

Determinants of Pineapple Output Growth Among Individual Farm Owners and Multinational Enterprises (MNEs) in Northern Mindanao: An Explanatory Study

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Abstract

This explanatory research seeks to investigate what drives pineapple output growth in Northern Mindanao from a socio-economic perspective. The study attempts to analyse the socio-economic determinants at two levels, namely, individual farm owners and MNEs operating in the top pineapple producing region in the country. The research methodology entails a sequential mixed-methods design combining survey, case study, extensive desk reviews, and triangulation of the results to provide a comprehensive study. The underpinnings of resource dependency theory, stakeholder theory, and institutional theory provide a solid theoretical framework for the study. The study aims to investigate what predisposes individual farm owners to engage in pineapple cultivation and how the interorganizational relationship or interplay between MNEs and the individual farm owners, the influence of cooperatives and/or farmers associations, and the government support impact pineapple output growth. By gaining understanding of the challenges and vulnerabilities in pineapple production, the study can provide inputs for potential policy interventions to enhance pineapple output growth and empower farmers and MNEs to ensure generational renewal of pineapple cultivation in the Philippines. This study also contributes to the evidence-based evaluation of how farm owners directly or indirectly pursue economic opportunities, contribute to food security, and help influence sustainable economic growth in line with the UN Sustainable Development Goal.

Keywords

Pineapple output growth, socio-economic determinants, interorganizational relationships, challenges

1. Introduction

Pineapple is one of the top ten primary fruits produced in the world, with a total of 29.4 million tonnes output in 2022. Production output has almost doubled in twenty years (see Figure 1 below) and grew by a CAGR of 2.1% over the past decade, except for slight dips in 2019 and 2020 due to the COVID-19 pandemic (FAOSTAT 2023).

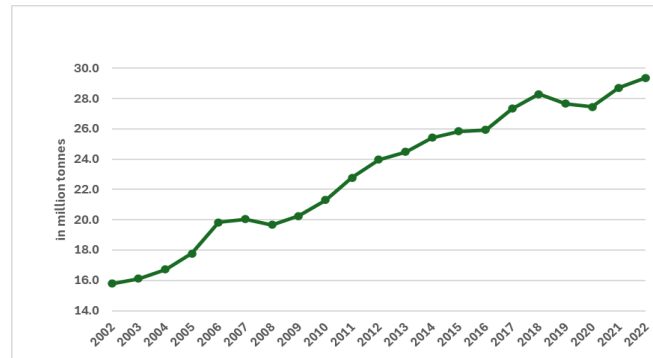


Figure 1. Worldwide pineapple production (in million tonnes), 2002-2022

There has been an increasing pineapple consumption trend in major import markets in the last decade. In the USA, the kg per capita consumption has increased by ~40% in ten years - from ~2.6 kg per capita in 2010 to 3.62 kg per capita in 2021 (Fruitrop 2021).

The Philippines is the second top producer of pineapple, contributing ten percent of the world's production. The country's pineapple production increased by 22% over the past 10 years to reach 2.9 million tonnes in 2022 (PSA 2022). Pineapple is the second most produced fruit in the country, next to bananas. The output has posted a CAGR of 2.0% over the last ten years. The Philippines has a competitive advantage in the export market with established brands, like Del Monte and Dole, for both fresh and processed pineapple products. It is estimated that 80% of the country's pineapple produce is used in the manufacture of processed pineapple products with North America as the major market destination (UNCTAD 2016). China and Japan are the biggest markets for fresh pineapple fruits, with a combined importation from the Philippines of about 0.4 million tonnes in 2021 (UN Comtrade 2023). In monetary terms, pineapple generated PHP 30.2 billion (or USD 550 million) of gross value added for the Philippine economy in 2022. It delivered 1.4% of the Agriculture, Forestry, and Fishing (AFF) Industry's gross value added (which contributed 9.6% in the country's GDP). It ranked third among the top fruit performers, banana and mango (PSA 2022). Approximately 70% of the country's total fresh pineapple production output is produced by multinational enterprises (MNEs) either through growership agreements with farm owners or MNE-managed farms on leased farmlands. The total area planted expanded by 13% over the past ten years to 66,000 hectares in 2022. About 85% of the areas planted are found in Mindanao - Northern Mindanao (60%) and Southern Mindanao (25%) - due to the favourable climate and weather conducive for pineapple cultivation.

Northern Mindanao is the top pineapple producing region in the Philippines, delivering 1.7 million tonnes or 59% of the country's pineapple fruits produced in 2022 (PSA 2022) (see Figure 2 below).

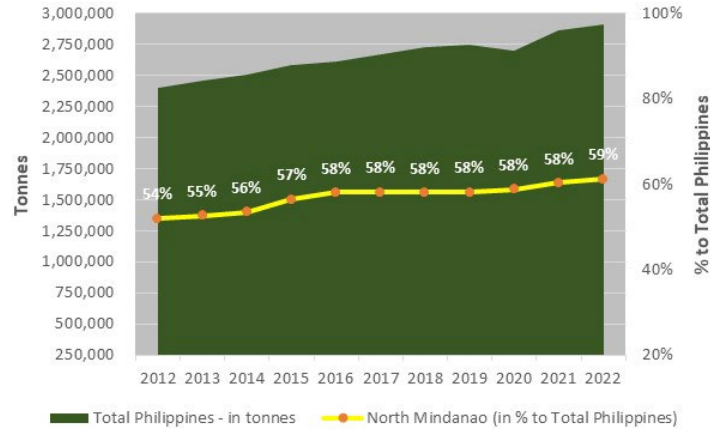


Figure 2. Philippine pineapple production trend (2012-2022)

The high output in the region is associated with the export-oriented agri-businesses of MNEs like Del Monte and Dole, which were established in 1926 and 1967 in the Philippines, respectively. Del Monte and Dole are having a duopsony in pineapple operations in that part of the country. No other firms have replicated the current massive pineapple production operations in terms of access to farmlands and access to export market. They have fully-integrated agribusiness operations from planting to canning and marketing. Carbonnel (2015) cited that growing pineapples and farming, in general, has contributed to the economic betterment of local families and communities. In Mindanao, MNEs have provided homes, built schools, operated medical facilities, and extended other social services to the employees and the local communities.

Agriculture is a key sector in the Philippine economy, contributing 9% of GDP and 25% of the country's employment (OECD 2020). A status quo could obstruct pineapple output growth and generational renewal of pineapple cultivation in the Philippines. The presence of a duopsony in pineapple operation in the region provides a unique industry set-up. It offers inferences on its influence on pineapple production output that are worth investigating. The study aims to seek and provide a thorough understanding of the socio-economic determinants of pineapple output growth and the pertinent role of the interplay between MNEs and farm owners in pineapple cultivation. By gaining an understanding of the issues and vulnerabilities in pineapple production, the study can provide inputs for potential policy interventions to enhance output growth and empower farmers and MNEs to ensure generational renewal of pineapple cultivation in the Philippines.

The viability of sustained output growth of pineapple (as a high-value crop) points in the right direction and helps address the urgent priorities of the broader United Nations SDG1 (no poverty), SDG2 (zero hunger), and SDG8 (decent work and economic growth). The study can help provide insights in improving access to sustainable livelihoods and entrepreneurial opportunities, support farm owners directly or indirectly foster economic opportunities, enhance food security, and promote inclusive and sustainable economic growth (United Nations 2015).

1.1 Objectives

The research questions to be investigated in this explanatory research project are: 1) what are the socio-economic determinants of pineapple output growth among individual farm owners and MNEs in Northern Mindanao? and 2) how does MNE and farm owners' interplay impact pineapple output growth and generational renewal of pineapple cultivation? This explanatory research seeks to investigate the factors of pineapple output growth from a socio-economic perspective, as opposed to a technological or agricultural angle. The study attempts to analyse these factors at two levels, individual farm owners and MNEs.

An underlying assumption of this research is that pineapple production is conducted through three known categories namely, a) MNE-managed farms, b) contract growership arrangement between farm owners and MNEs/Corporate Growers, and c) self-financing or independent growing (FAO 2016; Digal 2007). MNE-managed farms cultivate pineapples on owned or leased land. The lease agreement, ranging from five to 25 years, allows the MNE investor (lessee) to become the farm operator and pays the landowners an upfront fixed rental fee for using the land. Under the

contract growership arrangement (usually five to 10 years), the investors (mostly MNEs) provide input materials on loan basis and collect payment from the sale proceeds when farm owners sell their outputs to the MNEs upon harvest. Some small farmlands, usually within neighbouring areas, are banded together for pineapple cultivation. Self-financing or independent growing involves the individual farm owners putting their own capital for input materials and managing pineapple growing activities on their own.

This research aims to identify and analyse the determinants of pineapple output growth in Northern Mindanao, the Philippines. The study will investigate what predisposes landowners to engage in certain types of pineapple cultivation, and how the influence of the industry structure monopolised by two big MNEs, the impact of cooperatives and/or farmers associations, and the government support affect pineapple production.

Specifically, the study aims a) to investigate and provide empirical evidence on the key socio-economic drivers influencing the decision to engage in growing pineapple among individual farm owners and MNEs; b) to describe the interplay between MNEs and farm owners (including cooperatives) and examine the implications and influence in pineapple output growth; c) to describe the challenges and vulnerabilities confronting the individual farm owners and MNEs in pineapple cultivation in Northern Mindanao, Philippines; and d) to identify and evaluate potential policy interventions that can help promote pineapple output growth and generational renewal.

In doing so, this study contributes to the evidence-based evaluation of how farm owners directly or indirectly pursue economic opportunities, contribute to food security, and help influence sustainable economic growth in line with the UN SDG (UN 2015).

2. Literature Review

The US Department of Agriculture advocates agricultural productivity growth as essential in meeting the world's increasing food demand. Slowing agricultural productivity growth may result in increased prices in global commodities (USDA 2021). To achieve agricultural productivity growth, there must be more or the same output level using less production inputs. ABARES (2024) has suggested that "productivity growth measures changes in productivity over time." In Australia, ABARES (2024) has further indicated that farmers' outputs have increased by three times in a period of 50 years while they have reduced total inputs used (including land) by roughly one per cent each year over a period of four decades. Gross output is defined as "aggregated volume of all commodities that are produced on farms or that are related to on-farm activities" (Sheng and Jackson 2015).

Enablers of pineapple productivity. Several studies have outlined enablers to include access to credit, input costs, pineapple prices, pineapple variety being cultivated, technology, extension services available, and proximity to the market (Suhaimi et al. 2021; Jaji et al. 2018; Patton et al. 2018; Rupasinghe et al. 2016). Eapsirimetee et al. (2013) have cited additional factors affecting pineapple production in Thailand such as farm gate prices, size of the farm, labour costs, and weather conditions. While these studies suggest pertinent productivity determinants, there is insufficient research to contextually understand how the peculiar duopsony set-up of pineapple production in the biggest pineapple producing region in the Philippines help promote optimum output growth. To sustain crop output growth, the future of farming must be safeguarded. Generational renewal in agriculture is a key enabler in agricultural growth. However, Borda et al. (2023) has suggested that ageing farmers and the declining number of farms worldwide depict a gloomy picture. There has been limited research on this area in the Philippine setting.

Deterrents of pineapple productivity. World Bank (2020) has highlighted that fragmented landholdings and small-scale farming in the Philippines is primarily hampering agricultural productivity. Small farm owners have difficulty accessing input and output markets. Buyers, such as MNE's and wholesalers, find it challenging to get the desired quantity and quality of the produce they need. Notable other deterrents would include availability of planting materials, pests and diseases, and lack of access to market information (Kayetesi 2011). A long gestational period is typical for high-value crops like pineapple and requires more working capital for a longer cycle compared to other crops. There are also other competing crops which could be easier and less costly to produce. There are limited or few studies investigating socio-economic challenges and to what extent output growth has been curtailed.

Individual farm owners. Individual farm owners are key enablers in agricultural productivity (World Bank 2013). In some other crops where farmers produce larger quantities, it is noted that they tend to have larger farm size and have better education (Milford 2010). There is little understanding of how individual farm owners decide the type of activities they engage in pineapple cultivation (e.g., farmland leasing or pineapple growing). Understanding what

draws these farm owners to work with MNEs/Agri-enterprises or their aversion to pineapple cultivation is sparsely explored. Investigation is needed to arrive at insights to understand the socio-economic attributes in pineapple production – including vulnerabilities and motivations among this group.

Industry structure. In Northern and Southern Mindanao, MNEs and agribusiness enterprises operating in the region are affirmed as enablers of pineapple productivity (Mirasol 2023). There has been reliance on the big MNEs to produce pineapple and a major limitation of the current literature is understanding the impact of the duopsony and its influence on pineapple output growth. The lack of competition as demonstrated by the duopsony, the economic trade-off of such a set-up, and the impact on individual farm owners would need to be further investigated to provide deeper insights. An interesting observation of the existing structure compared to other top pineapple producing countries is that no local organization or association is formed to represent the common interests of the pineapple farmers, growers and traders and the industry in general (Pantoja 2018).

Cooperatives and Farmers' Association. Based on parallel studies in other crops or industries, farmer cooperatives or associations play a critical role in increasing agricultural productivity (Candemir et al. 2021; Bijman 2008). Borda et al. (2023) suggest that associations can build bargaining power by harmonising farmers' production output and sales, thereby creating stronger market position as seller. These cooperatives or groups also help facilitate consolidation of small contiguous farms to allow scalable or industrialized farming and contract growership. In other geographic settings, farmer association facilitates pro-competitive effects through price negotiations, facilitating bulk sourcing of agricultural inputs, and helping farmers get better and faster access to technical and financing assistance (FAO 2017; Fulton et al. 2013; Milford 2010). There is little focus and lack of structured study on the influence of cooperatives and farmers' association in pineapple production in the Philippines.

Government. World Bank (2020) has cited that the Philippine government's agricultural programs are still focused pervasively on rice growing as seen in government policies and spending decisions. There is lackluster agricultural growth in the country caused by the failure of the agriculture sector to support high-value crop production. There is no specific agenda for pineapple production augmentation and generational renewal in the country. One can argue that this has been relegated to MNEs operating in the country. No sub-government agency oversees the welfare of pineapple production compared to other crops such as sugarcane, banana, coconut, etc. The World Bank has opined that the absence of a sectoral strategic focus and support to produce high-value crops, such as pineapple, may expose the country to commercial risks and production-related issues in the future. The current agenda may inhibit the country's farm owners and agripreneurs from taking advantage of the growing demand for pineapples. Most of the existing literature covers limited scope in presenting the role of government in productivity augmentation for crops like pineapple.

Most studies referred to on enablers of pineapple productivity used quantitative research applying different models like regression analysis, econometric model, and policy analysis matrix model. The rest of the research papers used case study approach and systematic literature review. Due to lack of data, most government publications, reports, and position papers referred to in the literature review used observed experiences of similar programs in other countries and in-country analysis of priority projects. Data collection is based on targeted information and available literature - not necessarily research-based and not cited based on academic research rigour. The research gaps identified requires gathering of pertinent data to provide an overall landscape and triangulated findings to answer the research questions. As elaborated in the methods section, this study will attempt to use case study as primary research method. To augment the qualitative findings and triangulate the case study, a secondary research method will involve descriptive statistical analysis based on survey. Given some data availability constraints, the study will also entail extensive desk review.

3. Theoretical Framework

In an institutional set-up where farm owners are not able to control the input prices they pay and the output prices they get for their produce, increased production output is key to reliably growing their profits over time. "Farmers must produce a greater quantity of output from each unit of input they use" (ABARES 2024). FAOSTAT (2023) gathers and reports production output and yield as an important productivity indicator for pineapple. Yield is calculated by dividing the pineapple production output (in tonnes) over the area harvested (in hectares). There could be several factors that may affect pineapple output growth. The two main decision-making units in pineapple production are the individual farm owners and the MNEs operating in the region. There is an interplay between these two units, but the

wider pineapple supply chain operation also involves various activities and other players that influence overall productivity. Figure 3 below depicts the various activities and key players of the pineapple supply chain operations.

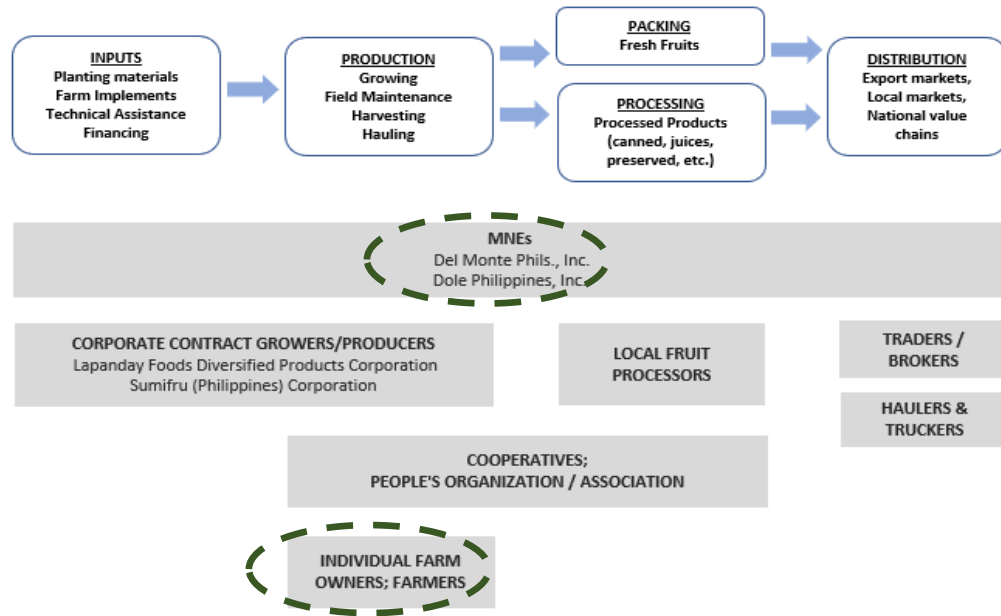


Figure 3. Pineapple supply chain operation – adapted from ILO (2019)

Production is the key activity which involves land preparation, planting, cultivating, field maintenance, and harvesting fresh fruits. The production performance (measured in tonnes of harvested pineapples) is driven by the quality of input materials and farm management. Taking production activity as a focus, MNEs and individual farm owners are key actors in the supply chain. The interplay between MNEs and the individual farm owners offers an intuitive appeal to investigate. Figure 4 presents a research framework depicting the interplay of MNEs and farm owners that give rise to an *interorganizational relationship (IOR)*. The left part of the diagram provides an abridged continuum of relevant IOR theories (Barringer and Harrison 2000) and rationale as both MNEs and farm owners steer to achieve their objectives. With land, labour and capital as primary resources in agriculture (Giller et al. 2021), the socio-economic factors that drive pineapple output growth - shown at the center of the diagram, are crucial considerations and could set the context of the interplay.

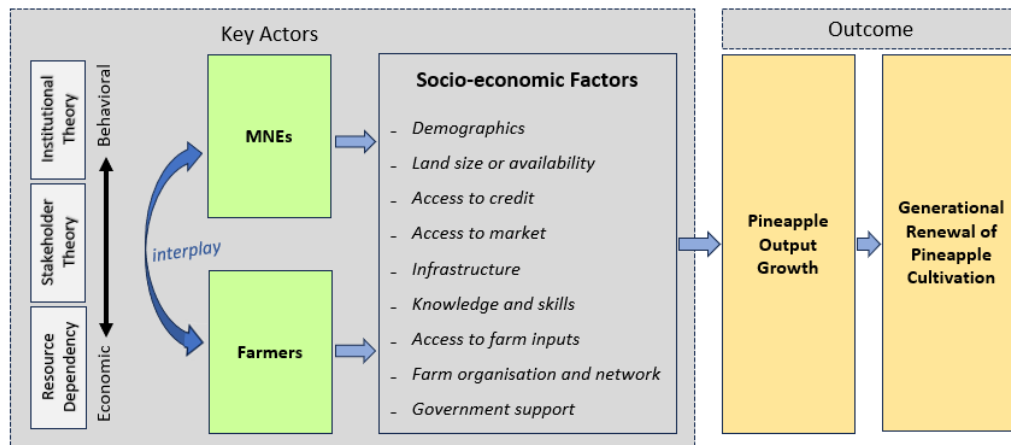


Figure 4. A research framework of theoretical foundation, interplay and socio-economic factors on pineapple output growth and generational renewal

Depending on the type of farm operations (either MNE-managed, contract growership, or independent growing), the expected MNEs-farm owners interplay presents a multi-dimensional relationship and may significantly influence pineapple output growth. The interplay represents a vertical relationship (i.e., buyer-supplier partnership) that gives rise to IORs (Börjeson 2015). IORs are formed to maximize value creation for the units involved through different forms of arrangements – be it resource and knowledge sharing, risk sharing, achieving access to market, cost minimization, etc. (Barringer and Harrison 2000). This study will take an extended definition or concept of “firm” or “organization” to include farmer cooperatives and farm owners engaged in pineapple production taken collectively, whether formally organized or not. To get a comprehensive understanding of the MNEs and farm owners’ interplay, the study will adopt a blended application of three relevant theoretical paradigms namely - resource dependency theory, stakeholder theory, and institutional theory. Barringer and Harrison (2000) suggest that resource dependency embodies economic rationale while institutional theory denotes behavioral or social dimension. Stakeholder theory takes the middle ground and can either be economic or behavioral - depending on the focus and argument. These three theoretical foundations provide a solid framework for the research to progress in the socio-economic perspective – as summarized in Table 1.

Resource dependency theory proposes that organizations engage with other organizations to obtain critical resources to survive. It suggests power play and exercise of control to reduce dependency on other organizations and increase dependency of other organizations in securing resources (Barringer and Harrison 2000). This theory can help guide in the investigation of how the socio-economic determinants play in pineapple output growth given the vertical interorganizational relationship. Depending on their needs, parties behave differently or similarly in securing the resources they need. In a country where MNEs are not allowed to own farmlands, MNEs engage local farm owners to access arable lands (ILO 2019). This suggests MNE dependency on individual farm owners. On the other hand, farm owners rely on MNEs for farm inputs, financial resources, farming knowledge, and access to markets - which are critical resources. This theory can help describe how dependency has contributed to pineapple output growth in the region.

Stakeholder management theory is a framework that encourages organizations to manage the interests of their stakeholders to create value and ensure sustainable positive outcome (Mahajan et al. 2023). The core application of this theory revolves around decision-making process and the impact of both parties’ influence in pineapple production activities. Mitchell et al. (1997) presented the existence of power and dependence, including its reciprocity, in interorganizational relationships. They have argued that the three key attributes of power, legitimacy, and urgency must be accounted in identifying and managing stakeholders. The theory can help to describe the decision-making process and impact of both parties’ influence in pineapple production. In assessing stakeholder influence, this research can gather insights on the vulnerabilities of low-power stakeholders (farm owners) and influence of high-power stakeholders (MNEs) in terms of identifying enablers and deterrents of pineapple output growth and generational renewal of pineapple cultivation.

In institutional theory, interorganizational relationships encourage firms to engage in activities that increase legitimacy and to achieve status quo. Such legitimacy can also “help a firm gain access to critical resources and expertise” (Barringer and Harrison 2000). The theory further suggests the tendency of firms to replicate business-as-usual practices and follow industry norms given institutional pressures. In the context of sustaining pineapple output growth, generational renewal of pineapple cultivation is critical. This theory directs the research in investigating the extent of institutional pressure that influences the decision among farm owners to engage in future pineapple growing or not and in what way.

Table 1. Summary table of relevance and value of selected theoretical lenses in addressing the key research question

Resource Dependency Theory	Stakeholder Theory	Institutional Theory
- focuses on how organizations seek critical resources to survive	- provides a framework for a nuanced description of the decision-making and interaction of MNE and farm owners	- examines the role of legitimacy in gaining access to critical resources and expertise
- investigates power dynamics and control to reduce or increase dependency in securing resources and implementing their strategies	- highlights the vulnerabilities of low-power stakeholders (farm owners) and the influence of high-power stakeholders (MNEs)	- helps analyze presumed motivation and payoff for MNE-farm owners alliance
- delves into the resultant MNE-farm owners interplay impacting pineapple output growth	- explores enablers and deterrents relating to value creation and sustainable outcomes	- focuses on the influence of institutional pressures on farm owners' decision to engage in future pineapple growing
↓	↓	↓
Research Questions: 1) <i>What are the socio-economic determinants of pineapple output growth among individual farm owners and MNEs in Northern Mindanao?</i> 2) <i>How does MNE and farm owners' interplay impact pineapple output growth and generational renewal of pineapple cultivation?</i>		

Several studies have identified an array of socio-economic determinants of agricultural productivity that are applicable to pineapple cultivation. They are farm size, crop management, agricultural inputs, demography, and farmer income (Balogun et al. 2018; Kayetesi 2011). The multitude of socio-economic factors presents a compelling case to empirically investigate in the context of duopsony operation in the biggest pineapple producing region in the Philippines. There has been limited focus and study made in these areas.

This research project theorizes that the MNEs-farm owners interplay and how these key actors navigate through socio-economic factors are key influence in pineapple output growth and generational renewal of pineapple cultivation. The theoretical underpinnings will guide the survey and will serve as prompters in formulating the interview questions.

4. Methods

Pineapple operation in the Philippines is under studied and given limited available information, this study seeks to delve into the research questions through explanatory research using a sequential mixed-methods research design. The primary research method involves a case study based on semi-structured interviews. The secondary research method entails a descriptive statistical analysis based on survey. Extensive desk review and internet search for relevant data will also be done.

The descriptive statistical analysis aims to provide the overall landscape and the foundation of the study. It entails collation of socio-economic factors affecting pineapple production among individual farm owners through survey. It is a necessary component of the research to augment the qualitative findings.

A triangulation in terms of data, method, and theoretical (Mtisi 2022) is designed for this study. To integrate the results of the descriptive statistical analysis and the insights of the case study, a triangulation will be conducted to corroborate the findings. The design should enhance the validity and reliability of the study by corroborating the findings and providing a comprehensive analysis and meaningful conclusion about the socio-economic determinants of pineapple output growth among farm owners and MNEs.

5. Data Collection

The research will employ multiple options for collecting data. To establish the pineapple output growth, which is the change in production output over time, the study will require historical data of production outputs, and the areas planted over at least the past 20 years. It is anticipated that the individual farm owners do not have these data at hand. Due to data limitation, the study will describe the extent of pineapple output growth by using the aggregated output

of the provinces identified in the study. Historical data of pineapple production output and areas planted/harvested by province for the past 20 years will be sourced from the Philippine Statistics Authority.

5.1 Survey

The objective of the survey is to gather data on socio-economic determinants of pineapple output growth among individual farm owners. It also aims “to inform the research on the type of participants to be purposefully selected for the qualitative phase” (Creswell and Creswell 2018). The research is designed to conduct a survey among the pineapple farm owners in four municipalities in Misamis Oriental province and six municipalities in the province of Bukidnon. The aim is to target farm owners from key geographic areas where pineapple cultivation is prevalent. The researcher will request a list of pineapple farm owners from the office of the Department of Agriculture, MNEs, local farmers’ cooperatives, and from the Agricultural Training Institute – Regional Training Centre (ATIRTC10). These multiple sources will help curate a list of pineapple farm owners in the area which will be the basis in identifying farm owners as potential research participants. Given the size of the population and the geographical dispersion of pineapple farm owners, a multi-stage sampling technique will be done to select the survey participants. The first stage is to identify farm owners from a constructed list of active farm owners involved in pineapple cultivation. They will then be clustered into the following sub-groups based on the nature of their activities, namely: a) farm owners leasing their land to MNEs or corporate growers, b) farm owners on contract growership with MNEs or corporate growers, and c) farm owners independently growing pineapple. Clustering is designed to have a good spread of farm owners and help get a fair representation and balanced input in the study.

The second stage involves purposive sampling, where research participants will be selected from each cluster based on characteristics such as farm location and size (i.e., small and large). PSA (2017) defines large farms as greater than one hundred hectares of planted area. For purposes of this research, a reference is made to the sampling methodology used by the Philippine Statistics Authority (PSA) in its quarterly survey on Crops Production Survey (CrPS). The PSA survey selects samples by categorizing farms into small and large farms. A maximum of five large farms are chosen from each province. Small farm samples are selected from the top five producing municipalities and do not exceed a total of twenty-five samples per province (PSA 2017). This study proposes to adopt and align the same sampling approach and expects to survey a total of fifty-five pineapple farm owners.

The researcher will seek permission from the local government units to allow and provide legitimacy of the study through the Municipal Agricultural Office. This will help ensure access to targeted respondents and participation in the study. Given the site of the study and the profile of the survey respondents, this research will directly engage enumerators from a reputable local research institute to help administer the survey questionnaire and collect information.

5.2 Interviews

The study intends to conduct a semi-structured interview to allow a comprehensive understanding of the research topic and capture the descriptive nature of the study. The process will entail a purposive-criterion sampling technique (Mtisi 2022) to solicit extensive input and rich insights on the drivers of pineapple output growth and pineapple cultivation from a total of thirty-eight targeted participants. Twenty farmer participants are to be selected from the survey based on the type of pineapple growing activity, size of farm, resource availability, levels of output, and location from each sub-group. The participants will also include three farm owners previously engaged in pineapple cultivation but are now cultivating other crops (termed as “switchers”), three farmers’ cooperatives and/or association, eight supply chain managers and/or executives from MNEs, and four heads of government agencies concerned in pineapple production.

A face-to-face, phone or video interview will be conducted depending on the participants’ preference and accessibility. The interview questions will cover topics such as socio-economic factors of pineapple cultivation, industry set-up and relationship, government support, motivations and decision-making factors, and challenges and opportunities.

Data saturation will be assessed in both survey and interview to establish and justify the sample size (Rahimi 2024). Specifically for the interview, the thirty-eight targeted participants arrived at using a purposive-criterion sampling is designed to capture the diversity, depth, and nuances of the study. Given the heterogeneity of the study population of four types of participants (i.e., farmers, cooperatives, MNEs, and government personnel), the targeted sample size has a good buffer versus the guidance of saturation reached in less than 25 interviews (Hennink and Kaiser 2022).

5.3 Extensive Desk Review

The study will also entail extensive desk review and internet search to get and use data from secondary sources such as industry publications, annual reports, contracts, government reports, and other journals. The desk review is expected to provide baseline information in understanding the pineapple industry and augment the overall explanation of the pineapple production profile and insights.

6. Data Analysis Approach

A descriptive statistical analysis will be done to help set the stage for further understanding the factors affecting pineapple production output. The analysis aims to provide general characteristics and profile of the farm owners and their farms, their reasons for engaging in pineapple cultivation, and perspectives on enablers and deterrents in increasing pineapple production output. Due to data limitation, the evidence that will be derived from this analysis is expected to be illustrative instead of statistically representative.

A single-case study with embedded multiple units of analysis approach (Mtisi 2020; Yin 2018) is chosen for this research to provide nuanced understanding of the interplay among the stakeholders in a duopsony context. Specifically, the case study will focus on understanding how the two MNEs operate to achieve desired pineapple production quantities and how the MNEs interact with farm owners in engaging them in pineapple cultivation. An inductive thematic approach will be used to answer the research questions and to identify common themes that can be summarized into a taxonomy of enablers and deterrents of pineapple output growth.

As the research will involve multiple options of data collection from different sources, a triangulation will be done to look for patterns of similarities and differences. Comparing the determinants of pineapple productivity between individual farm owners and MNEs will provide more insights that explains how these two players behave in relation to pineapple production activities. The comparison allows convergence of information to clearly describe how certain factors impact pineapple output growth and generational renewal. Figure 5 illustrates the research design and key activities for this research project.

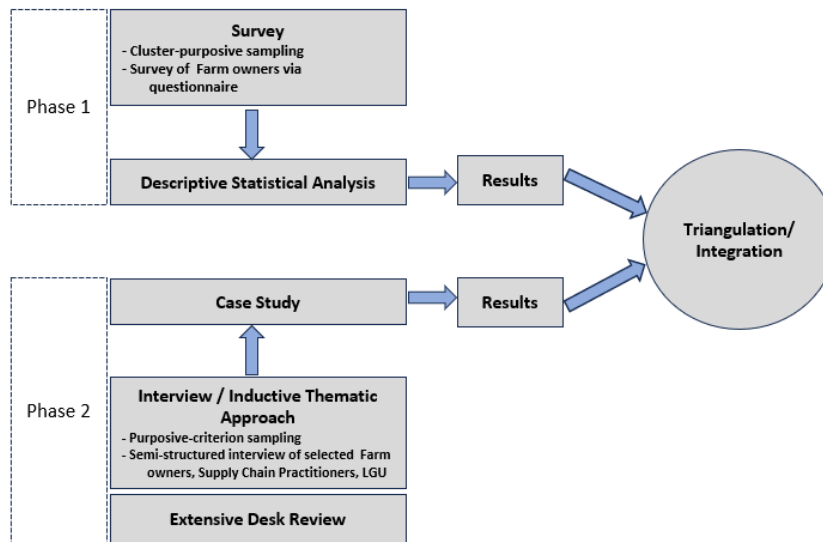


Figure 5. Sequential mixed methods design of analysis of socio-economic determinants of pineapple output growth in Northern Mindanao

7. Conclusion

The study aims to provide a nuanced understanding of the socio-economic determinants of pineapple output growth and the pertinent role of the interplay between MNEs and farm owners in pineapple cultivation. By shedding insights into the challenges and vulnerabilities of pineapple cultivation in a duopsony context, the study can provide inputs for potential policy interventions to enhance pineapple output growth and ensure generational renewal of pineapple cultivation in the Philippines.

The proposed framework that is underpinned by an integration of three theoretical lenses: - resource dependency theory, stakeholder theory, and institutional theory, is believed to be one of the first studies that do so in the scope of this research. It is also potentially one of the few mixed-method studies involving primary and secondary data that seek to offer a nuanced understanding of the interplay among the stakeholders from a socio-economic perspective in a duopsony set-up that is scarcely researched.

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