respondents agree that tourism has facilitated the establishment of new local businesses (M = 4.07, SD = 0.98) and created opportunities for cultural promotion (M = 4.06, SD = 0.94), indicating that the site not only boosts economic activity but also enhances the community's cultural visibility. However, the relatively lower mean for improved economic reputation (M = 3.86, SD = 1.09), while still within the "Moderate Implementation" range, suggests that broader recognition of Pililla as a tourism-driven economic hub may still be developing.

It is well known that tourism-driven development initiatives, such wind farms that serve as tourist attractions, improve local company performance and economic activity. One of the most obvious effects of tourism infrastructure is an increase in visitor arrivals. According to the World Travel and Tourism Council (2020), an increase in tourists results in more money being spent locally. This tourist inflow promotes the viability of local businesses and makes a substantial contribution to community income, which is consistent with the high ratings for increasing tourist arrivals found in the study.

However, while tourism can enhance economic activity, the development of a strong economic reputation or destination branding often takes time. According to Philip Kotler et al. (2017), place branding and reputation building require sustained marketing efforts, infrastructure development, and consistent tourist satisfaction over time. This explains why the perception of improved economic reputation received a relatively lower rating compared to more immediate impacts such as sales and tourist arrivals.

On top of that, study by Richard Sharpley (2014) highlights that although tourism can have short-term economic benefits, sustainable practices, community involvement, and strategic planning are necessary for its long-term viability. Without these, tourism may not reach its full potential as a catalyst for long-term prosperity and economic reputation.

Overall, the data imply that the windmill farm serves as a significant driver of local economic vitality, particularly by increasing tourist influx and strengthening the performance of small businesses, although its full impact on long-term economic branding and reputation may require further time and development.

The table 7 indicate that respondents perceive the Pililla Windmill Farm as providing a moderate level of socio-economic benefits in terms of infrastructure and community services, as reflected by the overall weighted mean of 3.88 ("Moderate Implementation").

Table 7. Socio-Economic Benefits of the Pililla Windmill Farm in terms of Infrastructure and Community Services

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes improvements in roads leading to windmill sites.	4.21	1.03	High Implementation
2. believes that public facilities (e.g., waiting sheds,	3.86	0.93	Moderate Implementation

	signage, viewing decks) improved because of the project.			
3.	sees that government services became more accessible in their community.	3.74	1.01	Moderate Implementation
4.	considers that electricity and communication networks improved after the windmill construction.	3.76	1.13	Moderate Implementation
5.	believes that the project attracted additional development programs to their barangay.	3.84	1.02	Moderate Implementation
	Overall Mean	3.88		Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Among the indicators, improvements in roads leading to the windmill sites (M = 4.21, SD = 1.03) received the highest rating, suggesting that the project has had a clear and tangible impact on local accessibility and transportation. This is followed by the perception that the project attracted additional development programs to the barangay (M = 3.86, SD = 0.93) and improved public facilities such as waiting sheds, signage, and viewing decks (M = 3.84, SD = 1.02), indicating visible enhancements in community amenities.

Meanwhile, slightly lower ratings were observed in the areas of electricity and communication networks (M = 3.76, SD = 1.13) and accessibility of government services (M = 3.74, SD = 1.01), implying that while improvements are recognized, they may not be as strongly felt or consistently experienced by all residents.

The World Bank (2020) states that road upgrades and other infrastructure investments promote community accessibility, mobility, and economic integration. The conclusion that road development obtained the highest ranking among the indicators is consistent with the fact that improved road networks help daily commuting, local businesses, and tourism.

In the same way, the Asian Development Bank (2017) highlights that infrastructure projects frequently result in multiplier effects, whereby initial expenditures draw in other development initiatives, such as community facilities, utilities, and public services. This validates the respondents' belief that the windmill project has inspired more barangay development projects.

Community amenities are recognized to be improved by tourism-related initiatives. The United Nations World Tourism Organization (2019) states that support facilities like viewing decks, signage, and waiting areas are often built as part of tourism infrastructure projects, which enhance both the quality of life for locals and visitors. By offering better public areas and services, these upgrades frequently help locals.

However, advancements in utilities like power and communication networks could not necessarily be felt right away or equally. According to the International Energy Agency (2021), grid connectivity, legislative frameworks, and infrastructure integration determine how directly energy projects affect local electricity access, even though they contribute to overall energy development. This could account for the somewhat muted view of advancements in communication and electrical services.

Overall, the findings suggest that the windmill farm contributes positively to infrastructural development and community services, particularly in road improvement and local facilities, although further efforts may be needed to strengthen its impact on essential services and broader public service accessibility.

The respondents' perceptions of the Pililla Windmill Farm's overall socioeconomic benefits are shown in Table 8. The overall weighted mean of 4.05 (SD = 0.96) shows a high degree of implementation, indicating that the windmill project generally improves the community's socioeconomic circumstances.

The two factors with the highest mean score (4.18), which is considered high implementation, were Employment Opportunities and Tourism and Local Business Development. This suggests that the windmill farm has greatly boosted local tourism-related economic activity and created jobs. These results are in line with the study conducted by Søren K. Madsen et al. (2019), which discovered that wind energy projects can create jobs locally both during the construction and operation stages and also promote tourism because of its aesthetic and environmental appeal. Similarly, David B. Hall (2020) noted that renewable energy installations frequently work as neighborhood draws that support small enterprises including the food service,

transportation, and souvenir industries.

Table 8. Composite Table on Extent of Socio-economic Benefits of the Pililla Windmill Farm

Indicators	*M*	Interpretation
1. Employment Opportunities	4.18	High Implementation
2. Income Generation	3.96	High Implementation
3. Tourism and Local Business Development	4.18	High Implementation
4. Infrastructure and Community Services	3.89	Moderate Implementation
Overall Mean	4.05	High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

However, Infrastructure and Community Services (Mean = 3.96) and Income Generation (Mean = 3.89) received ratings of moderate implementation. This implies that even while there are economic activity and infrastructure upgrades, not all facets of the community may completely profit from them. This result is consistent with Benjamin K. Sovacool's (2021) observation that while renewable energy projects boost local economies, the financial gains may be distributed unevenly, frequently based on community involvement and governance arrangements. Additionally, Harald Heffron (2020) noted that policy backing and local government ability have an impact on the infrastructural benefits of energy projects, which may take longer to materialize.

There is some variation in respondents' opinions, as evidenced by the comparatively greater standard deviations across indicators (range from 0.73 to 0.81, with an average SD of 0.96), indicating that not every member of the community experiences these benefits equally. Differences in occupation, socioeconomic position, and distance from the windmill site could all have an impact on this variation.

Overall, the results suggest that the Pililla Windmill Farm has produced a generally high degree of socioeconomic benefit, especially in terms of employment and the growth of tourism. To guarantee more inclusive and long-lasting community benefits, activities pertaining to infrastructure development and revenue distribution still need to be strengthened. Mark Diesendorf (2019) highlights that in order to maximize the socio-economic benefits of renewable energy projects, intentional policy interventions and inclusive planning processes are necessary to guarantee that benefits are distributed fairly among local stakeholders.

Table 9 indicates that the respondents generally "Moderate Implementation" that the windmill project has positively influenced community welfare in terms of health, as evidenced by an overall weighted mean of 3.70.

The highest-rated indicator is the observation of improved access to basic health services due to the windmill project (*M* = 4.09, *SD* = 1.14). The lowest-ranked indicator, though still within the "Moderate Implementation" range, is the conduct of information campaigns on health and sanitation (*M* = 3.47, *SD* = 1.04). This suggests a potential area for improvement; while services and policies are present, the educational aspect of public health administration requires more intensive focus to match the success of service delivery. This suggests that the infrastructure project may have provided the necessary economic or logistical impetus such as increased local revenue or improved road access to bring health services closer to the residents. Respondents also agreed that there was an increase in medical missions and an overall improvement in health conditions (While these scores remain positive, they are slightly lower than the direct access to services, suggesting that while the "reach" of health care has improved, the "frequency" of specific missions or the "visibility" of health changes is still in a developmental phase.

Table 9. Public Administration Perspective of Community Welfare in terms of Health

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes improvements on the access to basic health services because of the windmill project.	4.09	1.14	Moderate Implementation
2. believes that health centers or medical missions increased in the community.	3.66	0.98	Moderate Implementation
3. considers that information campaigns on health and sanitation were conducted.	3.47	1.04	Moderate Implementation

4.	sees that more policies supporting community health were implemented by the local government.	3.68	1.12	Moderate Implementation
5.	believes that overall health conditions in the community have improved since the windmill establishment.	3.61	1.21	Moderate Implementation
	Overall Mean	3.70		Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

In the Philippines, energy and infrastructure initiatives are frequently associated with increased access to health services, especially in rural areas. The Department of Health Philippines claims that by facilitating medical outreach programs and making health institutions more accessible, better road networks and local economic growth increase the provision of essential health services. In a similar vein, the Philippine Institute for Development Studies emphasizes how infrastructure development improves health outcomes by shortening clinic travel times and boosting the effectiveness of health care delivery.

However, PIDS also notes that health education and information dissemination such as sanitation campaigns and preventive care awareness, often lag behind infrastructure improvements due to limited local government resources and coordination. This supports the finding that health campaigns received lower ratings compared to service accessibility.

Furthermore, studies on local governance in the Philippines emphasize that medical missions and outreach programs are often dependent on partnerships between local government units (LGUs), NGOs, and private stakeholders. While these initiatives improve health conditions, their frequency and consistency may vary across communities.

The findings show that the public administration perspective suggests that the windmill project serves as a catalyst for health welfare. The data implies that the project's presence is not merely industrial but has integrated into the social fabric by facilitating better access to healthcare and encouraging local government units to strengthen health-related policy frameworks.

Table 10 presents the computed mean scores reflecting the public administration perspective on community welfare, specifically focusing on Livelihood.

The highest-ranking indicator in this category is the provision of skills training initiatives by stakeholders, garnering a mean of 4.18. This suggests that the impact of the windmill farm extends beyond mere aesthetics or energy production; it has served as a catalyst for human capital development. The community recognizes the active role of stakeholders in equipping residents with the necessary technical or vocational skills to adapt to new economic opportunities. Closely following this is the observation that livelihood assistance programs have become more available with a mean of 4.04.

Table 10. Public Administration Perspective of Community Welfare in terms of Livelihood

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes that livelihood assistance programs became more available in the locality.	4.04	0.96	High Implementation
2. believes that entrepreneurship opportunities increased because of the windmill tourism.	3.98	0.96	High Implementation
3. considers that skills training initiatives for livelihood were provided by stakeholders.	4.18	1.09	High Implementation
4. sees that the windmill project encouraged residents to start income-generating activities.	3.89	1.00	Moderate Implementation
5. believes that livelihood stability in the community has generally improved.	3.70	1.04	Moderate Implementation
Overall Mean	3.96		High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

This implies that public administration and private partners have successfully integrated social

responsibility programs that provide tangible support to the local workforce. The data further highlights the intersection of renewable energy and the service sector. Respondents agreed that windmill tourism increased entrepreneurship opportunities (M = 3.98, SD = 0.96) and encouraged income-generating activities (M = 3.89, SD = 1.00). This indicates a "multiplier effect" where the physical infrastructure of the windmill farm serves as a primary tourist attraction, subsequently fueling secondary businesses such as food stalls, souvenir shops, and local transport services. While still receiving an interpretation of "High Implementation," the statement regarding general improvement in livelihood stability received the lowest mean score in this set (M = 3.70, SD = 1.14).

Renewable energy and tourism projects in the Philippines have been proved to considerably improve livelihoods and skills. The Department of Energy Philippines claims that investments in renewable energy generate chances for local employment, training initiatives, and business growth, especially in host communities. Furthermore, according to the Department of Trade and Industry Philippines, tourism-driven regions promote microenterprise expansion and entrepreneurship, particularly in industries like food services, retail, and transportation.

According to research by the Philippine Statistics Authority, livelihood programs and skill development greatly increase locals' employability and ability to generate revenue, especially in rural areas. Additionally, PIDS study clarifies the multiplier effect of tourism, which occurs when a single attraction creates numerous secondary economic activities, such as jobs in the unorganized sector and small companies. However, it also highlights that seasonal demand and inadequate money may make livelihood stability unpredictable, which is why stability was rated lowest in the results.

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The data reveals an overall weighted mean of 3.98, which carries a verbal interpretation of "High Implementation." This indicates that, generally, the respondents perceive a positive shift in the economic landscape of the locality due to the presence of the windmill project.

Table 11. Public Administration Perspective of Community Welfare in terms of Education

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes that educational assistance or scholarship programs increased after the windmill establishment.	3.82	1.09	Moderate Implementation
2. believes that school supplies or learning materials were provided by stakeholders.	3.73	1.02	Moderate Implementation
3. considers that educational outreach activities (seminars, training, tutorials) have been implemented.	3.68	1.01	Moderate Implementation
4. sees that learning facilities or classrooms improved due to community support programs.	3.76	1.02	Moderate Implementation
5. believes that educational opportunities for children and youth have expanded.	3.71	1.05	Moderate Implementation
Overall Mean	3.74		Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Table 11 illustrates the computed mean scores for the Public Administration Perspective of Community Welfare in terms of Education. Educational assistance or scholarship programs increased after the windmill establishment garnered the highest mean of 3.82 (SD = 1.09). Improvements in learning facilities and classrooms followed closely with a mean of 3.76 (SD = 1.02). This indicates that the community perceives a physical upgrade in the learning environment, likely funded or supported by the windmill stakeholders. The provision of school supplies and learning materials (M = 3.73, SD = 1.02). While still

positive, the indicators related to specific outreach activities and broad opportunity expansion ranked slightly lower. The belief that educational opportunities for children and youth have expanded received a mean of 3.71 (*SD* = 1.05). The implementation of educational outreach activities such as seminars and tutorials received the lowest mean in this
set at 3.68 (*SD* = 1.01).

In the Philippines, educational support programs are frequently included in infrastructure and corporate social responsibility (CSR) efforts. The Department of Education Philippines claims that collaborations with private businesses and development initiatives help to provide classroom upgrades, educational supplies, and scholarships. In a similar manner, the Commission on Higher Education Philippines highlights that educational aid and scholarship programs are essential tactics for expanding educational opportunities, especially in underprivileged areas.

The results indicate that the Pililla Windmill Farm has played a constructive
role in the community's educational welfare. The results imply that the project's presence has successfully bolstered the "hard" assets of education scholarships and facilities which are crucial for long-term community development. However, the slightly lower rankings for outreach programs suggest an area for future growth in stakeholder-community engagement.

Table 12 presents the computed mean scores evaluating the impact of the Pililla Windmill Farm on community welfare through the lens of Agricultural Productivity.

Table 12. Public Administration Perspective of Community Welfare in terms of Agricultural Productivity

Indicator	M	SD	Interpretation
The respondent…			
1. observes that farming support services increased (seed distribution, financing, equipment lending).	4.05	1.16	High Implementation
2. believes that irrigation systems or water access improved in agricultural areas.	3.52	1.10	Moderate Implementation
3. considers that agricultural training and technical assistance were provided by government or private partners.	3.48	1.04	Moderate Implementation
4. sees that farmers gained opportunities to market their products to tourists.	3.68	1.10	Moderate Implementation
5. believes that agricultural productivity in the community improved after the windmill development.	3.76	1.10	Moderate Implementation
Overall Mean	3.73		Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

The observation that farming support services (such as seed distribution, financing, and equipment lending) increased garnered the highest mean of 4.05 (*SD* = 1.16). This indicates that the windmill project likely facilitated better coordination between public administrators and the farming sector or directly funded agricultural subsidy programs as part of its community development plan. Respondents also agreed that the project created new marketing opportunities for farmers to sell to tourists (*M* = 3.68, *SD* = 1.10).

This highlights a successful integration of "Agri-Tourism," where the windmill farm acts as a primary attraction that draws consumers directly to the local farmers, reducing the need for traditional middlemen. While the community generally agrees that agricultural productivity has improved (*M* = 3.76, *SD* = 1.10) following the development, the technical and structural components of farming received the lowest scores such as the improvements in irrigation systems or water access received a mean of 3.52 (*SD* = 1.10). Provision of agricultural training and technical assistance received the lowest mean in this category at 3.48 (*SD* = 1.04).

It has been demonstrated that infrastructure and development initiatives in the Philippines boost agricultural productivity through market connections and government-assisted services. Programs including

seed distribution, agricultural mechanization, and finance assistance are important ways to increase farm productivity and farmer income, according to the Department of Agriculture Philippines. These services are frequently improved through collaborations with local government units (LGUs) and private stakeholders, which is consistent with the observation that the community's farming support services have grown

Also, the idea of agri-tourism has become popular in the Philippines as a way to increase farmers' earnings. The Department of Tourism Philippines claims that agri-tourism combines tourism and agriculture, enabling farmers to sell goods directly to tourists and lessen their dependency on middlemen. According to the Philippine Institute for Development Studies, tourism-related developments can boost rural income and economic resilience by generating new markets for agricultural products. It also points out that finance and coordination issues frequently cause advancements in irrigation systems and technical training to lag behind, which explains the lower ratings for these metrics.

Overall the Pililla Windmill Farm is perceived as a beneficial force for local agriculture, particularly through the provision of essential farming inputs and the opening of new tourist-driven markets. However, the data implies a need for public administration to pivot more attention toward technical training and irrigation infrastructure to ensure that the initial productivity gains are sustainable in the long run.

Table 13. Composite Table on Extent of Public Administration Perspective of Community Welfare

	Indicator	*M*	Interpretation
1.	Health	3.70	Moderate Implementation
2.	Livelihood	3.96	High Implementation
3.	Education	3.73	Moderate Implementation
4.	Agricultural Productivity	3.73	Moderate Implementation
	Overall Mean	3.78	Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

The results shown in Table 13 show that the public administration perspective on community welfare is implemented to a moderate degree generally (M = 3.78). This implies that although there are clear government initiatives in a number of important areas, their implementation, effectiveness, and influence have not yet reached their full potential. From a governance perspective, initiatives that are in place but may be limited by problems like scarce resources, poor interagency collaboration, or weaknesses in monitoring and evaluation
mechanisms are considered to be partially effective.

Livelihood (M = 3.96) showed the highest level of implementation among the metrics, suggesting that economic and income-generating programs are provided more successfully than those in other sectors. Bandahan et al. (2024), who discovered that livelihood interventions greatly increase beneficiaries' income, access to essential services, and general well-being, corroborate this conclusion. The study highlighted that because these programs yield quantifiable and rapid results, they are prioritized by policymakers and frequently receive higher institutional backing. This explains why, in contrast to more complicated social services, livelihood programs typically achieve higher adoption levels.

Health (M = 3.70) and education (M = 3.73), on the other hand, were both assessed as moderately implemented, suggesting that although services are provided, issues with sustainability, quality, and accessibility still exist. This result is consistent with the World Bank's (2018) finding that many developing nations still face inefficiencies in service delivery and unequal access despite greater investments in health and education. These restrictions diminish the overall efficacy of initiatives meant to enhance human capital. Similarly, Brinkerhoff and Bossert (2018) stressed that inadequate governance structures might impair the effectiveness of health systems, especially when it comes to accountability and coordination processes. These revelations corroborate the current study's conclusion that, despite their existence, health and education services need more systemic changes and administrative assistance in order to reach greater implementation levels.

The agricultural productivity indicator (M = 3.73) is likewise classified as having moderate implementation, indicating that while agricultural initiatives are being implemented, they are not entirely successful in increasing productivity and promoting rural development. This outcome is in line with the

findings of Singh et al. (2024), who emphasized the vital role that agriculture plays in reducing poverty, creating jobs, and ensuring food security while also pointing out that structural issues like restricted access to technology, poor infrastructure, and environmental vulnerabilities still limit productivity. Ituriaga et al. (2024) went on to say that while government support services for farmers are available in the Philippine context, their overall impact is limited by problems with service quality, responsiveness, and long-term sustainability. The moderate level of implementation found in this study is a result of these difficulties.

Furthermore, greater problems in public administration are reflected in the disparity in implementation levels among sectors. The OECD (2020) states that variations in governance capability, policy coherence, and resource allocation are frequently connected to discrepancies in service delivery outcomes. Sectors that require complex, long-term investments, like health, education, and agriculture, typically fare worse than those that receive more funding, clearer policy direction, and greater institutional backing, like livelihood.

Overall, the results point to an imbalance in the execution of community welfare since public administration initiatives are more successful in economic interventions than in social and agricultural services. The integration of related studies reveals that whereas livelihood initiatives are successful because of their immediate and palpable advantages, systemic and structural issues restrict their efficacy in industries like agriculture, health, and education. Therefore, a more integrated, multi-sectoral strategy, improved governance structures, and ongoing investments to guarantee that all sectors are equally prioritized and successfully executed are necessary to achieve a greater degree of community welfare.

Table 14 displays the computed mean scores regarding Stakeholder Engagement in terms of Environmental Protection. The data yields an Overall Weighted Mean of 3.91, interpreted as "High Implementation." This indicates a strong consensus that the Pililla Windmill Farm has acted as a catalyst for environmental stewardship and conservation efforts within the host community.

The belief that tree planting or reforestation programs were conducted by windmill stakeholders received the highest mean of 4.19 (*SD* = 1.05). This suggests that the stakeholders have successfully implemented "green" offset policies, addressing the ecological footprint of the construction phase with visible, community-based environmental projects. General environmental protection programs introduced in the community garnered a mean of 3.99 (*SD* = 1.08). Respondents agree that educational campaigns have increased awareness of environmental conservation (*M* = 3.84, *SD* = 0.90). The responsiveness of government agencies and windmill companies to environmental concerns received a mean of 3.76 (*SD* = 0.98). The observation that waste management practices improved near the windmill site received the lowest mean in this category 3.76 (*SD* = 0.98).

Here, in the Philippines, environmental stewardship is essential to development initiatives, especially those that use renewable energy. As part of their compliance obligations, businesses are required by the Department of Environment and Natural Resources to adopt environmental protection activities, such as waste management, reforestation, and environmental education. Among the most well-known environmental initiatives are reforestation and tree planting campaigns. Community-based forest management and tree-growing initiatives are popular methods to reduce environmental effects and advance sustainability, according to DENR. This corroborates the conclusion that, among environmental indicators, tree-planting initiatives were rated highest.

Table 14. Public Administration Perspective of Public Administration Perspective Stakeholder Engagement in terms of Environmental Protection

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. believes that environmental protection programs were introduced in the community.	3.99	1.08	High Implementation
2. observes that waste management practices improved near the windmill site.	3.76	1.04	Moderate Implementation
3. considers that tree planting or reforestation programs were conducted by windmill stakeholders.	4.19	1.05	High Implementation

4.	sees that residents are more aware of environmental conservation due to educational campaigns.	3.84	0.90	Moderate Implementation
5.	believes that government agencies and windmill companies respond to environmental concerns in the locality.	3.76	0.98	Moderate Implementation
	Overall Mean	3.91		High Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Based on the results, stakeholder engagement in environmental protection is highly regarded by the community, particularly through tangible reforestation efforts and educational outreach. The data confirms that the Pililla Windmill Farm is perceived not just as an industrial energy site, but as a proactive partner in local conservation.

Table 15 illustrates the computed mean scores for Stakeholder Engagement, specifically evaluating the Effectiveness of Corporate Social Responsibility (CSR) programs.

Table 15. Public Administration Perspective of Public Administration Perspective Stakeholder Engagement in terms of CSR Effectiveness

Indicator	*M*	*SD*	Interpretation
The respondent…			
1. observes that the windmill company regularly implements CSR programs for the community.	4.01	0.96	High Implementation
2. believes that CSR projects meet the needs of residents.	3.76	0.97	Moderate Implementation
3. considers that CSR activities are planned in coordination with local leaders.	3.75	0.97	Moderate Implementation
4. sees that CSR support is fairly distributed among different sectors (youth, elderly, farmers, students, etc.).	3.82	1.04	Moderate Implementation
5. believes that CSR implementation resulted in long-term positive community outcomes.	3.94	1.02	High Implementation
Overall Mean	3.86		Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

The belief that tree planting or reforestation programs were conducted by windmill stakeholders received the highest mean of 4.01 (*SD* = 0.96). This suggests that the stakeholders have successfully implemented "green" offset policies, addressing the ecological footprint of the construction phase with visible, community-based environmental projects. General environmental protection programs introduced in the community garnered a mean of 3.94 (*SD* = 1.02). Respondents agree that educational campaigns have increased awareness of environmental conservation (*M* = 3.82, *SD* = 1.04). The responsiveness of government agencies and windmill companies to environmental concerns received a mean of 3.76 (*SD* = 0.97). The observation that waste management practices improved near the windmill site received the lowest mean in this category 3.75 (*SD* = 0.97).

Corporate Social Responsibility (CSR) is widely practiced in the Philippines, particularly among companies involved in large-scale infrastructure and energy projects. According to the Securities and Exchange Commission Philippines, CSR programs are increasingly institutionalized as part of corporate governance, focusing on community development, education, health, and environmental sustainability.

As part of their social responsibility obligations, renewable energy companies are urged to establish livelihood and community development initiatives, according to the Department of Energy Philippines. These programs, which support long-term community welfare, frequently involve livelihood aid, scholarships, and skill development.

Meanwhile, PIDS research shows that long-term impact, consistency, and inclusivity are characteristics of successful CSR initiatives in the Philippines. It also highlights the ongoing difficulties with participatory planning and stakeholder coordination, especially when it comes to making sure that local people are actively participating in decision-making processes.

The findings outline the CSR effectiveness of the Pililla Windmill Farm is highly rated by the community, particularly in terms of consistency and long-term value. The results suggest that while the programs are effective and widely distributed, there is an opportunity for public administrators and company stakeholders to enhance their coordinative mechanisms.

The composite assessment of the level of public administration in connection to the success of Stakeholder Engagement programs related to the Pililla Windmill Farm is shown in Table 16. The overall weighted mean of 3.89 denotes an acceptable level of implementation, indicating that although stakeholder management initiatives exist and are operational, their overall efficacy and influence have not yet reached their full potential.

Table 16. Composite Table on Extent of Public Administration Perspective of Stakeholder Engagement

	Indicators	*M*	Interpretation
1.	Environmental Protection	3.91	High Implementation
2.	CSR Effectiveness	3.86	Moderate Implementation
	Overall Mean	3.89	Moderate Implementation

Legend: n=266. This means is interpreted as follows: 4.46-5.00 (Very High Implementation); 3.91-4.45 (High implementation); 3.36-3.90 (Moderate Implementation); 2.81-3.35 (Low Implementation); <2.80 (Very Low Implementation)

Environmental Protection received a mean score of 3.91 among the indicators, which is moderate to high implementation. This implies that environmental initiatives like conservation efforts, adherence to environmental legislation, and sustainability programs, are being carried out, but they need to be strengthened further in terms of community engagement, consistency, and monitoring. Wayne Visser (2019), who highlighted that many CSR programs only achieve middling success when they are compliance-driven rather than strategically incorporated into fundamental organizational and governance structures, supports this conclusion.

Similarly, CSR Effectiveness recorded a mean of 3.86, which is likewise considered to be moderate implementation. This suggests that although CSR initiatives are in place, their ability to meet community needs and produce long-term advantages may be restricted. This is consistent with the findings of Andrew Crane and Dirk Matten (2021), who observed that gaps in stakeholder participation, openness, and alignment with local development aspirations frequently limit CSR effectiveness.

Although evident, CSR initiatives may not yet be fully institutionalized into a robust public administration and governance framework, according to the continuous moderate ratings across both metrics. In addition to business dedication, effective CSR necessitates active cooperation with communities and local government entities. According to Jeremy Moon (2020), public administration plays a crucial role in ensuring that CSR activities are implemented in a participatory and responsible manner and are in line with public welfare aims.

Furthermore, the results suggest that monitoring and evaluation systems, which are crucial for determining the true impact of CSR initiatives, may have flaws. Thomas Maak (2016) asserts that an organization's ability to monitor results beyond compliance indicators and incorporate social responsibility into governance processes is a major factor in the effectiveness of CSR.

The relationship between the respondents' opinions of public administration in terms of community welfare (health, livelihood, education, agricultural productivity) and stakeholder involvement (environmental protection and CSR effectiveness) is shown in the table. Pearson correlation was used in the study, and the significance thresholds were set at 0.05 and 0.01.

The findings suggest that only a small number of demographic characteristics have statistically significant connections with the indicators, with the majority having weak correlations. This implies that, although there are some differences, opinions about the efficacy of CSR and public administration are widely held by various demographic groups.

Age showed no significant relationship with any of the indicators ($p > 0.05$), suggesting that opinions about stakeholder engagement and community wellbeing do not differ significantly between age groups. This suggests that opinions and experiences regarding public administration projects are largely constant across age groups. John W. Creswell (2018), who pointed out that demographic factors like age do not often significantly affect perception-based responses, particularly in community-wide research, supports this conclusion.

Conversely, there were substantial positive correlations between sex and agricultural productivity ($r = .223$, $p < 0.01$), education ($r = .134$, $p < 0.05$), and health ($r = .185$, $p < 0.01$). This suggests that respondents who are male and female have different opinions about these facets of community welfare. The results imply that people's perceptions of the efficacy of public administration programs may be influenced by gender norms and experiences.

Table 17. Test of Significant Relationship between the Respondents' Demographic Profile and their Assessment of the Public Administration Perspective

Demographic Profile		Public Administration Perspective					
		Community Welfare				Stakeholder Engagement	
		Health	Livelihood	Education	Agricultural Productivity	Environmental Protection	CSR Effectiveness
Age	Pearson Correlation	0.088	-0.004	0.060	0.051	-0.006	0.058
	Sig. (2-tailed)	0.154	0.953	0.329	0.410	0.928	0.349
	N	266	266	266	266	266	266
Sex	Pearson Correlation	.185**	0.092	.134*	.223**	0.097	0.117
	Sig. (2-tailed)	0.002	0.135	0.028	0.000	0.114	0.058
	N	266	266	266	266	266	266
Educational Attainment	Pearson Correlation	-.149*	-0.092	-.197**	-.195**	-0.102	-0.102
	Sig. (2-tailed)	0.015	0.133	0.001	0.001	0.098	0.095
	N	266	266	266	266	266	266
Occupation	Pearson Correlation	.195**	0.080	.164**	.191**	.129*	0.104
	Sig. (2-tailed)	0.001	0.194	0.007	0.002	0.036	0.092
	N	266	266	266	266	266	266
Income	Pearson Correlation	-0.013	-0.080	-0.031	-0.013	0.044	0.047
	Sig. (2-tailed)	0.835	0.192	0.615	0.827	0.474	0.444
	N	266	266	266	266	266	266
Years of Residency	Pearson Correlation	.176**	0.082	0.085	.127*	0.014	0.033
	Sig. (2-tailed)	0.004	0.183	0.169	0.038	0.815	0.593
	N	266	266	266	266	266	266
Distance	Pearson Correlation	0.111	-0.062	0.032	0.080	0.059	0.055
	Sig. (2-tailed)	0.070	0.317	0.604	0.192	0.341	0.373
	N	266	266	266	266	266	266

***. Correlation is significant at the 0.01 level (2-tailed).*
**. Correlation is significant at the 0.05 level (2-tailed).*

Health ($r = -0.149$, $p < 0.05$), education ($r = -0.197$, $p < 0.01$), and agricultural productivity ($r = -0.195$, $p < 0.01$) were all significantly correlated negatively with educational attainment. This suggests that respondents' evaluations of public administration performance in these areas are often lower among those with higher educational levels. Higher expectations and more awareness among educated people could be the cause of this. This result is in line with Mark Bovens' (2017) claim that because educated people have greater access to information and better standards of evaluation, they are more likely to be critical of government performance.

Health ($r = .195$, $p < 0.01$), education ($r = .164$, $p < 0.01$), agricultural productivity ($r = .191$, $p < 0.01$), and environmental protection ($r = .129$, $p < 0.05$) were all significantly positively correlated with occupation.

This implies that respondents' opinions on public administration projects are influenced by the nature of their jobs. People whose jobs are impacted by these initiatives, either directly or indirectly, might view their advantages more favorably. According to Guy Peters (2019), people's interactions with public services are frequently shaped by their vocational responsibilities, which in turn affects how they assess the efficacy of governance.

Income showed no significant relationship with any of the indicators, suggesting that in this particular context, perceptions of community welfare and CSR efficacy are not greatly impacted by economic status. This implies that all income categories have similar perceptions of the advantages and effects of the windmill project and associated public administration initiatives.

Residency years showed strong positive correlations with both agricultural productivity ($r = .127$, $p < 0.05$) and health ($r = .176$, $p < 0.01$). This suggests that individuals who have lived there for a long period tend to view these elements more favorably, maybe as a result of their extended exposure to community services and noticeable changes over time. This is consistent with Robert Putnam's (2020) results, which showed that long-term residents frequently get a greater understanding and respect of local governance activities.

Lastly, there was no significant relationship between the distance from the project site and any of the measures ($p > 0.05$), indicating that respondents' opinions of public administration and CSR efficacy are not significantly impacted by the windmill farm's proximity. This could suggest that the project's and related initiatives' effects are dispersed very equitably throughout the community.

In summary, the results show that although the majority of demographic factors do not significantly affect perceptions, there are some notable correlations between certain indicators and sex, years of residency, occupation, and educational achievement. Nonetheless, the relationships are often minor, suggesting that opinions of public administration and CSR efficacy are mostly unaffected by demographic characteristics. This implies that community members have a somewhat consistent experience, but it also emphasizes the need for more focused and inclusive strategies to meet the different viewpoints of particular groups.

Table 18 shows the significant relationship between the socio-economic benefits of the Pililla Windmill Farm and the Public Administration Perspective.

In terms of community welfare (health, livelihood, education, and agricultural productivity) and stakeholder engagement (environmental protection and CSR effectiveness), the table illustrates the connection between the socioeconomic advantages of the Pililla Windmill Farm and the public administration viewpoint. All variables produced statistically significant associations at the 0.01 level ($p = 0.000$) using Pearson correlation analysis, suggesting a high correlation between the two constructs.

Table 18. Test of Significant Relationship between the Socio-Economic Benefits of the Windmill Farm and the Public Administration Perspective

Socio-Economic Benefits		Public Administration Perspective					
		Community Welfare				Stakeholder Engagement	
		Health	Livelihood	Education	Agricultural Productivity	Environmental Protection	CSR Effectiveness
Educational Opportunities	Pearson Correlation	.459**	.672**	.501**	.430**	.521**	.541**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	266	266	266	266	266	266
Income Generation	Pearson Correlation	.524**	.724**	.528**	.456**	.540**	.591**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	266	266	266	266	266	266
Tourism and Local Business Development	Pearson Correlation	.422**	.710**	.459**	.422**	.554**	.497**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	266	266	266	266	266	266
Infrastructure and Community Services	Pearson Correlation	.660**	.688**	.661**	.644**	.651**	.600**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	266	266	266	266	266	266

***. Correlation is significant at the 0.01 level (2-tailed)*

Overall, the findings show moderate to high positive relationships (r = 0.422 to 0.724), indicating that improvements in socioeconomic advantages are linked to improved stakeholder engagement and public administration effectiveness views.

All variables showed strong positive correlations with educational opportunities, although livelihood (r =.672) and CSR effectiveness (r =.541) showed the strongest correlations. This suggests that having access to education improves people's capacities as well as their opinions of local initiatives and government. Amartya Sen (2017), who highlighted that education increases human skills and strengthens engagement in socio-economic and governance processes, concurs with this conclusion.

Income generation also had strong positive relationships in every area, with livelihood (r =.724) and CSR effectiveness (r =.591) showing the strongest associations. This suggests that communities' perceptions of the efficacy of business activities and public administration are greatly impacted by improved economic prospects. Income growth is a major factor in enhancing well-being and boosting confidence in organizations and development initiatives, claims Jeffrey Sachs (2018).

Significantly positive correlations were also found between tourism and local business development, especially with livelihood (r =.710) and environmental preservation (r =.554). This implies that tourism-related activities raise awareness and support for environmental sustainability in addition to producing economic benefits. This is consistent with Richard Sharpley's (2020) observation that, when correctly managed, tourism may boost local economies and promote
environmental stewardship.

Infrastructure and Community Services showed the greatest and most stable connections (r =.600 to.688) across all metrics. Interestingly, it was highly correlated with agricultural productivity (r =.644), health (r =.660), and education (r =.661). This suggests that roads, utilities, and public amenities are examples of infrastructure upgrades that are essential to improving community welfare and views of efficient government. This result is in line with Paul Collier's (2017) assertion that infrastructure development is a key factor in institutional trust, service delivery, and economic growth.

Public administration performance and socioeconomic development are strongly correlated, according to the consistently significant results for every variable. Community's perceptions of government efficacy, stakeholder participation, and CSR programs improve in tandem with socioeconomic advantages. This bolsters the claim made by Elinor Ostrom (2019) that community-level growth and collaborative governance are processes that reinforce one another.

In summary, the results show that the Pililla Windmill Farm's socioeconomic benefits have a major impact on stakeholder engagement and public administration performance. To achieve sustainable community development, it is crucial to integrate economic, social, and governance initiatives, as demonstrated by the strong and positive links. Enhancing socio-economic programs can further improve public trust, participation, and overall welfare outcomes, especially in the areas of infrastructure, income production, and education.

3.2. Proposed Policy Recommendations

In response to the study's findings, these policy recommendations aim to
institutionalize sustainable, inclusive, and data-driven development mechanisms in Pililla, Rizal, particularly in areas influenced by the windmill project. The policy framework emphasizes multi-sectoral collaboration, capacity building, and evidence-based governance to ensure long-term socio-economic and environmental benefits.

The recommendations are anchored on the following strategic goals:

1. Strengthening agricultural modernization and resilience;
2. Expanding sustainable livelihood and enterprise development;
3. Institutionalizing environmental governance and CSR accountability;
4. Improving infrastructure systems and service accessibility;
5. Enhancing participatory governance and social inclusion; and

6. Establishing a robust Monitoring, Evaluation, and Learning (MEL) system.

The allocation of funds for the implementation of the identified programs and initiatives shall be subject to the determination and approval of the Local Government Unit (LGU), in accordance with its priorities, available resources, and applicable policies and regulations.

Program/ Project Title	Policy Description	Objectives/ Targets	Strategies/ Activities	Institutional Mechanism	Persons Involved	Source of Fund/ Estimated Cost	Target Date	Expected Outcome
Agri-Tourism and Local Economic Development Policy	Adopt an integrated agri-tourism development policy that positions Pililla as a sustainable tourism hub while strengthening local agriculture and microenterprises.	Increase farmer income by at least 20% within 2 years Establish at least 3 agri-tourism sites or circuits Improve market access for 70% of local producers	Develop a Municipal Agri-Tourism Development Plan aligned with provincial and national tourism frameworks Establish farm-to-market hubs and weekend trading posts Provide digital marketing training (e-commerce, social media branding) Introduce product standardization and certification support (e.g., organic, local branding) Organize annual agri-tourism festivals and exhibits	Creation of a Municipal Agri-Tourism Council Integration into the Local Development Investment Program (LDIP)	LGU, Department of Tourism (DOT), Department of Agriculture (DA), DTI, Farmers' Associations, MSMEs	LGU Development Fund, Tourism Infrastructure Grants, CSR Funds, DTI Shared Service Facilities	Short to Medium Term (6 months – 2 years)	Diversified local economy Increased tourism revenue Strengthened farmer-market linkage.
Sustainable Livelihood and Skills Development Policy	Institutionalize a community-based livelihood and workforce development program targeting vulnerable and underemployed sectors.	Reduce unemployment/underemployment by 15% within 2 years Train at least 500 residents annually	Conduct community skills mapping and labor market analysis Implement TESDA-certified training programs (e.g., welding, food processing, digital jobs) Provide startup kits and seed capital assistance Establish public-private job placement partnerships Promote cooperatives and social enterprises	Establishment of a Local Livelihood and Employment Office (LLEO) or strengthening PESO Integration with Public Employment Service Office (PESO) programs	LGU, TESDA, DOLE, Windmill Company, NGOs, Private Sector	LGU Funds, DOLE Programs, TESDA Scholarships, CSR Funds	Short Term (6–12 months, continuing annually)	Increased household income Enhanced workforce employability Strengthened local enterprises
Environmental Governance and CSR Institutionalization Policy	Strengthen environmental protection through formalized CSR engagement and community-based environmental stewardship.	Achieve zero net environmental degradation Conduct quarterly CSR and environmental audits Increase community participation in environmental programs by 50%	Develop a Local Environmental Management Plan (LEMP) Institutionalize CSR reporting and compliance mechanisms Conduct regular tree-growing, waste management, and biodiversity programs Establish community-based monitoring teams	Creation of a Multi-Sectoral Environmental Monitoring Committee Adoption of a CSR Accountability Ordinance	LGU, DENR, Windmill Company, Academe, Community Organizations	CSR Funds, DENR Grants, LGU Environment Fund	Continuous (with quarterly monitoring)	Sustained environmental quality Increased corporate accountability Heightened public awareness and participation

Program/ Project Title	Policy Description	Objectives/ Targets	Strategies/ Activities	Institutional Mechanism	Persons Involved	Source of Fund/ Estimated Cost	Target Date	Expected Outcome
			Implement environmental education campaigns in schools and barangays					
Infrastructure and Accessibility Development Policy	Enhance infrastructure systems to support economic activities, service delivery, and overall community well-being.	Improve road accessibility by 30% in key areas Upgrade irrigation systems covering at least 60% of farmlands Increase access to basic services in underserved barangays.	Prioritize farm-to-market roads and tourism access routes Rehabilitate and expand irrigation systems Construct multi-purpose community centers and service hubs Adopt Public-Private Partnership (PPP) models Integrate climate-resilient infrastructure designs	Integration into the Annual Investment Plan (AIP) Coordination with national agencies (e.g., DPWH)	LGU, DPWH, NIA, Barangay LGUs, Private Contractors	National Government Funds, LGU Infrastructure Budget, PPP Investments	Medium to Long Term (1–3 years)	Improved mobility and logistics Increased agricultural productivity Better access to essential services
Participatory Governance and Social Inclusion Policy	Promote transparent, inclusive, and participatory governance through institutionalized stakeholder engagement mechanisms.	Ensure 100% barangay participation in planning processes Increase stakeholder satisfaction ratings by at least 25%	Conduct quarterly multi-sectoral consultations and town hall meetings Institutionalize citizen feedback and grievance systems	Establishment of a Local Governance and Participation Council Adoption of a Participatory Planning Ordinance	LGU, Civil Society Organizations, Community Leaders, Residents	LGU Funds, Governance Grants	Quarterly/Continuous	Increased public trust Improved transparency and accountability More responsive and inclusive policies

Program/ Project Title	Policy Description	Objectives/ Targets	Strategies/ Activities	Institutional Mechanism	Persons Involved	Source of Fund/ Estimated Cost	Target Date	Expected Outcome
		Strengthen representation of marginalized sectors	Integrate youth, women, IPs, and vulnerable groups in planning bodies Utilize digital platforms for participatory governance Strengthen capacity-building for local leaders					
Data-Driven Monitoring, Evaluation, and Learning (MEL) Policy	Institutionalize a comprehensive MEL system to guide evidence-based planning, implementation, and policy refinement.	Establish a centralized data management system within 1 year Conduct annual impact evaluations for all major programs Improve policy responsiveness and efficiency	Develop a Municipal MEL Framework aligned with national standards Conduct baseline, midline, and endline assessments Utilize digital dashboards and GIS-based planning tools Train LGU staff on data analytics and research methods Partner with academic institutions for research support	Strengthening of the Municipal Planning and Development Office (MPDO) Creation of a Research and Evaluation Unit	LGU Planning Office, Research Institutions, Academe, NGOs	LGU Funds, Research Grants, Development Partners	Short to Medium Term (1–2 years, continuous thereafter)	Improved decision-making quality Efficient program implementation Strong evidence-based governance culture

4. Summary, Conclusions and Recommendations

This chapter initially discusses the research problem, respondents of the study, and the statistical treatments applied to the data of the investigation. Then it focuses on the summary of findings, conclusions and recommendations.

4.1. Summary of Findings

The following conveyed the results of the evaluation:

1. The demographic profile of the 266 respondents reveals that the population is largely composed of older individuals, with the highest proportion belonging to the 56 years and above age group (76 or 28.60%), followed by those aged 36–45 years (60 or 22.60%), while younger groups such as 18–25 years old comprise only 35 respondents (13.20%). In terms of sex, females (138 or 51.90%) slightly outnumber males (121 or 45.50%), indicating balanced but female-leaning participation. Educational attainment is concentrated at the secondary level, with the majority being high school graduates (115 or 43.20%), while only a small proportion reached college (5 or 1.90%) or postgraduate education (3 or 1.10%). Occupationally, most respondents are private employees (78 or 29.30%), followed by self-employed individuals (50 or 18.80%) and farmers (43 or 16.20%), reflecting a mix of formal and informal economic activities. In terms of income, a significant majority belongs to the low-income bracket, with 101 respondents (38.00%) earning below ₱10,000 and 75 (28.20%) earning ₱10,001–₱20,000, totaling 176 respondents (66.20%) earning ₱20,000 or less monthly. The data also show strong community stability, as more than half of the respondents (145 or 54.50%) have resided in the area for 21 years or more. Lastly, in terms of distance from the windmill farm, respondents are relatively evenly distributed, with 74 (27.80%) living within 1 km, 71 (26.70%) within 1–5 km, and another 71 (26.70%) within 6–10 km, while 40 (15.00%) reside more than 10 km away.

2. The majority of respondents believe that the Pililla Windmill Farm significantly improves the community's socioeconomic situation. In addition to somewhat raising household income, it has a significant positive effect on employment opportunities, helping to create jobs and grow the workforce. By increasing tourist arrivals and local merchants' sales, the project strengthens the local economy and promotes tourism and the expansion of local businesses.

3. The majority of respondents believe that the windmill project has a beneficial impact on community welfare, especially in the areas of health and economic development, thanks to strong stakeholder support for livelihood and skill-training initiatives. In addition to enhancing farmer support services and agri-tourism opportunities, it has had a multiplier effect by encouraging tourism-driven entrepreneurship and income-generating activities. Improvements in irrigation, technical training, agricultural output, and general livelihood stability, however, are perceived as less noticeable and point to areas that still require work.

4. The results demonstrate that respondents' evaluations of community wellbeing are influenced by demographic characteristics in diverse ways depending on the industry. Age, occupation, and wealth have no discernible impact on health perceptions, but distance from residence, educational attainment, sex, and duration of residency do, emphasizing the importance of access, awareness, and experience. The only factors that affect perceptions of livelihood are sex and educational achievement, indicating that gender roles and knowledge are important. Other factors reveal opinions that are constant across groups. While socioeconomic and regional factors have less of an impact on perceptions in schooling, age, occupation, and particularly educational achievement have a substantial impact, highlighting the importance of experience and critical awareness. In agricultural productivity, multiple factors including sex, education, occupation, income, and distance from residence shape perceptions, indicating the importance of socio-economic and contextual conditions, while age and length of residency remain insignificant.

5. The results demonstrate that demographic characteristics had little bearing on respondents' evaluations of stakeholder engagement in environmental preservation and CSR performance. Perceptions are

consistent across groups regardless of differences in age, sex, education, occupation, income, period of residency, or distance from dwelling. This suggests that both environmental efforts and CSR programs are widely acknowledged, accessible, and similarly interpreted in terms of their efficacy and impact. It also shows a high degree of uniformity in how the community perceives and evaluates stakeholder activities.

6. The findings show that integrated socioeconomic development significantly strengthens governance, community engagement, and sustainable development in Pililla, Rizal. Improvements in education, income generation, and infrastructure are linked to increased stakeholder participation and more positive perceptions of public administration. Education enhances community capacity, while livelihood opportunities and local enterprises improve economic benefits and public trust. The results also emphasize the role of sustainable tourism, environmental protection, and infrastructure in promoting community welfare and effective governance.

4.2. Conclusions

Based on the findings, the following conclusions can be drawn:

1. The findings indicate that the community is characterized by a mature and stable population with a slight predominance of female respondents and a generally moderate level of education concentrated at the secondary level.

2. The Pililla Windmill Farm makes a substantial contribution to the socioeconomic development of the town, especially through the creation of jobs and the expansion of tourism-related enterprises. Although its impact on income production is less noticeable, it greatly helps small business development and local livelihoods, suggesting potential for more economic growth.

3. The windmill project is concluded to have a positive impact on community welfare, particularly in health, economic development, and stakeholder-driven initiatives, while also supporting tourism, agriculture, and entrepreneurship.

4. Depending on the sector, respondents' perceptions of community wellbeing are influenced by a variety of demographic parameters; education, sex, occupation, and proximity frequently influence opinions, whereas age, income, and
length of residency have less consistent effects.

5. Perceptions of stakeholder engagement in environmental protection and CSR are largely unaffected by demographic characteristics, suggesting that these activities are generally acknowledged, easily accessible, and consistently valued throughout the community.

6. The public’s opinion of the administration and the socioeconomic benefits of the windmill farm are strongly positively correlated, with gains in employment, income, tourism, local companies, and infrastructure boosting stakeholder participation and community welfare.

4.3. Recommendations

In the light of the foregoing findings and conclusions of the study, the following recommendations are strongly presented:

1. Local government officials and policymakers should prioritize inclusive development by increasing employment and livelihood options, particularly for low-income people, through skill development. To alleviate low educational attainment, increase access to technical training and education. Increase community involvement and governance, especially by incorporating long-term inhabitants. Maintain women's participation while ensuring gender-inclusive programs. Increase distant residents' access to services by providing outreach and transportation assistance. Finally, involve young people to maintain community growth in the future.

2. Stakeholders may prioritize tourism development, support employment

and livelihood programs, increase income-generation initiatives for microenterprises and tourism-related businesses, invest in infrastructure and community services, and improve cooperation between the public and private sectors to optimize the windmill farm's economic impact.

3. Project implementers, local government units, and partner organizations are advised to boost livelihood stability, improve cooperative planning, and increase agricultural assistance. Additionally, CSR initiatives can be further institutionalized with stronger monitoring, stakeholder engagement, and alignment with local development needs to enhance their effectiveness and sustainability.

4. Community planners, development agencies, and partner organizations are advised to take accessibility, gender, education, and occupation into account when creating and executing community programs. Because these aspects have a significant impact on how locals view and benefit from programs and services.

5. It is recommended that project implementers, local government units, environmental agencies, community organizations, and residents may continue maintaining and promoting stakeholder engagement in environmental protection and CSR, as these initiatives are widely recognized, accessible, and consistently valued across all demographic groups.

6. It is recommended that the local government strengthen integrated policies on education, livelihood, infrastructure, sustainable tourism, environmental initiatives, and CSR programs, while promoting participatory governance to ensure transparency and long-term sustainability.

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"The Researcher"

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