


Productivity of Corn Farms in Silang, Cavite, as a Predictor of Economic Sustainability

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ABSTRACT

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Ballesteros, A., Bareng, S. L., Bari, B. M. C., De Los Reyes, A. E., Doctor, J. M. B., & Mendoza, H. A. (2026). Productivity of corn internal and external factors affecting corn farms in Silang, Cavite, as a predictor of farm productivity in Silang, Cavite, economic sustainability. *Advances in Philippines*, and assessed whether these *Global Economics and Business Journal* factors predict economic sustainability. A causal-explanatory research design was employed, and data were collected from 95 corn farmers using a structured survey questionnaire. Descriptive statistics, Pearson correlation, and regression analyses were used to analyze the data. The findings indicate that farmers generally perceive their farms as highly productive and economically sustainable. Correlation analysis revealed that both internal productivity factors ($r = 0.270$, $p = 0.008$) and external productivity factors ($r = 0.439$, $p < 0.001$) are significantly associated with economic sustainability. Regression results showed that farm resources and market orientation significantly influence profitability and investment viability, whereas farm infrastructure does not significantly affect profitability. Furthermore, environmental factors significantly influence profitability but do not significantly affect investment viability. The findings suggest that economic sustainability is shaped by both farm-level productivity factors and broader external conditions, with external factors demonstrating stronger explanatory power

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Corn is an important agricultural commodity that contributes to food security, rural livelihoods, and economic development. However, declining productivity and profitability have raised concerns regarding

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INTRODUCTION

Maize, commonly known as corn, is one of the world's most important agricultural commodities and serves as a major source of food, feed, and industrial raw materials. Corn production is concentrated in several regions, particularly North America, Asia, and South America (Wang & Hu, 2021). The crop is cultivated in various forms, including yellow corn, white corn, sweet corn, baby corn, and popcorn, reflecting its broad economic and agricultural significance. In the Philippines, corn remains one of the country's major crops, occupying approximately 2.56 million hectares of agricultural land in 2021. Production occurs during two primary growing seasons: the rainy season from May to August and the dry season from November to February (De Los Santos et al., 2022). Several varieties are commonly cultivated nationwide, including sweet corn, white lagkitan, Visayan white corn, purple corn, wild violet corn, and baby corn.

Within Cavite Province, Silang plays a significant role in corn production. The municipality recorded one of the largest harvested areas in the province, covering 4,901.74 hectares and producing 44,418.23 metric tons of crops. Previous studies have identified Silang as one of the most profitable agricultural areas in Cavite, exhibiting high average profits per hectare within its cropping systems (Anciro et al., 2024). According to the Cavite Ecological Profile (2021), Silang was also among the province's leading corn-producing municipalities, contributing substantially to overall provincial output.

Despite its importance, corn production has experienced considerable challenges in recent years. National corn production has shown fluctuations over the past decade, accompanied by declining farm profitability. Ochave (2020) reported that corn farmers' average net returns declined by 15.5% per hectare, reflecting increasing production costs and other operational constraints. A similar trend has been observed in Silang, Cavite, where corn production decreased from 1,157.41 metric tons in 2021 to 1,038.06 metric tons in 2022, representing a decline of 10.31%. Such conditions raise concerns regarding the long-term sustainability of corn farming and highlight the need to identify factors that support both productivity and economic viability.

Economic sustainability has become a critical issue in contemporary agricultural development because it determines the ability of farming enterprises to remain profitable and viable over time. While productivity is often considered a key determinant of farm performance, both internal factors, such as farm resources, infrastructure, and market orientation, and external factors, including political, legal, and environmental conditions, may influence sustainability outcomes. However, empirical evidence regarding the extent to which these productivity factors contribute to the economic sustainability of corn farms remains limited, particularly in the context of local farming systems in the Philippines.

Therefore, this study aims to examine the factors influencing corn farm productivity in Silang, Cavite, Philippines, and determine whether these factors predict the economic sustainability of corn farms. Specifically, the study seeks to determine the socioeconomic profile of corn farms, assess the internal and external productivity factors affecting corn farming operations, and evaluate the economic sustainability of corn farms in the study area.

LITERATURE REVIEW

Corn Farms

Corn is one of the most essential food crop commodities in the Philippines. It is considered a staple crop alongside rice. In the past years, there have been about 2.5 million hectares of corn farmland, with 8 million metric tonnes produced in 2021 (Statista, 2021). In Silang, Cavite, where most people depend mainly on the agricultural economy (Cahapin et al., 2019), corn production reached 848.69 metric tonnes (Cavite Ecological Profile, 2021).

Productivity

Productivity is an essential determinant of economic and business performance, which measures how input is transformed into output. It also contributes to overall efficiency and success in a rapidly changing global landscape (Holliday, 2021). Improving agricultural productivity is crucial for global economic development and food security, particularly in emerging nations (Đokić et al., 2022). Farmers can enhance productivity and harness the full potential of the farming sector with support from technology, infrastructure, farming practices, access to markets, finance, and knowledge-sharing platforms. Farms with higher productivity have lower operating expenses per acre.

Internal Productivity

The socio-economic profile of corn farms encompasses a wide range of factors that influence their operations, livelihoods, and the agricultural sector's overall sustainability. According to Wardani et al. (2019), factors such as land area, wage, work outside the family, and land ownership significantly influence the income of maize farmers. All have been highlighted as socio-economic factors that may influence a farmer's decision on which farming systems or practices to employ (Beharielal et al. 2022). Klocker et al. (2019) stated that maintaining a farm for longer than a year allows farmers to develop new knowledge and abilities, which can improve productivity, increase crop quality, and increase earnings. Moreover, the size of farms and form of ownership contribute to the overall success and profitability of farms (Ren et al., 2019).

Despite the long-standing practice of agriculture, various factors can both positively and negatively impact production (Raza et al., 2019). Internal factors are the elements that are under control, whether tangible or intangible (Nguyen et al. 2023), while external factors are beyond the farmers' control and affect the success, operations, and strategy implementation of the farm. External factors such as the environment, the economy, and political aspects can either have a beneficial or detrimental impact on the productivity of corn farms.

By effectively utilizing internal factors such as machinery, water irrigation, infrastructure, and marketing strategies, farmers can standardize production, produce better product quality, higher sales prices, and increased income (Peng et al., 2022). Moreso, adopting advanced techniques in corn cultivation leads to increased crop yield and profits, ultimately boosting household income and consumption (Jones et al., 2021).

On the other hand, outside forces like political/ legal aspects influence agricultural production rules and regulations. The impact of agricultural policies extends beyond financial support; policies have far-reaching consequences for the operational practices of corn farms, primarily due to their significant environmental implications. Environmental factors such as climate conditions influence all aspects and phases of plant growth (Fu & Jiang, 2022). Additionally, corn farms encounter various challenges from insect pests and diseases that can significantly affect crop health, productivity, and profitability because they can lessen the crop yield. According to Ahlersmeyer (2020), planting corn

has led to increased pest pressure from diseases, weeds, and, most significantly, insects.

Economic Sustainability

Embracing sustainable farming practices while maximizing economic returns contributes to the agricultural sector's overall sustainability and ensures corn's continued availability as a vital crop for global food security and industrial needs (Kröbel et al., 2021). Economic sustainability advocates sustainable development, sustaining a corn farm's profitability over time by considering its environmental, social, and financial effects. Profitability is a fundamental aspect of economic sustainability as it determines the financial success of agricultural operations. Achieving and maintaining profitability requires a combination of effective management practices, market understanding, cost control, and strategic decision-making.

Farmers are exposed to a variety of risks that ultimately impact their profitability, including production risk, financial risk, and price risk (Yakin et al., 2022). As per Kiely et al. (2019), explained that farms face various risks in agricultural production. Consequently, the willingness of farmers to embrace risks becomes a crucial determinant of the long-term viability of their corn farming endeavours. How they respond to risks and uncertainties profoundly influences the efficiency of corn farming production, highlighting the importance of risk management strategies in optimising outcomes (Yakin et al., 2022). Although viability encompasses multiple dimensions, such as the farm business and household, this specific context does not address the latter aspect. Agricultural viability is about the ability of farmers or groups of farmers to maintain a financially successful farming operation. However, it is essential to note that there is a growing recognition that this should be expanded to include the long-term sustainability of agriculture within a community (Christensen & Limbach, 2019).

Hypotheses Development

The literature suggests that economic sustainability is influenced by a range of factors that affect farm performance and long-term viability. Although productivity and financial performance are conceptually distinct constructs, productivity remains an important determinant of economic outcomes because it reflects the efficiency with which inputs are converted into outputs (OECD, 2020). Internal productivity factors, such as farm resources, infrastructure, and market orientation, may contribute to improved farm performance and profitability. However, the extent to which these factors directly predict the economic sustainability of corn farms remains inconclusive. Therefore, the following hypothesis was formulated:

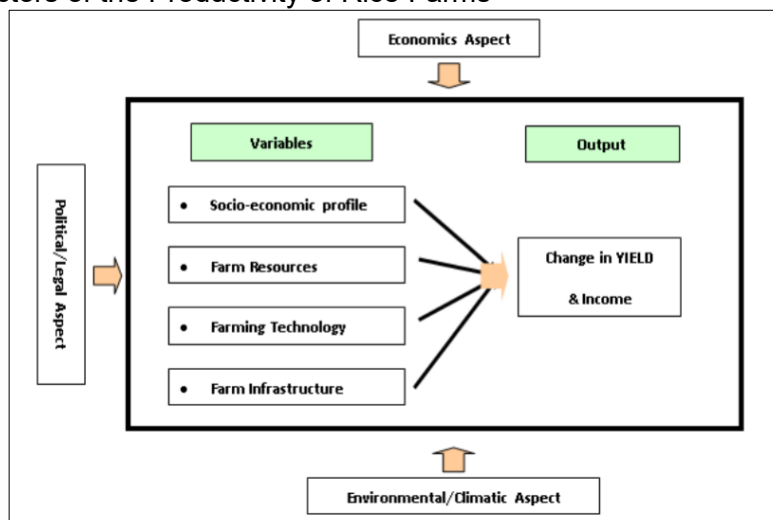
H1: Internal productivity factors do not significantly predict the economic sustainability of corn farms.

In addition to internal factors, economic sustainability is often shaped by external conditions that are beyond farmers' direct control. Empirical studies have identified market prices, climatic conditions, government policies, credit accessibility, and institutional support as important determinants of farm performance. Corn farms operate within these broader environmental and regulatory contexts, which may substantially influence their ability to remain economically sustainable. Evidence from agricultural economics further suggests that external structural factors can exert considerable effects on farm outcomes, sometimes exceeding the influence of internal productivity factors (Tey & Brindal, 2015). Nevertheless, whether these external productivity factors significantly predict the economic sustainability of corn farms requires empirical verification. Thus, the following hypothesis was proposed:

H2: External productivity factors do not significantly predict the economic sustainability of corn farms.

Conceptual Framework

Figure 1. Factors of the Productivity of Rice Farms



Source: Cañete and Temanel (2017)

This study is anchored on the conceptual framework (Figure 1) developed by Cañete and Temanel (2017) in their paper on the productivity of rice in Isabela, Philippines. Their framework interplays all factors that can influence the productivity of rice farms. Internal factors include the socioeconomic profile, farm resources, technology, farming practices used, and infrastructure. The external factors that influence productivity are beyond the control of the farmers, such as economic, environmental, and legal conditions

RESEARCH METHOD

This study utilized a causal explanatory research design. The causal-explanatory method, also known as the explanatory research design or the causal research design, is a research approach that aims to investigate cause-and-effect relationships between variables (Taboola, 2018). Bhasin (2023) stated that this method is typically used when researchers seek to comprehend the contributing factors and reasons for a specific occurrence. The 95 participants were from 32 barangays in the Municipality of Silang, Cavite, selected using random sampling. The researchers collected data using self-made survey questionnaires.

The questionnaire is divided into three parts. The first part of the questionnaire is questions about the socio-economic profile of farmers, including their years of operation, farm ownership, farm size, and annual income. The second part contains twenty questions that address the participants' views on productivity, specifically focusing on both internal and external factors affecting corn farms. Lastly, the third part consists of fifteen questions regarding participants' degree of agreement on the economic sustainability of corn farms. The Likert Scale format was used to organize the survey questions. For each statement, there were five options. Indicators were rated using the following scale: "1 - strongly disagree," "2 - disagree," "3 - neither agree nor disagree," "4 - agree," and "5 - strongly agree."

The statistical treatment of data includes frequency and percentage, mean and standard deviation, Pearson correlation to determine the strength of the relationship between variables, and regression to determine how productivity predicts economic sustainability.

RESULTS

Socioeconomic Profile of Corn Farms

Table 1. Number of Years of Operation of Corn Farms

Years of Operations	Frequency	Percentage
1-5	28	29.47
6-10	17	17.89
11-15	16	16.84
16-20	9	9.47
21 and more	25	26.33
Total	95	100

As presented in Table 1, the largest proportion of respondents (29.47%) had been operating their corn farms for 1–5 years. This was followed by farmers with 21 years or more of farming experience (26.33%), while smaller proportions reported operating their farms for 6–10 years (17.89%), 11–15 years (16.84%), and 16–20 years (9.47%). The distribution suggests that although a substantial number of farmers possess extensive farming experience, the sector is also characterized by a considerable presence of relatively new entrants.

Table 2. Form of Ownership

Farm Ownership	Frequency	Percentage (%)
Individual and Family Ownership (Sole Proprietorship)	66	69.47
Partnership	8	8.42
Corporation	0	0
Leased/Tenanted	17	17.89
Rights	4	4.21

The ownership structure summarized in Table 2 demonstrates that family-owned or sole proprietorship farms dominate corn production in Silang, Cavite. Of the 95 respondents, 69.47% reported operating under individual or family ownership arrangements, whereas 17.89% were tenants, 8.42% operated as partnerships, and only 4.21% held land-use rights. No respondent reported operating under a corporate structure. These findings indicate that corn farming remains largely dependent on small-scale family-based agricultural enterprises.

Table 3. Size of Corn Farms Per Hectare

Farm Size (hectares)	Frequency	Percentage (%)
1	32	33.68
2	13	13.68
3	7	7.37

4	3	3.16
5	0	0
Others (sqm)	40	42.11
Total	95	100

Table 3 reveals that farm sizes are generally small among the surveyed respondents. The largest category consisted of farms measured in varying square-meter areas (42.11%), followed by one-hectare farms (33.68%). Meanwhile, only a limited number of respondents managed farms larger than two hectares. This pattern reflects the predominance of smallholder farming systems within the municipality.

Table 4. Annual Income Generated from Corn Farms

Annual Income	Frequency	Percentage (%)
Below 50,000.00	69	72.63
50,001.00 - 100,000.00	18	18.95
100,001.00 - 200,000.00	4	4.21
200,001.00 - 300,000.00	2	2.11
300,001.00 - 400,000.00	1	1.05
400,001.00 - 500,000.00	1	1.05
Total	95	100

As depicted in Table 4, most respondents (72.63%) generated annual farm income below ₱50,000. The proportion of farmers earning higher income levels declined substantially across subsequent categories. These results indicate that corn farming provides relatively modest economic returns for most producers in the study area.

Internal Productivity Factors

Table 5. Degree of Agreement of Participants on Farm Resources

Farm Productivity (Internal Factors - Farm Resources)		Mean	Standard Deviation	Verbal Interpretation
1	I cultivate the land and raise crops.	4.67	0.61	Strongly Agree
2	I ensure proper water drainage for the crops' survival and to maximize their yield potential.	3.66	1.33	Agree
3	I ensure the quality of seeds to increase crop yield.	4.67	0.64	Strongly Agree
4	I strive to produce more goods for the same amount of relative work.	4.56	0.78	Strongly Agree
5	I value the physical strength of farmers to increase crop production.	4.78	0.47	Strongly Agree
Average Mean		4.47		Strongly Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

The responses reported in Table 5 yielded an overall mean score of 4.47, corresponding to a “Strongly Agree” interpretation. Among the indicators, valuing farmers’ physical strength to increase crop production obtained the highest mean score (M = 4.78), whereas ensuring proper water drainage recorded the lowest mean score (M = 3.66). Nevertheless, all indicators received favorable evaluations, suggesting that respondents perceive farm resources as important contributors to productivity enhancement.

Table 6. Degree of Agreement of Participants on Farm Infrastructure

Farm Infrastructure		Mean	Standard Deviation	Verbal Interpretation
1	I have adequate storage facilities and post-harvest infrastructure.	3.56	1.40	Agree
2	I make sure proper irrigation is in place to ensure the crop receives adequate water.	3.55	1.26	Agree
3	I have access to well-maintained farm roads and transportation infrastructure.	4.04	1.14	Agree
4	I use multiple cropping practices to significantly contribute to enhancing agricultural productivity and land utilization efficiency.	4.37	0.80	Strongly Agree
5	I do expansion of agricultural operations through the use of agricultural machinery to increase productivity and reduce production costs.	3.80	1.25	Agree
Average Mean		3.86		Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

Based on the results shown in Table 6, farm infrastructure received an average score of 3.86, indicating general agreement among respondents. The practice of multiple cropping achieved the highest evaluation (M = 4.37), while irrigation adequacy received the lowest rating (M = 3.55). Overall, the findings suggest that respondents acknowledge the role of infrastructure-related components in supporting agricultural productivity.

Table 7. Degree of Agreement of the Participants on Market Orientation

Market Orientation		Mean	Standard Deviation	Verbal Interpretation
1	I meet the needs and desires of customers through efficient farm management.	4.49	0.81	Strongly Agree
2	I maintain a good relationship with my customers because I consistently deliver crops on time.	4.57	0.72	Strongly Agree
3	I pay attention to how my competitors react to economic changes to stay ahead in the agricultural sector due to high-quality yields.	4.41	0.87	Strongly Agree
4	I prioritize promptly selling my harvest rather than storing it and waiting for prices to rise for increased profit, as the corn may be susceptible to pests and maturity delays.	4.48	1.01	Strongly Agree
5	Focusing on new strategies or techniques in the market has aided me in enhancing the overall quality of my corn produce.	4.48	0.84	Strongly Agree

Average Mean	4.49	Strongly Agree
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Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

The data displayed in Table 7 indicate a strong level of agreement regarding market orientation, with an overall mean score of 4.49. Maintaining positive customer relationships through timely crop delivery emerged as the highest-rated practice (M = 4.57). In contrast, monitoring competitors' responses to economic changes obtained the lowest score (M = 4.41), although it remained within the "Strongly Agree" category. These findings demonstrate that respondents exhibit a high degree of market awareness and customer orientation.

External Productivity Factors

Table 8. Degree of Agreement of the Participants on Political Factor

Political/Legal Aspects		Mean	Standard Deviation	Verbal Interpretation
1	Agricultural mechanization is essential for boosting income and achieving high-quality agricultural development.	4.28	1.15	Strongly Agree
2	Government subsidies are essential to boost our agricultural sector.	4.71	0.60	Strongly Agree
3	Prioritizing the preservation of farmland as a valuable resource influences crop productivity.	4.72	0.60	Strongly Agree
4	I value having access to dependable transportation infrastructure (farm to market road).	4.49	0.89	Strongly Agree
5	Government policies play a crucial role in preserving agricultural land to protect agricultural workers.	4.65	0.61	Strongly Agree
Average Mean		4.57		Strongly Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

According to Table 8, political and legal factors received an overall mean score of 4.57, reflecting strong agreement among participants. Preserving farmland as a valuable agricultural resource achieved the highest rating (M = 4.72), whereas agricultural mechanization recorded the lowest mean score (M = 4.28). The results suggest that respondents recognize the importance of government support, policy interventions, and legal protections in sustaining agricultural productivity.

Table 9. Degree of Agreement of the Participants on Environmental Factors

Environmental/Climatic Aspects		Mean	Standard Deviation	Verbal Interpretation
1	Sustainable practices should be adopted in corn farming to ensure long-term ecological balance.	4.47	0.73	Strongly Agree
2	Climate variability projections indicate a potential for enhancing agricultural productivity.	4.71	0.54	Strongly Agree
3	Pest-resistant mechanisms are crucial to protect my crops.	4.72	0.63	Strongly Agree

4	New agricultural strategies/techniques could improve yield stability.	4.63	0.60	Strongly Agree
5	Adjusting planting dates varied due to climate change.	4.58	0.72	Strongly Agree
Average Mean		4.62		Strongly Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

As evidenced by Table 9, environmental factors generated the highest overall mean score among the external productivity dimensions (M = 4.62). Pest-resistant mechanisms were viewed as the most important environmental consideration (M = 4.72), while the adoption of sustainable farming practices obtained the lowest score (M = 4.47). Despite this difference, all indicators were evaluated positively, highlighting farmers' awareness of environmental influences on crop production.

Economic Sustainability

Table 10. Degree of Agreement of the Participants on Corn Farms' Profitability

Economic Sustainability - Profitability		Mean	Standard Deviation	Verbal Interpretation
1	A good quality of raw materials can help to increase sales.	4.77	0.49	Strongly Agree
2	I gain more profitable opportunities by maximizing the use of renewable resources.	3.63	1.26	Agree
3	The subsidies from the government help to increase my income.	4.42	0.86	Strongly Agree
4	By utilizing modern techniques in corn farming, I have been able to increase my income.	4.57	0.65	Strongly Agree
5	Despite exerting efforts to increase the supply of corn, I still find it challenging to protest against the low prices set by corn buyers.	4.21	1.00	Strongly Agree
Average Mean		4.32		Strongly Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

The profitability dimension, summarized in Table 10, achieved an overall mean score of 4.32, corresponding to a "Strongly Agree" interpretation. The statement concerning the contribution of quality raw materials to increased sales received the highest rating (M = 4.77), whereas maximizing renewable resources for profitability obtained the lowest mean score (M = 3.63). These findings indicate that respondents generally perceive corn farming as a profitable agricultural activity.

Table 11. Viability of Investment

Viability of Investment		Mean	Standard Deviation	Verbal Interpretation
1	I consider corn farmland as a good long-term investment.	4.47	0.73	Strongly Agree
2	There is a high return on investment through the good quality of corn farmland.	4.34	0.86	Strongly Agree
3	The farm generates a considerable net profit despite the changes in weather conditions or natural calamities due to proper cropping practices.	3.68	1.12	Agree

4	Despite the pest infestation the farm generates a considerable net profit.	3.29	1.40	Neutral
5	The farm provides steady cash flow in the long run due to the use of farming machinery.	4.35	0.88	Strongly Agree
Average Mean		4.03		Agree
Overall Mean		4.28		Strongly Agree

Scoring System: 1.00-1.80 = Strongly Disagree; 1.81-2.60 = Disagree; 2.61-3.40 = Neutral; 3.41-4.20 = Agree; 4.21-5.00 = Strongly Agree

The results presented in Table 11 show that the viability of investment obtained an overall mean score of 4.03, indicating agreement among respondents. Considering corn farmland as a long-term investment emerged as the highest-rated item (M = 4.47), while profitability despite pest infestation received the lowest evaluation (M = 3.29). This pattern suggests that farmers view corn farming as a potentially viable long-term investment, although concerns remain regarding risks associated with pest-related production losses.

Relationship Between Productivity Factors and Economic Sustainability

Table 12. Internal Factors of Productivity Relationship with Economic Sustainability

		Correlation	P value	Remark	Decision
Internal productivity	Economic sustainability	0.270	0.008	High significant	Reject the null hypothesis

Note: $p < 0.01$

As shown in Table 12, internal productivity factors were significantly associated with economic sustainability ($r = 0.270$, $p = 0.008$). The positive correlation indicates that improvements in internal productivity factors are accompanied by improvements in economic sustainability. However, the magnitude of the relationship remains relatively weak.

Table 13. External Factors of Productivity Relationship with Economic Sustainability

		Correlation	P value	Remark	Decision
External productivity	Economic sustainability	0.439	0.000	High significant	Reject the null hypothesis

Note: $p < 0.01$

The correlation results reported in Table 13 demonstrate a statistically significant relationship between external productivity factors and economic sustainability ($r = 0.439$, $p = 0.000$). Compared with internal productivity factors, the relationship is stronger, suggesting that external conditions play a more substantial role in shaping the economic sustainability of corn farms.

Influence of Productivity Factors on Economic Sustainability

Table 14. Regression Weights of Internal Factors of Productivity on Economic Sustainability

Internal Factors of Productivity	Productivity	Regression Coefficient (B)	Std Error	T Value	P-Value	Significance	Remark
Farm Resources	Profitability	0.332	0.117	2.83	0.005	Highly Significant Influence	Reject H0
	Viability of Investment	0.249	0.088	2.82	0.005	Highly Significant Influence	Reject H0
Farm Infrastructure	Profitability	0.038	0.071	0.543	0.588	Not Significant Influence	Accept H0
	Viability of Investment	0.212	0.074	2.83	0.005	Highly Significant Influence	Reject H0
Market Orientation	Profitability	0.364	0.075	4.82	0.001	Highly Significant Influence	Reject H0
	Viability of Investment	0.352	0.109	3.19	0.002	Highly Significant Influence	Reject H0
Model Summary	R = 0.270						

Legend: p-value \leq 0.01 = High Significance; p-value \leq 0.05 = Significance; p-value \geq 0.05 = Not Significance

The regression estimates presented in Table 14 indicate that farm resources and market orientation significantly influence both profitability and investment viability. In contrast, farm infrastructure did not significantly affect profitability ($p = 0.588$), although it significantly influenced investment viability. The model explains 27% of the variation in economic sustainability, suggesting that internal productivity factors contribute meaningfully to sustainability outcomes.

Influence of External Factors of Productivity on Economic Sustainability

Table 15. Regression Weights of External Factors of Productivity on Economic Sustainability

External Factors of Productivity	Economic Sustainability	Regression Coefficient (B)	Std Error	T Value	P-Value	Significance	Remark
Political/ Legal	Profitability	0.231	0.096	7.37	0.017	Highly Significant Influence	Reject H ₀
	Viability of Investment	0.249	0.088	2.82	0.005	Highly Significant Influence	Reject H ₀
Environment/ Climatic	Profitability	0.370	0.113	3.25	0.001	Highly Significant Influence	Reject H ₀
	Viability of Investment	0.225	0.159	1.41	0.159	Not Significant Influence	Accept H ₀
Model Summary	R = 0.439						

Legend: p-value ≤ 0.01 = High Significance; p-value ≤ 0.05 = Significance; p-value ≥ 0.05 = Not Significance

Table 15 summarizes the effects of external productivity factors on economic sustainability. The findings reveal that most external factors exert a significant influence on sustainability outcomes. However, environmental factors do not significantly affect investment viability. The model explains 44% of the variation in economic sustainability, indicating that external productivity factors provide stronger explanatory power than internal productivity factors

DISCUSSION

The findings indicate that corn farming in Silang, Cavite, is predominantly characterized by small-scale, family-owned operations with relatively low annual income levels. This profile is consistent with the observations of Wardani et al. (2019), who found that farm size and ownership structure significantly influence farmers' income and operational performance. Likewise, Ren et al. (2019) emphasized that farm size contributes substantially to agricultural sustainability and profitability, while Das and Ganesh-Kumar

(2018) noted that smaller farms often face income limitations due to restricted economies of scale.

The strong agreement regarding farm resources highlights the importance of productive assets and labor in supporting farm productivity. Respondents particularly emphasized physical labor as a major contributor to production. While this finding reflects the continued reliance on manual labor in local farming systems, it contrasts with studies by Zhichkin et al. (2019), Rakhra et al. (2021), and Peng et al. (2022), which demonstrated that mechanization improves efficiency, reduces production costs, and enhances agricultural productivity. Nevertheless, Baudron et al. (2019) reported that labor utilization can also positively contribute to farm productivity, especially in smallholder farming contexts. The relatively lower score assigned to water drainage further supports the argument of Wang et al. (2020) that effective water management remains a critical determinant of crop performance.

Regarding farm infrastructure, respondents generally acknowledged its contribution to productivity, particularly through multiple cropping practices. This finding supports Peng et al. (2022), who argued that multiple cropping improves land utilization efficiency, agricultural output, and farmers' welfare. Similarly, Waha et al. (2021) emphasized that multiple cropping can contribute to global food security and sustainable agricultural development when adapted to local conditions.

The strong market orientation demonstrated by respondents suggests that customer relationships and responsiveness to market conditions are important components of farm productivity. This finding aligns with Ho et al. (2018), who found that market-oriented agricultural practices improve competitiveness and performance. Likewise, Jian et al. (2021) reported that market orientation contributes to stronger farm outcomes by integrating production decisions with market demands. The importance placed on customer relationships further supports the findings of Horská et al. (2020), who emphasized that long-term customer relationships are essential for sustainable agricultural marketing.

The high ratings assigned to political and legal factors indicate that respondents recognize the importance of government intervention in supporting agricultural productivity. This finding is consistent with Kumar and Alamgir (2022), who highlighted the role of subsidies and government support in improving farmers' access to agricultural technologies. Similarly, Rakhra et al. (2021) found that supportive policies facilitate mechanization adoption and productivity enhancement. The strong emphasis on farmland preservation also reinforces Nierenberg's (2020) argument that protecting agricultural land is essential for maintaining future production capacity.

Environmental factors emerged as the highest-rated external productivity dimension, demonstrating farmers' awareness of climate and pest-related challenges. The importance attached to pest-resistant mechanisms supports the findings of Sarkar et al. (2021), who reported that pest management remains one of the most important strategies for protecting crop yields in developing countries. Similarly, Piñeiro et al. (2021) emphasized that sustainable agricultural practices are essential for balancing productivity and environmental preservation over the long term.

Regarding economic sustainability, respondents perceived profitability and investment viability positively. The importance assigned to quality raw materials supports the arguments of Bisley Company (2021) and Mabaso (2023), who emphasized that quality agricultural inputs are fundamental for improving crop performance and market outcomes. However, the relatively lower confidence regarding renewable resource

utilization suggests that adoption remains limited, supporting Everest (2021), who argued that renewable technologies in agriculture require stronger institutional and cooperative support mechanisms.

The correlation and regression analyses provide further evidence that both internal and external productivity factors contribute significantly to economic sustainability. Internal productivity factors demonstrated a significant but relatively weak relationship with economic sustainability, while external factors exhibited a stronger association. These findings support Tey and Brindal (2015), who argued that farm profitability and sustainability are influenced by a broad combination of internal resources and external environmental conditions. The significant effects of farm resources and market orientation indicate that productive assets and market responsiveness directly contribute to profitability and investment viability. Conversely, the non-significant effect of farm infrastructure on profitability suggests that infrastructure alone may be insufficient to generate immediate financial returns without complementary managerial and market-oriented capabilities.

The stronger predictive power of external factors highlights the substantial influence of government policies, environmental conditions, and institutional support on farm sustainability. However, the non-significant influence of environmental factors on investment viability suggests that farmers may perceive environmental risks as manageable through adaptation strategies rather than as direct determinants of investment decisions. This finding partially supports Christensen and Limbach (2019), who argued that agricultural viability extends beyond short-term profitability and depends on broader sustainability considerations.

Overall, the findings imply that strengthening farm resources, market orientation, supportive government policies, and environmental management practices can improve the economic sustainability of corn farms. Policymakers should prioritize investments in mechanization support, irrigation systems, pest management programs, market access facilitation, and farmer training initiatives. Such interventions could improve productivity while simultaneously enhancing long-term profitability and investment viability among corn farmers in Silang, Cavite.

CONCLUSION

This study examined the internal and external factors influencing corn farm productivity and assessed their role in predicting the economic sustainability of corn farms in Silang, Cavite, Philippines. The findings indicate that farmers generally perceive their farms as highly productive, with strong evaluations of both internal productivity factors, including farm resources, infrastructure, and market orientation, and external productivity factors, particularly political, legal, and environmental conditions. Among the internal factors, farm resources and market orientation emerged as important dimensions of productivity, while environmental and political–legal factors were perceived as critical external influences on farming operations.

The results further demonstrate that corn farmers generally view their farming activities as economically sustainable, particularly in terms of profitability and long-term investment potential. Nevertheless, concerns remain regarding the ability of farms to maintain profitability under adverse conditions, especially in the presence of pest infestations and other environmental challenges. These findings suggest that although corn farming remains a viable economic activity in the study area, its sustainability is subject to various production and market-related risks.

The inferential analyses provide evidence that both internal and external productivity factors are significantly associated with economic sustainability. Internal productivity factors exhibited a positive and significant relationship with economic sustainability, although the strength of the association was relatively weak. In contrast, external productivity factors demonstrated a stronger relationship and greater explanatory power, indicating that economic sustainability is influenced not only by farm-level management practices but also by broader institutional, regulatory, and environmental conditions. The regression results further revealed that farm resources and market orientation significantly contribute to profitability and investment viability, while the influence of farm infrastructure on profitability was not statistically significant. Similarly, although environmental and climatic factors significantly influenced profitability, their effect on investment viability was not significant. These findings highlight the complex and multidimensional nature of economic sustainability in agricultural production systems.

The study contributes to the growing literature on agricultural sustainability by demonstrating that economic sustainability cannot be explained solely by productivity-related factors within the farm. Instead, sustainable farm performance depends on the interaction between internal managerial capabilities and external structural conditions that shape production opportunities and constraints. Consequently, efforts to improve the long-term sustainability of corn farming should adopt an integrated approach that strengthens farm resources, enhances market orientation, promotes adaptive farming practices, and provides supportive institutional and policy environments.

From a practical perspective, the findings underscore the importance of government support, agricultural extension services, and stakeholder collaboration in improving the resilience and competitiveness of corn farming systems. Policies that facilitate access to modern technologies, market information, infrastructure development, and climate-resilient farming practices may contribute to enhanced profitability and long-term sustainability. Future studies may expand the scope of investigation by incorporating additional dimensions of sustainability, such as environmental and social sustainability, examining different geographical contexts, and employing longitudinal approaches to capture changes in farm productivity and sustainability over time.

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DECLARATION OF CONFLICTING INTERESTS

The authors have declared no potential conflicts of interest concerning the study, authorship, and/or publication of this article.

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