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GOVERNMENT INTERVENTION AND ECONOMIC WELL-BEING OF FARMERS

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ABSTRACT

This paper investigates the impact of the PM-Kisan Samman Nidhi scheme, revised in 2020, on the economic well-being of farmers in Karur, Tamil Nadu. The study employs a mixed-method approach, incorporating both quantitative and qualitative data from 50 farmers through structured questionnaires and secondary sources. Key findings indicate a significant increase in farmers' average annual income and investments in agricultural inputs, leading to higher productivity and improved living standards. Despite an observed rise in debt levels, the scheme facilitated greater access to formal credit and insurance. The analysis, supported by subsidy theory, real income effect, microfinance, and Cobb-Douglas production function, underscores the positive influence of PM-Kisan on agricultural productivity and financial resilience among beneficiary farmers. The study concludes with recommendations for addressing limitations and future research directions to enhance policy effectiveness.

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INTRODUCTION

Agriculture in India is characterized by its diversity and contributes to 20.19% of India's GDP and employment, with approximately 50% of the workforce engaged in agriculture-related activities[1]. It serves as a source of livelihood for millions of people, especially in rural areas, and plays a critical role in ensuring food security for the nation[2]. The state of Tamil Nadu, known for its robust industrial sector, also possesses a vibrant agricultural landscape[3]. Karur district is renowned for its agricultural productivity and diverse crop cultivation[4] and benefits from favorable climatic conditions and fertile land, making it conducive for the cultivation of crops such as paddy, maize, millets, and cotton[5]. Agriculture has long been a cornerstone of Karur's economy, offering vital employment prospects and serving as a principal source of income for a substantial portion of its residents[6]. However, the economic well-being of farmers in Karur has been a subject of concern as they face various challenges, including inadequate access to institutional credit, lack of modern farming practices, and market uncertainties[7]. Consequently, there has been a persistent need to address these challenges and improve the economic well-being of farmers in the region. One such initiative is the Pradhan Mantri Kisan Samman Nidhi launched in 2019[8] and then revised in 2020[9]. The primary objective of this initiative was to provide direct income support to farmers and improve their livelihoods[10]. Under the scheme, eligible small and marginal farmers receive a fixed income support of ₹6,000 per year, transferred directly into their bank accounts in three instalments of Rs. ₹2,000 each[11].The PM-Kisan

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Samman Nidhi aimed to enhance farmers' access to financial resources, strengthen their purchasing power, and promote agricultural productivity[12]. The scheme underwent revisions in 2020[13], expanding its coverage and addressing some of the limitations and shortcomings identified in its initial implementation. The revised PM-Kisan Samman Nidhi introduced several noteworthy changes. One of thekey modifications was to ensure that a larger number of farmers, irrespective of their landholding size, could avail themselves of the benefits of the scheme as 55% of the agricultural labor force consisted of landless farmers[14]. Additionally,it also aimed to strengthen the integration of technology in the implementation process, ensuring accurate identification and verification of beneficiaries[15]. The significance of agriculture in Karur and the potential impact of the revised PM-Kisan Samman Nidhi on farmers' economic well-being makes this study worthy of investigation as a striking 80% of Karur's economic activity is rooted in agriculture, with over 30% of the region's land dedicated to active cultivation, and an additional 10% left as current fallow.[16] The scope of the study is to evaluate the extent to which the revised PM-Kisan Samman Nidhi has influenced the economic conditions of farmers in Karur, Tamil Nadu through indicators such as changes in farmers' income levels, agricultural productivity and access to credit. Thus, the research question can be stated as: "*To What Extent Has the PM-Kisan Samman Nidhi Revised in 2020 Impacted the Economic Well-being of Farmers in Karur, Tamil Nadu?*"

Hypothesis

H1: The PM-Kisan Samman Nidhi will result in an increase in average annual household income as well as wealth for scheme beneficiaries.

H2: The PM-Kisan Samman Nidhiwill allow farmer beneficiaries to access insurance benefits, formal creditand reduce reliance on loans from informal sector.

H3: The PM-Kisan Samman Nidhi should enable beneficiary farmers in Karur district to increase investments in seeds, fertilizers and equipment over the, resulting in an increase in agricultural output per hectare of land.

METHODOLOGY

To conduct this research, a mixed-method approach was employed, combining quantitative and qualitative data analysis and qualitative. Primary data was collected through a structured questionnaire framed in the local language (Tamil) to ease interpretation for 50randomly selected farmers in Karur.Convenience and stratifiedsampling were used to ensure representation across different taluks, landholding sizes, and types of crops grown. The questionnaire collected information on farmers' socio-economic characteristics, their participation in the PM-Kisan Samman Nidhi scheme, and the perceived impact of the scheme on their economic well-being. Descriptive statistics was used to calculate the meanincome, expenditure, and savings for before and after the scheme. It was an essential tool for understanding and interpreting data as it summarises and describe data meaningfully[17]. Inferential statistics, such as t-tests and regression analysis, wereused to compare the economic well-being of beneficiaries before and after the revision of the scheme to determine if the differences were statistically significant. Secondary data was collected from reports and statistics published by the Tamil Nadu Agricultural Database, National Bank for Agriculture and Rural Development[18], Indian Institute of Management Ahmedabad[19], and NABARD[20]were utilized to supplement the primary data analysis. These sources provided valuable information on the broader agricultural context in Karur, previous studies on farmer welfare schemes, and the policy framework surrounding the PM-Kisan Samman Nidhi. Additionally, such government sources provided reliable and comprehensive information with a sense of objectivity and neutrality, which offered unbiased data and insights free from commercial or personal agendas. However, the reports often focused on specific policy areas, whichoverlooked broader societal or economic contexts and could also be updated as it takes time to be published or updated.

THEORETICAL ANALYSIS

Subsidy Theory& Real Income Effect: A subsidy is a financial assistancegiven by the government to consumers or firms, usually in the form of a cash, grants or tax breaks[21]. In economic theory, subsidies can be used to boost production or to offset market failures and externalities to achieve economic efficiency[22].Real Income Effect is a consumer theory that studies the change in consumption of goods and services due toa change in income of individuals[23], which in this case are the scheme beneficiaries.

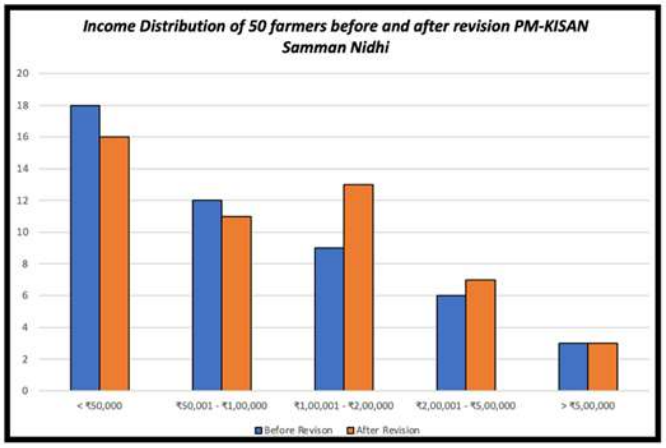

Figure 1. Income distribution before and after PM-KISAN Samman Nidhi[24]

[12]PMKisan Samman Nidhi. "PRADHAN MANTRI KISAN SAMMAN NIDHI SCHEME." PMKisan, 29 Mar. 2020, pmkisan.gov.in/Documents/RevisedPM-KISANOperationalGuidelines(English).pdf. Accessed 6 Oct. 2023.

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When subsidies are implemented, they directly affect the income of beneficiaries, leading to higher consumption and improved overall well-being of individuals[25].When individuals receive an increase in income through a subsidy, they have the potential to increase their utility because they can now afford to consume more goods and services[26].It focuses on the relationship between changes in income and changes in consumption and suggests that all else being equal (ceteris paribus), individuals experience an improvement in their overall well-being when they have more income (due to the subsidy) to allocate to goods and services[27].

Figure 1. Provides a visual representation of how farmers within the income bracket of ₹1,00,000 to₹2,00,000 experienced a significant increase in income levels after the scheme's revision[28].

$$Mean\ income\ before\ Revision = \frac{\Sigma Income\ before\ Revision}{No.of\ Farmers}$$

$$\text{Mean income before Revision} = \frac{6600000}{50}$$

$$\text{Mean income before Revision} = ₹132000$$

$$\text{Mean income after Revision} = \frac{\Sigma\text{Income before Revision}}{\text{No. of Farmers}}$$

$$\text{Mean income after Revision} = \frac{7125000}{50}$$

$$\text{Mean income after Revision} = ₹142500$$

$$\text{Change in income as \%} = \frac{\text{New income} - \text{Old income}}{\text{Old income}} \times 100$$

∴ % increase in income before and after revision of PM Kisan=7.13%

On calculating the mean income levels prior to the revision of the PM-Kisan Samman Nidhi scheme, it was found that they had an average income of₹1,32,000. However, after the revision, farmers experienced a notable increase in their average income, reaching a mean income of₹1,42,500. This significant income growth of 7.13% signifies the direct impact of the subsidy support on farmers' financial and economic well-being[29].The net revenue per hectare of land after the revision was₹54,098 whereas the net revenue before the revision was ₹40,082, representing anenormous34.9% increase over the net revenue of ₹40,082 per hectare before the scheme's revision[30]. Gross revenue, on the other hand, revealed that the farms' per hectare gross income after the revision of the policy was ₹73,100, while that before the revision was ₹72,428[31], which is a mere 0.92% gain. Thisindicated that the sample farms' per household income from agriculture after the revision was 9.85% higher than the farms' per household income before the revision[32]. The primary crop activities include land ploughing, seeding, fertilisers, pesticides, irrigation, harvesting, and threshing. Of all the crop operations, land ploughing accounted for the largest portion of the PM-Kisan Scheme, at 40.55%[33]. Subsequently, in 2020–21, fertilisers and seeds constituted 22.69% and 21.01%[34] of the PM-Kisan Scheme's total fund, respectively.A sizable portion of the income gain went towards investments in a range of goods and services and other assets.[35]

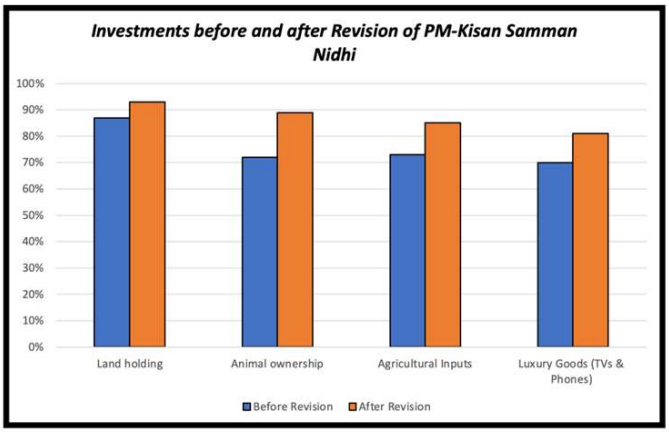

Figure 2. Changes in investments before and after revision[36]

Figure 2 illustrates the increase in land holding among farmers before and after the scheme revision is a crucial indicator of their improved economic well-being as it suggests that these farmers have been able to invest in wealth, such as agricultural land, potentially expanding their farming operations. A rise in animal ownership also suggested that farmers made investments in livestock farming, therefore diversifying their sources of income. A higher level of income also enabled farmers to make larger investments in agricultural inputs[37], such as premium seeds and tractors *(Figure 3)*, which may boost agricultural output and, in turn, raise income and economic well-being. *Figure 3* shows a graphical representation of various combinations of seeds and tractors that the farmers can consume. At any point on the curve, the combination of the two will leave the consumer equally well off or equally satisfied—hence indifferent[38]. Although it is assumed that individuals have no particular preference for either one good or another based on their relative quantities, consumers are always more satisfied when achieving bundles of goods on indifference curves that are farther from the origin[39]. As seen earlier,the rise in farmers' mean income in Karur after revision of PM-Kisan increases their consumption level, leading to a rightward shift in the indifference curve from IC_B to IC_A, allowing consumption of$S + y$ units of seeds along with $T + x$ units of tractors. The result is increase in economic well-being of beneficiary farmers[40]. The entire

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amount of₹4,60,700was spent, of which 84.25% was allocated to seeds, fertiliser, and ploughing combined. 3.36% and 4.10%, respectively, of the total amount of₹4,60,700 under the PM-Kisan Scheme went for pesticides and irrigation[41].

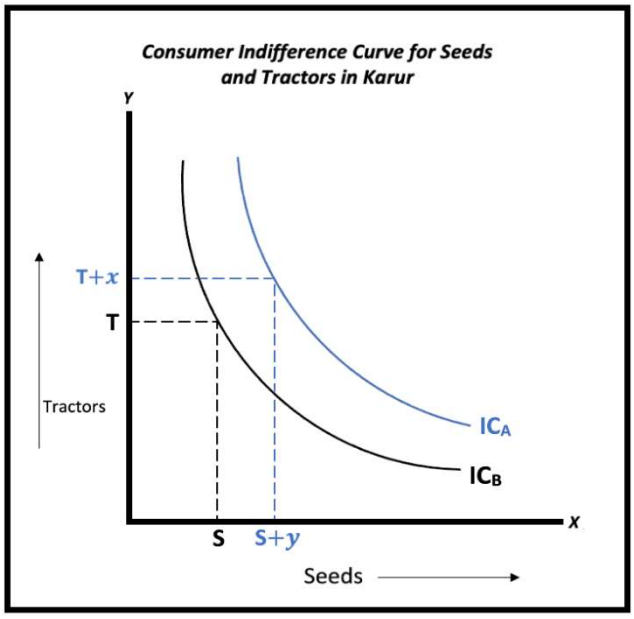

Figure 3. Indifference Curve for Seeds & Tractors in Karur[42]

Additionally, the increasing trend shown in the consumption of luxury goods such as TVs and mobile phones highlights the improved discretionary spending power among these farmers[43]. Such spending patterns are all in line with Subsidy and Realincome theory, which suggests that higher income through a subsidy leads to increased consumption of goods and services and improved living standards. The increase in farmers' income levels demonstrated that the financial assistance provided by the PM-Kisan Samman Nidhi scheme improved economic well-being for the beneficiaries[44]. *Figure 1*and *3* visually highlights this income growth, emphasizing the tangible benefits that the scheme's revision has brought to farmers, thusacceptingthe first hypothesis that *"The PM-Kisan Samman Nidhiwill result in an increase in average annual household income as well as wealth for scheme beneficiaries".*

Microfinance & Financial Inclusion: Microfinance serves as a bridge between formal banking institutions and informal lenders, addressing the financial needs of individuals and households traditionally excluded from mainstream banking services[4546].The financial inclusion theory posits that granting access to formal financial services like banking, credit, and insurance can enhance individuals' ability to manage finances, elevate living standards, and reduce vulnerability[47]. Microfinance initiatives contribute to the realization of financial inclusion objectives by facilitating farmers' interactions with formal financial institutions.This implies that the additional income assistance offered by the PM-Kisaninitiative could encourage farmers to interact with formal financial institutions, improving their well-being[48].

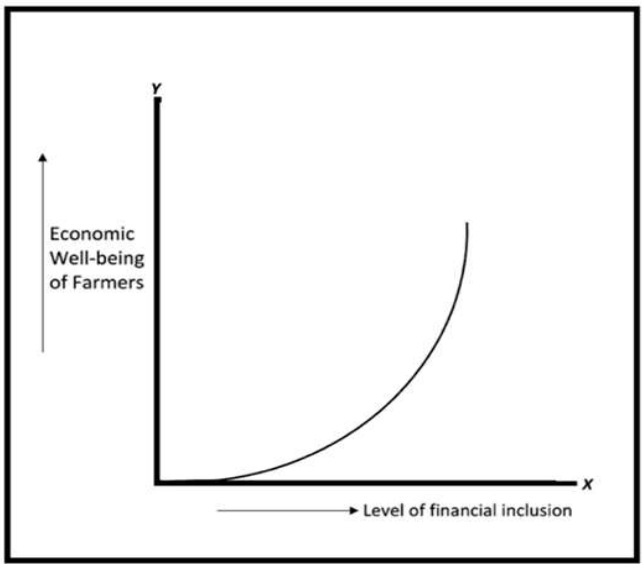

Figure 4. Relationship between financial inclusion and economic well-being of farmers[49]

These theories are supported by the upward-sloping curve *(Figure 4)* that indicates a positive correlation between farmers' economic well-being and financial inclusion. This is because microfinance can lead to financial inclusion where farmers have access to financial services. Only 34% of farmers in Tamil Nadu had access to formal credit from banks or cooperatives, while the remaining 66% of farmers relied on informal lenders, who charge high interest rates and have predatory lending practices[50]. The lack of access to formal credit prevented farmers in Karur from investing in new technologies, high-yielding seeds and irrigation systems and made them vulnerable to shocks, such as droughts and floods (2021), as they are unable to access credit to rebuild their lives after a disaster[51].

Table 1. Percentage of farmers with access to formal credit[52]

Year	Percentage of farmers with access to formal credit
2020	42%
2021	68%
2022	81%

However, as seen in table 1, after the implementation and the revision of the scheme, there was a significant increase in the percentage of farmers in Karur who have access to formal credit[53]. The increase in

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access to formal credit had several positive consequences such as ability to invest in new technologies, such as high-yielding seeds[54], as seen in *Figure 2*, which further led to an increase in beneficiary incomes. Farmers were also able to build up savings, which made them more resilient to shocks[55]. In India, the average farming household owes 60 per cent of their yearly income in debt[56]. From July 2018 to June 2019, the yearly income of farm household was₹1,23,000, while the average debt was ₹74,100[57]. Furthermore,50.2% of the agricultural farmers were in debt across the nation out of which the state-wise results show that 60.3 % of Tamil Nadu's agricultural farmers were in debt[58]. Out of the total operational cost of ₹4,77,875; the beneficiary farms estimated per-hectare input cost was ₹33,003[59]. The bank loan portion was 61.36%, while the owned fund portion was 28.62%[60], demonstrating reliance on loans by the beneficiary farmers.Furthermore, it was noticed that as the income of farmers increased, the reliance on formal sectors for debt also increased. The graph below represents this situation:

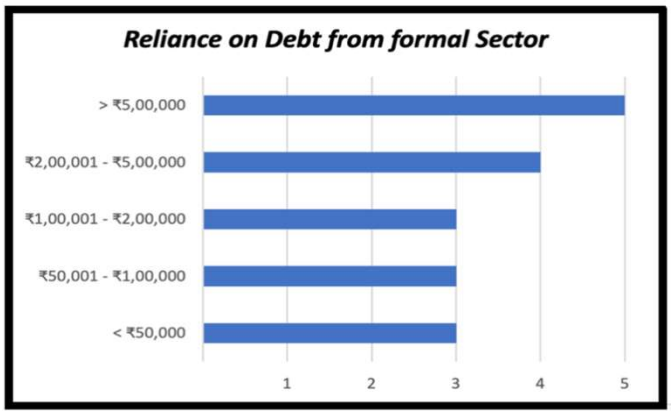

***Figure 5. Reliance on Debt from Formal Sector*[61]**

Graph Legend:

1	Decreased significantly
2	Decreased moderately
3	No significant change
4	Increased moderately
5	Increased significantly

*Figure 5*indicated that the policy was successful in helping farmers connect into formal financial systems and the amount of formal credit awarded to farmers significantly increased[6], especially for those in the small and marginal category[62].

Furthermore, to understand the relationship between income levels and level of debt accumulated, a Pearson Correlation Coefficient was calculated with the responses of the sample population.

$$r = \frac{n\Sigma xy - (\Sigma x \times \Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2] \times [n\Sigma y^2 - (\Sigma y)^2]}}$$

$$r = 0.96749751214$$

A value of 0.96 indicates a strong positive correlation, suggesting that in Karur, as income increased for the scheme beneficiaries, the level of debt also increased. This correlation, together with *Figures 1* and *2*, illustrates how increasing income stimulated consumption and investment in agriculture, which caused a brief rise in debt levels. However, it was found that factors such as crop yields, market prices and access to formal credit also played a role in determining debt levels[63]. The theory of microfinance advocates for greater access to formal credit, which should ideally lead to less reliance on informal sources[64]. However, the correlation showed that increased debt resulted from farmers with higher incomes taking advantage of their better financial standing to obtain more borrowing. Furthermore, inflation soared to 9.18% in 2020[65], which was more than the percentage change (7.13%) in the average incomes of the beneficiaries. This means, the real value of farmer incomes decreased which could have made them retake loans privately, thereby building up the same level of debt.

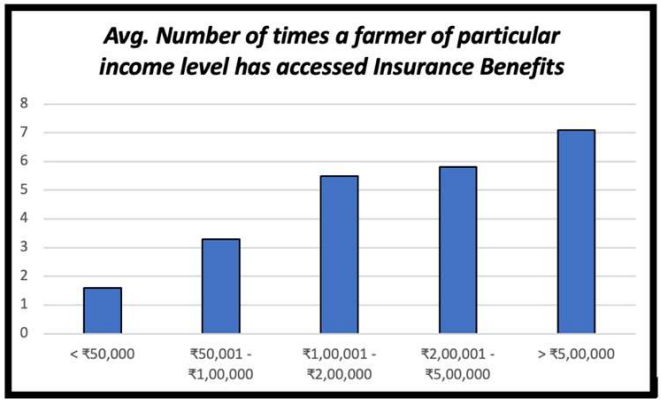

***Figure 6. Insurance Benefits accessed by farmers of different income levels*[66]**

Figure 6 shows that as the income of the farmer rises, the number of times insurance is accessed in a year increases. This suggests that the farmers of Karur are aware of the inclusion of insurance under the scheme's revision.The lowest income level has least accessed insurance due to barriers such as documentation requirements, complexity of the claims process, or the perceived value of the insurance[67].

In conclusion, the analysis partially supports the hypothesis. The PM-Kisan Samman Nidhi scheme succeeded in increasing access to

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[62] National Bank for Agriculture and Rural Development. (2021). Impact of PM-KISAN on agricultural credit disbursement: Evidence from a cross-sectional analysis. Economic and Political Weekly, 56(35), 69-76. Accessed 21 Jan. 2024.

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[67] Daniel AduAnkrah, et al. "Agricultural Insurance Access and Acceptability: Examining the Case of Smallholder Farmers in Ghana." Agriculture & Food Security, vol. 10, no. 1, 28 June 2021. Accessed 2 Jan. 2024.

formal credit for farmers, aligning with its objectives. However, while the hypothesis assumed that the scheme would reduce debt levels, the correlation study indicated thatan increase in income was associated with higher debt. This suggested that farmers with higher incomes may be more willing to take on additional debt to fund investments or consumption, thus rejecting the second hypothesis that *"The PM-Kisan Samman Nidhiwill allow farmers to reduce the amount of debt accumulated but provide families access to formal credit and insurance"*.

Law of Diminishing Marginal Returns &Cobb Douglas Production Function: The Law of Diminishing Marginal Returns states that as additional units of one input are added to fixed quantities of other inputs, after a certain point, the marginal output per unit of the input will decrease[68]. In the context of the Cobb-Douglas production function, which represents a mathematical representation of the relationship between inputs (e.g., labor and capital) and output, the Law of Diminishing Marginal Returns can help explain how the marginal productivity of each input changes as more units of that input are added while keeping other inputs constant[69]. It assumes an exponential relationship between inputs and outputs which means that adding more of a specific input, for example fertilizer, will initially lead to a significant boost in crop yield[70]. However, as more fertilizer is added, the additional yield gained starts to diminish[71]. The Cobb-Douglas function allows for the incorporation of the PM-Kisan Samman Nidhi into the equation by accounting for the increased income provided by the scheme, which translates into greater investments in the inputs. It can be used to examine whether the increased income support provided by the scheme enabledfarmers to increase agricultural output per hectare of land by investing in seeds, fertilizers, and equipment.

$$Q = A \times L^{\alpha} \times K^{\beta}$$

Where:

- Q is the output
- A is the total factor productivity (a constant representing technology and efficiency).
- L is the quantity of labor (or, in this case, the quantity of seeds, fertilizers, and equipment).
- K is the quantity of capital (representing land, machinery, etc.)
- α and β are the output elasticities of labor and capital, respectively.

Table 2. Regression Statistics[72]

Multiple R	0.99312566				
R^2	0.98782104				
Adjusted R^2	0.98533263				
Standard Error	0.04178095				
Observations	50				
	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	1.36801244	0.64827023	590.218568	2.98212×10^{-16}
Residual	21	0.0180917	0.00111184		
Total	23	1.3941296			
	Coefficients	*Standard Error*	*t Stat*	$P-value$	
Intercept	−0.9761204	0.48912673	−3.0679438	0.06168905	
$Ln(L)$	0.24314639	0.06513877	4.7839691	0.00128316	
$Ln(K)$	0.98215732	0.12405866	8.1896947	5.006495×10^{-7}	

The summary calculates (A) by exponentiating the intercept.

$$A = e^{-0.9761} = 0.389$$

The α and β values are derived from their respective coefficients that are inserted into the equation.

$$Log\,(Q) = 0.389 + 0.243Log\,(L) + 0.982Log\,(K)$$

This formulates the Cobb-Douglas production function:

$$Q(L,K) = 0.527 \times L^{0.24} \times K^{0.98}$$

The relationship betweenα and β values, where $\alpha > \beta$, suggests that capital has a marginal productivity greater than labor, where each unit of additional capital added is more influential to the total output generated.

Table 3. Cobb Douglas Production Function Interpretation[73]

Relation	Meaning	Description
$\alpha+\beta=1$	Constant return to scale	Output increases at the **same rate** as capital and labor.
$\alpha+\beta<1$	Decreasing return to scale	The increase in output is **less** than the increase in capital and labor.
$\alpha+\beta>1$	Increasing return to scale	The increase in output is **more** than the increase in capital and labor.

By adding the values of α and β, the following relationship proves:

$$0.24 + 0.98 = 1.22$$
$$1.22 > 1$$

Since the summation of α and β is greater than one, it suggests increasing returns to scale, implying that a proportional increase in all inputs combined leads to a more than proportional increase in output. In simpler terms, for every 1% farmers collectively increase their investment in seeds, fertilizers, and equipment, the yield per hectare might rise by more than 1.22%. The interactions between inputs in crop production, for instance, efficient fertilizer application combined with improved seed quality can lead to more effective nutrient uptake and higher yields, exceeding the sum of their individual effects[74]. Such an interaction, fostered by increased investments enabled by the PM-Kisan Samman Nidhi, could have contributed to increasing returns in Karur[75]. Another contributing factor could be the $10-15\%$ reduction in input costs through bulk purchase arrangements due to the PM-Kisan Samman Nidhi[76]. Such cost reductions could have translated into higher effective investments and contributed to increasing returns. Beyond these general factors, Karur's unique characteristics such as the fertile Cauvery River delta soil offers a strong foundation for yield improvement[77], which could potentially amplify the impact of increased input investments from the PM-Kisan Samman Nidhi. Additionally, the presence of research institutions like the TNAU Agricultural Research Station in Karur provides access to expertise and improved crop cultivars[78], further enhancing the potential for yield gains beyond proportional input increases. Thus, the analysis illustrates how the scheme has enabled farmers to optimize their input combinations, thereby overcoming the potential diminishing returns and achieving greater agricultural productivity. Thus,the PM-Kisan Samman Nidhi has enabled beneficiary farmers in Karur district to increase investments in seeds,

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fertilizers and equipment that has resulted in a greater increase in agricultural output per hectare of land, thus accepting the third hypothesis.

CONCLUSION

The Pradhan Mantri Kisan Samman Nidhi was implemented with the aim to supplement the financial needs of the small and marginal farmers. Recognizing that agriculture is a risky venture, dependent on various unpredictable factors like weather and market conditions, the Government of India launched PM-Kisan to provide income support to these farmers. There is a significant increase in the average income of farmers in Karur by 7.13%. Similarly, there has also been notable increase in the average percentage of income spent on consumption, as indicated in *Figure 2* and *3*. Although the increase in borrowing levels can be largely attributed to the soaring inflation rates, which outpaced the growth in income levels, the PM-Kisan scheme played a crucial role in mitigating the impact by bolstering income levels which otherwise would have remained stagnant or insufficient in the face of rising inflation. Lastly, the summation of α and β derived from table 4 indicates that there has been an increased investments in seeds, fertilisers and equipment that has resulted in a greater increase in agricultural output per hectare of land. This is in line with the Cobb-Douglas Production theory where the farmers are now producing higher yields per hectare of land after the increase in investments and adoption of modern technology after the implementation of PM-Kisan. Therefore, answering the research question this study explored "*To What Extent Has the PM-Kisan Samoan Nidhi Revised in 2020 Impacted the Economic Well-being of Farmers in Karur, Tamil Nadu?"* it can be safely stated that the income levels; investments in seeds, fertilizers and equipment; the consumption of necessary and luxury goods and services have increased, supporting the fact that the PM-Kisan has positively impacted the economic well-being of farmers in Karur, Tamil Nadu.

Limitations: The methodology and analysis of our study, while comprehensive in many respects, have some limitations that could affect the validity and generalizability of the findings. One key concern is selection bias, which may have skewed the results due to the sample not fully representing the broader economic population of farmers. Additionally, the study primarily focuses on quantitative data, possibly overlooking other qualitative aspects of farmers' well-being. Furthermore, the analysis is limited to a short-term perspective; long-term impacts of the scheme remain unexplored. The external factors such as market fluctuations, climatic conditions, and policy changes that could affect the outcomes were not thoroughly examined. Finally, the word count constraints for this study have necessitated the omission of potentially valuable detailed discussions around subsidiary findings and hypotheses. The complexity of the economic interactions could not be explored in depth due to the limitations imposed by the designated word.

Scope for Future Research: Consideringthe findings of the study on the beneficiaries of the PM-Kisan, there is considerable scope for further research that could deepen the understanding of its long-term efficacy and its broader implications. With the development of technology and data analytics, big data can be used to monitor progress and identify the areas where the scheme has been most effective or where it requires improvements. Lastly, policy feedback mechanisms could be investigated to comprehend how farmers' contributions and experiences might influence future revisions of PM-Kisan, guaranteeing that the scheme continues to be responsive in positively impacting the economic well-being of the farmers. These research avenues can assist the policymakers in improving and fine-tuning the scheme for the benefit of farmers and the agriculture industry overall.

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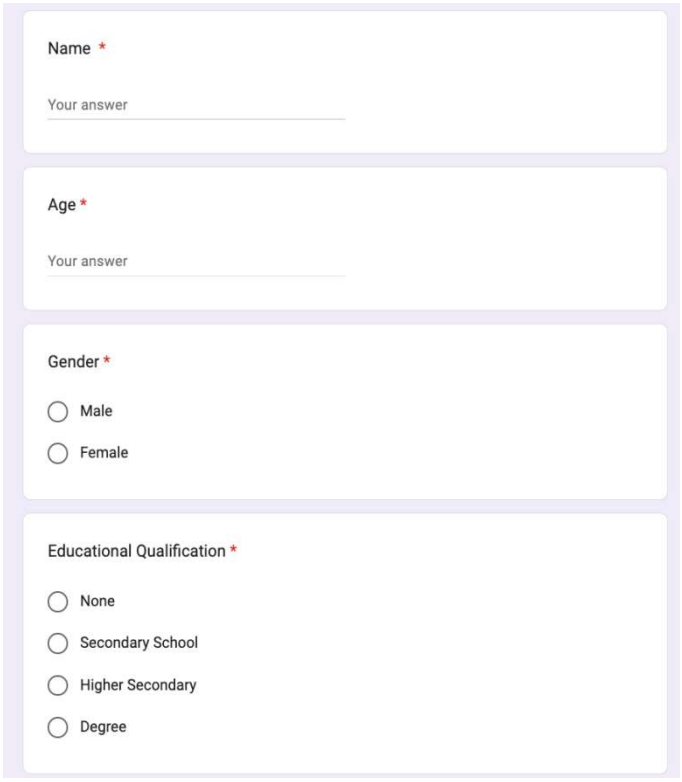
APPENDIX A – QUESTIONNAIRE



How many hectares of land do you cultivate on? *

- ◯ <1
- ◯ 1-2
- ◯ 2-5
- ◯ >5
- ◯ Farm Labourer

What major crop do you grow? *

- ◯ Paddy
- ◯ Millets
- ◯ Pulses
- ◯ Sugarcane
- ◯ Other: _____

Are you aware of the PM Kisan Samman Nidhi? *

- ◯ Yes
- ◯ No

Have you enrolled in the PM Kisan Samman Nidhi? *

- ◯ Yes
- ◯ No

Have you received any financial assistance under this scheme since its revision in 2020? *

- ◯ Yes
- ◯ No

How has your agricultural productivity changed since you started receiving these funds? *

- ◯ Increased significantly
- ◯ Increased moderately
- ◯ No change observed

Have you been able to invest in new tools, equipment, or technology for your farm with the assistance received? *

- ◯ Yes
- ◯ No

Have you noticed any changes in your economic well-being since revision in the PM-Kisan scheme? *

- ◯ Improved significantly
- ◯ Improved moderately
- ◯ No significant change
- ◯ Deteriorated moderately
- ◯ Deteriorated significantly

To what extent do you feel that the PM-Kisan scheme has improved your access to resources such as seeds, fertilisers, and irrigation facilities? *

- ◯ Improved significantly
- ◯ Improved moderately
- ◯ No significant change
- ◯ Deteriorated moderately
- ◯ Deteriorated significantly

To what extent do you feel that the Revsions of PM-Kisan scheme has improved your access to resources such as seeds, fertilizers, and irrigation facilities? *

- ◯ Improved significantly
- ◯ Improved moderately
- ◯ No significant change
- ◯ Deteriorated moderately
- ◯ Deteriorated significantly

What was your average annual household income before revision in the PM-Kisan scheme? *

- ◯ <50,000
- ◯ 50,001 to 1,00,000
- ◯ 1,00,0001 to 2,00,000
- ◯ 2,00,001 to 5,00,000
- ◯ >5,00,001

What is your average annual household income after revision in the PM-Kisan scheme? *

- ◯ <50,000
- ◯ 50,001 to 1,00,000
- ◯ 1,00,0001 to 2,00,000
- ◯ 2,00,001 to 5,00,000
- ◯ >5,00,001

To what extent has the spending towards consumption of goods and services increased after the revision of the PM-Kisan? *

- ◯ Increased Significantly
- ◯ Increased Moderately
- ◯ No significant increase
- ◯ Deceased Moderately
- ◯ Decreased Significantly

Have you been able to access formal credit and insurance through the PM-Kisan scheme? *

- ◯ Yes
- ◯ No

If yes, what is the amount of formal credit obtained through the scheme? *

- >50,000
- 50,001 - 1,00,000
- 1,00,001 - 2,00,000
- 2,00,001 - 5,00,000
- >5,00,000

What is the number of times you have utilised the insurance benefits from the revised PM-Kisan scheme? *

- 1
- 2-5
- 5-7
- >7

To what extent has your reliance on loans from informal sector reduced since the PM-Kisan revision? *

- Reduced significantly
- Reduced moderately
- No significant change
- Increased somewhat

Percentage increase in market participation since joining the PM-Kisan scheme in terms of new markets reached, greater volume sold, etc *

- No increase
- 1%- 10%
- 10%- 20%
- 20%- 30%
- >30%

What is the approximate increase in agricultural output (yield) per hectare of land since **enrolling** in the PM-Kisan scheme? *

- No increase
- 1%- 5%
- 5%- 10%
- 10% - 15%
- 15%- 20%
- 20%-30%
- >30%

What is the approximate increase in agricultural output (yield/0 per hectare of land since the **revision** in PM-Kisan scheme? *

- No increase
- 1%- 5%
- 5%- 10%
- 10% - 15%
- 15%- 20%
- 20%-30%
- >30%

Do you think the scheme will continue to positively impact your economic situation? *

- Yes
- No
- Maybe

What are your expectations for the future regarding the PM-Kisan scheme? *

Your answer

Is there anything else you would like to share about your experience with the PM-Kisan Samman Nidhi scheme? *

Your answer

APPENDIX B – ANALYSIS TABLES

Table 1. Income distribution before Revision of PM-Kisan Samman Nidhi

Income levels	No. of farmers
$< ₹50,000$	18
$₹50,001$ to $₹1,00,000$	12
$₹1,00,0001$ to $₹2,00,000$	9
$₹2,00,001$ to $₹5,00,000$	6
$> ₹5,00,001$	3

Table 2: Income distribution after Revision of PM-Kisan Samman Nidhi

Income levels	*No. of farmers*
$< ₹50,000$	16
$₹50,001$ *to* $₹1,00,000$	11
$₹1,00,0001$ *to* $₹2,00,000$	13
$₹2,00,001$ *to* $₹5,00,000$	7
$> ₹5,00,001$	3

One-Variable Stats for income levels Before Revision of PM-Kisan

$\bar{}$

n	50
y	₹13200
Σy	₹6600000
$MinY$	₹50000
IQ_1	₹75000
$MedianY$	₹75000
IQ_2	₹150000
$MaxY$	₹500000

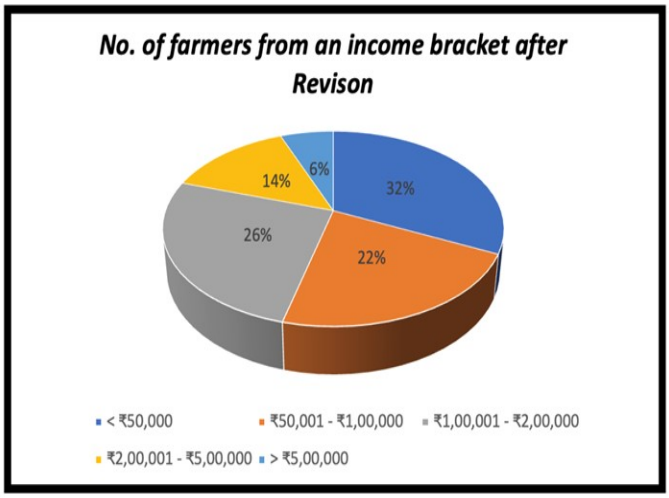
One-Variable Stats for income levels After Revision of PM-Kisan

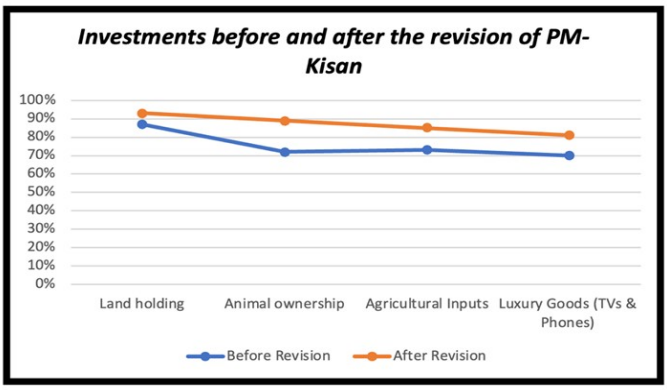
$\bar{}$

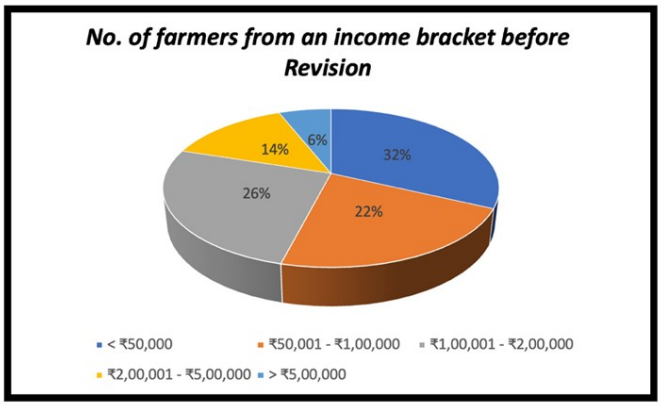
n	50
y	₹142500
Σy	₹9500000
$MinY$	₹50000
IQ_1	₹75000
$MedianY$	₹150000
IQ_2	₹350000

Cobb Douglas Function Interpretations

Relation	Meaning	Description
$\alpha + \beta = 1$	Constant return to scale	Output increases at the same rate as capital and labor.
$\alpha + \beta < 1$	Decreasing return to scale	The increase in output is less than the increase in capitaland labor.
$\alpha + \beta > 1$	Increasing return to scale	The increase in output is more than the increase in capital and labor.







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