RESEARCH PAPER

# Farmers' Debt Profile and Determinants of Borrowing: A Socio-Economic Analysis of Farmers' Existing Debts and Reasons Behind Loans

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**ABSTRACT**

This study examines farmers' debt profiles and the socioeconomic factors that influence borrowing behaviour, with an emphasis on outstanding agricultural loans. Using primary data obtained from 520 farmers in three districts (Anantnag, Baramulla, and Budgam), the study analyses patterns of indebtedness and perceptions of debt manageability using descriptive statistics, frequency analysis, ranking analysis, Chi-square testing, and ANOVA. The data show that the majority of respondents are small and marginal farmers, with landholdings of less than five acres and widely varying monthly farm incomes. The results show a moderate overall level of agricultural indebtedness, with farmers borrowing mostly for agricultural production, growing input costs, and off-season household needs. A ranking analysis reveals a significant demand for further government involvement in financial education and debt management awareness campaigns. There is a substantial correlation between income levels and opinions of debt manageability, but not between monthly farm revenue and the number of outstanding loans, according to the Chi-square test. Although variable variability calls for cautious interpretation, ANOVA results indicate no significant differences in opinions of debt manageability across income categories. Overall, the study highlights the continued reliance on credit across all income levels and stresses the necessity of focused financial literacy programs and legislative support to enhance farmers' ability to manage their debt sustainably.

**Keywords:** Financial Literacy, Debt Management, Agricultural Indebtedness, Farmers Literacy, Debt Profile, Financial Literacy Programs.

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## 1. INTRODUCTION

Agriculture is the foundation of rural lives in India, employing a sizable proportion of the population and making considerable contributions to economic stability and food security. Despite its importance, the agricultural sector is becoming more financially vulnerable, with farmer debt emerging as a persistent and complex issue. Rising input costs, fragmented landholdings, income uncertainty caused by climate variability, and a lack of accessible institutional credit have forced many farmers to rely extensively on borrowing to sustain agricultural production and household consumption. As a result, agricultural debt has become a key socioeconomic issue, with far-reaching consequences for farmers' financial well-being and long-term viability. In recent years, the problem of farmer indebtedness has grown, particularly among small and marginal farmers, who frequently lack adequate reserves and alternative income streams. Loans are widely used not just for productive agricultural objectives like purchasing seeds, fertilisers, and advanced farming technologies, but also to cover household needs during the off-season and to deal with unexpected weather circumstances. While credit can be an effective instrument for increasing output, excessive or badly managed debt can trap farmers in a loop of financial hardship, making debt management a critical problem.

Against this context, the current study intends to evaluate farmers' debt profiles and the causes of borrowing behaviour using a thorough socioeconomic analysis. Using primary data obtained from 520 farmers from various regions, the study investigates differences in farm size, monthly farm revenue, outstanding agricultural loans, and attitudes toward debt management. The research uses descriptive

statistics, ranking analysis, Chi-square testing, and ANOVA to uncover major elements influencing borrowing decisions and determine if income levels have a substantial impact on farmers' views regarding agricultural debt. The study's findings are intended to contribute to a better understanding of the nature and scope of farmer indebtedness, as well as significant insights for policymakers, financial institutions, and development organizations. The study emphasizes the importance of targeted financial literacy programs, improved access to institutional credit, and enhanced government support mechanisms in promoting sustainable agricultural finance and improving farmers' economic resilience.

## 2. REVIEW OF LITERATURE

**Akyoo, Elimeleck., et.al (2026)** looked at how socioeconomic factors influenced smallholder coffee producers' participation in the Mount Meru Coffee Project in Arumeru District. Data from 155 farmers were analyzed using a cross-sectional mixed-methods approach, which included descriptive statistics and binary logistic regression. The results demonstrate that age, marital status, household size, wealth, and landholding all had a substantial impact on involvement. The study indicates that major socioeconomic criteria influence farmer participation and advises that local authorities and policymakers in Meru District Council include these aspects to enable sustained coffee project execution.

**Aondona, Burbwa, et.al (2025)** used questionnaires and econometric analysis to investigate the socioeconomic drivers of loan repayment among 424 rice farmers in the North-West agricultural zone of Benue State and discovered very poor repayment performance, with extensive loan diversion. The results demonstrated that sex, loan sources, collateral value, loan size, and total income all had a substantial impact on payback, leading to the conclusion that poor repayment impedes effective credit administration and necessitates closer monitoring by lenders.

**Natarajan, Kumaravelu, et.al (2025)** examines in southern India, goat husbandry is a low-input, traditional means of subsistence that is crucial to milk production and rural resilience. Using primary data from 180 farmers chosen through farm-level interviews, this study examined the socioeconomic characteristics of goat farmers in Tamil Nadu, Kerala, and Maharashtra. The findings indicate reliance on indigenous knowledge, lengthy farming experience, low educational attainment, and male dominance. Farmers exhibit community-based activities and resilience, but they are also limited by market vulnerability, institutional access issues, and a lack of resources. The report provides guidance for creating a sustainable and inclusive goat farming industry.

**Suresh, Darshan., et.al (2025)** Sericulture is a low-input, labour-intensive industry that sustains millions of people and gives rural farmers a steady income. The socioeconomic standing of sericulture producers in the Mysuru district was investigated in this study. The majority of farmers, according to the results, were middle-aged, had a middling family size, little education, and relied on bank loans. Most raised double hybrid silkworms, produced five to eight crops a year, and had medium decision-making skills and moderate cocoon production. The report emphasizes the potential revenue from sericulture and suggests government-led training initiatives to increase the use of technology and enhance the socioeconomic circumstances of farmers.

**Babar, A.P., et.al (2025)** looked at how land use, cropping patterns, animal holdings, and socioeconomic traits affected grape productivity on small, medium, and big wine export farms. The majority of farmers had small families, were middle-aged, educated, and mostly involved in agriculture. Due to their high economic value, grapes dominated planting patterns, while land utilization and irrigation efficiency grew with farm size. All farms relied heavily on livestock, particularly bullocks. According to regression analysis, grape productivity was greatly increased by capital investment and livestock, with supportive factors including age, family size, landholding, and occupation.

**Hassan, Mohammed, et.al (2025)** Using the ARDL approach and yearly data from the Central Bank of Nigeria, International Monetary Fund, and World Bank, this study examines the impact of public debt on economic growth in Nigeria between 1986 and 2024. The findings indicate that while debt servicing, particularly external debt, has a negative impact on growth, both domestic and foreign debt have a beneficial long-term impact on growth. While servicing lowers output, short-term borrowing increases it. Strong debt-growth relationships are confirmed by causality tests. In order to maintain growth and reduce fiscal risks, the report suggests careful borrowing, concessional loans, debt restructuring, and improved fiscal oversight.

**Aondona, Burbwa, et.al (2025)** examined the socioeconomic factors impacting loan repayment among 424 rice farmers in the North-West agricultural zone of Benue State. Using questionnaire data and analytical tools such as descriptive statistics, CAR,

LRI, and OLS, researchers discovered very low repayment performance, with only 25.94% of loans repaid on time and extensive loan diversion. Farmers were primarily male, middle-aged, and relied on informal financing. Regression results revealed that sex, collateral value, loan size, income, and alternative credit sources all had a substantial impact on payback. The study concludes that poor repayment affects credit administration and suggests increased lender monitoring.

**Natarajan, Kumaravelu., et.al (2025)** In southern India, goat farming is a low-input, traditional lifestyle whose sustainability and productivity are influenced by socioeconomic conditions. Using farm-level interviews, this study examined the profiles of 180 goat farmers in Tamil Nadu, Kerala, and Maharashtra. The majority of responders had extensive experience raising goats, were male, and had just a secondary or lower level of schooling. Alongside limitations including scarce resources, poor institutional access, and market vulnerability, the findings emphasize farmers' tenacity, indigenous knowledge, and community-based systems. The report provides recommendations for the equitable and long-term development of the goat farming industry.

**Anthony, Luka., et.al (2022)** Using survey data and econometric analysis, this study evaluated the socioeconomic factors and sources of loan availability for 100 small-scale rice farmers in Gwagwalada Area Council. The findings indicate that rice farming is profitable, with farmers having small landholdings, an average age of 43, and a dependence on personal resources and little borrowing. While education level and cooperative membership enhanced loan availability, labour, fertilizer, and chemical inputs had a substantial impact on output. High interest rates, the distance to financial institutions, the need for collateral, and administrative bottlenecks were among the main obstacles. The study suggests affordable single-digit-rate loans, better access to farm equipment, farmer education, cooperative involvement, and rural agricultural microfinance institutions.

**Kumar, Sunil, et.al (2021)** examine the socioeconomic features and motives of dairy farmers who join Farmer Producer Companies (FPCs) in Rajasthan, Uttar Pradesh, and Madhya Pradesh, utilizing data from 360 farmers. Farmers primarily join FPCs to improve revenue, acquire better prices, and secure timely payments, with socioeconomic variables having a substantial influence on membership.

**Zhang, Xin., et.al (2021)** This chapter covers how a Chinese entity borrows money from non-PRC creditors. Section 2.1 addresses the concept and categories of "foreign debts" in the PRC, accompanied by pertinent data on foreign debts. Section 2.2 investigates who may borrow foreign debts under PRC legislation. Section 2.3 then delves into the essential notion of borrowing loans from non-PRC creditors, known as the "foreign debt quota". The focus of this part is on how to obtain a foreign loan quota using various techniques in compliance with Chinese rules and regulations. Section 2.4 discusses cross-border loan documentation and key legal considerations from a transactional standpoint.

**Ing, Kvanthai., et.al (2021)** investigate how livelihood systems and debt recovery tactics explain farmer indebtedness by focusing on livelihood assets (natural, financial, social, human, and physical). The study was done in Takeo Province's Prey Kabas District, with 56 household surveys and key informant interviews. Landholding was used to identify four types of livelihood strategies: no land, small, medium, and large land families, each with its own income streams and repayment capacities. Approximately 69% of households borrowed loans, with no-land and large-land households having stronger repayment ability, but small and medium-land households were more vulnerable. Loan repayment was not greatly impacted by COVID-19. The report suggests targeting loans, skill development, and agricultural training based on household type.

**Nagthan, Shrishail., et.al (2011)** This article used home and secondary data to examine the nature, causes, and socioeconomic and psychological profiles of suicide and non-suicide farmers using a LOGIT model. The findings suggest that suicides were concentrated among middle-aged farmers (36-50 years old), primarily engaged in dry farming, with debt stress being the predominant factor. High stress levels, family tensions, and pressure from moneylenders all indicated deeper economic difficulty. The report suggests encouraging supplementary livelihoods, improving dry-land development and irrigation, tightening farm loan policies, and forming expert committees and support organizations to address farmer hardship and prevent suicide.

## 3. RESEARCH METHODOLOGY

This study uses a descriptive and analytical research design to investigate the debt profiles and borrowing factors of farmers in Jammu and Kashmir's Anantnag, Baramulla, and Budgam districts. A systematic questionnaire was used to obtain primary data from 520 farmers, which included socioeconomic factors, farm size, income levels, outstanding agricultural loans, and

reasons for borrowing. To investigate correlations and group differences, the data were analyzed with descriptive statistics, frequency analysis, mean-based ranking, Chi-square testing, one-way ANOVA, and Levene's test. All replies were completed, assuring data dependability and statistical validity for the findings.

## 4. DATA ANALYSIS

**Table-1, Descriptive Analysis of the number of farmers with outstanding loans and their debt profiles.**

| | Address | Farm Size | Monthly Farm Income | Have Outstanding Agricultural Loans |
|---|---|---|---|---|
| Valid | 520 | 520 | 520 | 520 |
| Missing | 0 | 0 | 0 | 0 |
| Mean | | | | 3.012 |
| Std. Deviation | | | | 1.321 |
| Minimum | | Less than 5 acres | 1 | 1.000 |
| Maximum | | More than 50 acres | 5 | 5.000 |

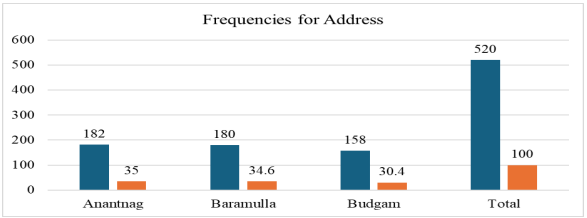
Descriptive statistics demonstrate that all 520 respondents provided data with no missing values, supporting the study's dependability. Farm holdings range widely—from less than 5 acres to more than 50 acres—indicating significant variances in landholding that may affect borrowing ability. Monthly agricultural revenue varies greatly, indicating disparities in farmers' economic status. The average score of 3.012 for outstanding agricultural loans (SD = 1.321) indicates a moderate level of indebtedness overall. However, the wide response range suggests that while some farmers have little debt, others rely extensively on credit, emphasizing the need to investigate how farm size and income influence financial decisions and debt management.

**Frequency analysis demonstrates the distribution of farmers based on outstanding agricultural loans, income levels, farm size, and district-wise representation.**

**Table-2, Frequencies for Address**

| Address | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| **Anantnag** | 182 | 35.0 | 35.0 | 35.0 |
| **Baramulla** | 180 | 34.6 | 34.6 | 69.6 |
| **Budgam** | 158 | 30.4 | 30.4 | 100.0 |
| **Missing** | 0 | 0.0 | | |
| **Total** | 520 | 100.0 | | |

**Graph - 1**



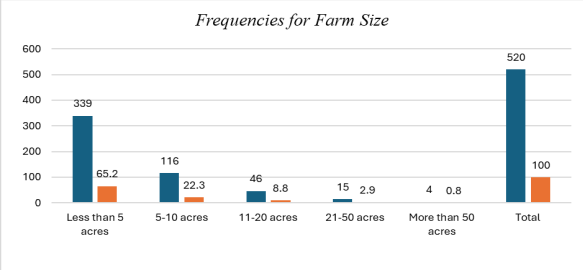

The frequency distribution of responses by address indicates that the sample of 520 farmers was reasonably evenly distributed across the three districts. Anantnag had the most respondents, with 182 (35.0%), followed by Baramulla, with 180 (34.6%). Budgam contributed 158 responses, or 30.4% of the total sample. According to the cumulative figures, approximately 70% of responders were from Anantnag and Baramulla combined, with the remainder from Budgam. The absence of missing values confirms total coverage across districts. The graphical depiction further demonstrates this balanced distribution, indicating that the sample is geographically well-represented, which improves the reliability and comparability of the study's district-wise analysis.

**Table-3, Frequencies for Farm Size**

| Farm Size | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| **Less than 5 acres** | 339 | 65.2 | 65.2 | 65.2 |
| **5-10 acres** | 116 | 22.3 | 22.3 | 87.5 |
| **11-20 acres** | 46 | 8.8 | 8.8 | 96.3 |
| **21-50 acres** | 15 | 2.9 | 2.9 | 99.2 |
| **More than 50 acres** | 4 | 0.8 | 0.8 | 100.0 |
| **Missing** | 0 | 0.0 | | |

| | | | | |
|---|---|---|---|---|
| **Total** | 520 | 100.0 | | |

**Graph - 2**

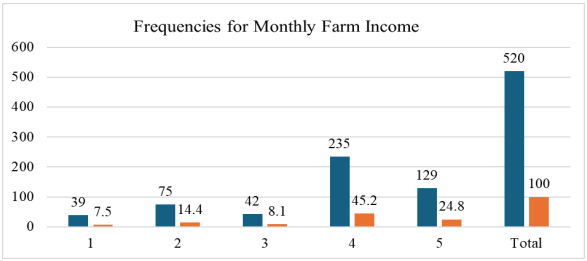



The frequency distribution of farm size shows that the majority of respondents are small or marginal farmers. Out of the 520 farmers polled, 339 (65.2%) held less than 5 acres of land, which indicates a preference for small landholdings in the research area. This was followed by 116 farmers (22.3%) with farm sizes of 5 to 10 acres. Medium-sized holdings were rather small, with 46 respondents (8.8%) owning 11-20 acres and 15 respondents (2.9%) owning 21-50 acres. Only four farmers (0.8%) reported landholdings greater than 50 acres. The graphical representation clearly shows a skewed distribution toward smaller farm sizes, which suggests that the farming community under study is largely defined by limited land resources, which may have significant implications for income generation, borrowing behaviour, and debt-management practices.

**Table-4, Frequencies for Monthly Farm Income**

| Monthly Farm Income | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| **1-Less than RS 10,000** | 39 | 7.5 | 7.5 | 7.5 |
| **2-RS10000 - RS20000** | 75 | 14.4 | 14.4 | 21.9 |
| **3-RS20001 - RS50000** | 42 | 8.1 | 8.1 | 30.0 |
| **4-RS50001 - RS100000** | 235 | 45.2 | 45.2 | 75.2 |
| **5-More than RS100000** | 129 | 24.8 | 24.8 | 100.0 |
| **Missing** | 0 | 0.0 | | |
| **Total** | 520 | 100.0 | | |

**Graph - 3**




The table presents the distribution of farmers based on their monthly agricultural income levels. The majority of the 520 farmers in the sample fall into income group 4, accounting for 235 respondents (45.2%), showing that nearly half of the farmers earn in this range. This is followed by income group 5, which comprises 129 farmers (24.8%), indicating that a sizable proportion of respondents had a considerably higher monthly farm income. Lower income groups are underrepresented: 75 farmers (14.4%) belong to category 2, 42 farmers (8.1%) to category 3, and only 39 farmers (7.5%) to category 1. The cumulative findings indicate that 75.2% of farmers fit into income groups up to level 4, whereas all respondents are in category 5. There are no missing numbers, indicating that the study contains complete and credible data on monthly agricultural income.

**Table-5, Frequencies for having outstanding agricultural loans**

| Have outstanding agricultural loans | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| **1-Less than RS 10,000** | 84 | 16.2 | 16.2 | 16.2 |
| **2-RS10000 - RS20000** | 114 | 21.9 | 21.9 | 38.1 |
| **3-RS20001 - RS50000** | 118 | 22.7 | 22.7 | 60.8 |
| **4-RS50001 -** | 120 | 23.1 | 23.1 | 83.8 |

| | | | | |
|---|---|---|---|---|
| **RS100000** | | | | |
| **5-More than RS100000** | 84 | 16.2 | 16.2 | 100.0 |
| **Missing** | 0 | 0.0 | | |
| **Total** | 520 | 100.0 | | |

The distribution of farmers according to their current outstanding agricultural loans is displayed in the table, with replies evenly distributed throughout the five categories. With 120 farmers (23.1%), category 4 has the largest share, followed by category 3 with 118 farmers (22.7%) and category 2 with 114 farmers (21.9%). There are 84 farmers (16.2%) in each of Categories 1 and 5. A consistent distribution of loan status is shown by cumulative percentages, which show that 60.8% of farmers fall into categories up to level 3 and 83.8% into level 4. This disparity indicates that farmers have varying degrees of debt. The trustworthiness and completeness of the results are confirmed by the lack of missing data.

**The ranking analysis based on mean scores suggests that agricultural production and rising input expenses are the most common reasons for taking out loans.**

**Table-6, Descriptive Statistics**

| | **Valid** | **Mean** | **Std. Deviation** | **Minimum to Maximum** | **Rank** |
|---|---|---|---|---|---|
| **Have outstanding agricultural loans** | 520 | 3.012 | 4.000 | 1.000 to 5.000 | 4 |
| **Agricultural debt is manageable** | 520 | 3.031 | 4.000 | 1.000 to 5.000 | 3 |
| **Loans taken for agricultural purposes** | 520 | 2.960 | 4.000 | 1.000 to 5.000 | 7 |
| **Loans due to unpredictable weather** | 520 | 2.881 | 4.000 | 1.000 to 5.000 | 10 |
| **Loans for modern farming technologies** | 520 | 2.990 | 4.000 | 1.000 to 5.000 | 6 |
| **Loans due to a lack of alternative funding** | 520 | 2.850 | 4.000 | 1.000 to 5.000 | 11 |
| **Loans for household expenses in the off-season** | 520 | 3.012 | 4.000 | 1.000 to 5.000 | 4 |
| **Loans to cope with rising input costs** | 520 | 2.912 | 4.000 | 1.000 to 5.000 | 9 |
| **Seek information on government schemes** | 520 | 2.942 | 4.000 | 1.000 to 5.000 | 8 |
| **Attended financial management training** | 520 | 3.090 | 4.000 | 1.000 to 5.000 | 2 |
| **Need better financial support for farmers** | 520 | 3.008 | 4.000 | 1.000 to 5.000 | 5 |
| **The government should enhance debt-management awareness** | 520 | 3.125 | 4.000 | 1.000 to 5.000 | 1 |

The table shows descriptive statistics and a mean-based ranking of factors influencing outstanding agricultural loans, debt perception, and financial support among farmers. All 520 replies were legitimate, with no missing data, suggesting accurate information. The

mean ratings on a five-point scale varied from 2.850 to 3.125, indicating moderate agreement on the majority of claims. The most important element was the need for government actions to increase debt management expertise (Mean = 3.125), followed by participation in financial management training (Mean = 3.090) and belief that agricultural debt is manageable (Mean = 3.031). Outstanding loans and off-season household borrowing had comparable relevance (mean = 3.012). Financial support and technology-related loans were given moderate priority, while weather-related borrowing and a lack of alternative financial sources received the lowest rankings, underlining the need for stronger financial awareness programs.

**Table-7, Chi-Squared Test: Monthly Farm Income and Outstanding Agricultural Loans**

| | Value | Df | P |
|---|---|---|---|
| $X^2$ | 20.90 | 16 | .182 |
| N | 520 | | |

Note. Continuity correction is available only for 2x2 tables.

The table shows the Chi-square test of the relationship between monthly farm revenue and outstanding agricultural loans among 520 farmers. The Chi-square value of 20.90 (df = 16) and p-value of 0.182 indicate that the result is not statistically significant at the 0.05 level. This shows that monthly farm revenue and the presence of outstanding agricultural loans are unrelated, implying that farmers rely on credit regardless of income level.

**Table-8, Chi-Squared Test: Monthly Farm Income and Agricultural Debt is Manageable**

| | Value | Df | P |
|---|---|---|---|
| $X^2$ | 27.98 | 16 | .032 |
| N | 520 | | |

Note. Continuity correction is available only for 2x2 tables.

The table illustrates the Chi-square test used to investigate the relationship between monthly farm revenue and perceptions of agricultural debt manageability among 520 farmers. The Chi-square value is 27.98, with 16 degrees of freedom, and the p-value is 0.032, which is less than 0.05. This suggests a statistically significant association between farm revenue and attitudes toward debt management. As a result, farmers' judgments of whether agricultural debt is manageable differ by income level, and monthly farm revenue is a key factor in molding these beliefs.

**Table-9, ANOVA: Agricultural Debt is Manageable**

| Cases | Sum of Squares | Df | Mean Square | F | P |
|---|---|---|---|---|---|
| Monthly Farm Income | 7.592 | 4 | 1.898 | 1.056 | .378 |
| Residuals | 925.916 | 515 | 1.798 | | |

Note. Type III Sum of Squares

The table presents a one-way ANOVA that examines differences in farmers' perspectives on the sustainability of agricultural debt across monthly income groups. The between-group variance (SS = 7.592, df = 4, MS = 1.898) is smaller than the within-group variance (SS = 925.916, df = 515, MS = 1.798). The F-value of 1.056 and the p-value of 0.378 are not statistically significant. This demonstrates that there is no discernible difference in opinions of debt management across income categories, implying that monthly farm revenue has no substantial impact on farmers' views on whether agricultural debt is sustainable.

**Table-10, Descriptives: Agricultural debt is manageable**

| Monthly Farm Income | N | Mean | SD | SE | Coefficient of variation |
|---|---|---|---|---|---|
| 1 | 39 | 2.821 | 1.520 | 0.243 | 0.539 |
| 2 | 75 | 2.867 | 1.501 | 0.173 | 0.524 |
| 3 | 42 | 2.857 | 1.221 | 0.188 | 0.427 |
| 4 | 235 | 3.081 | 1.326 | 0.087 | 0.430 |
| 5 | 129 | 3.155 | 1.247 | 0.110 | 0.395 |

The table shows descriptive information on perceptions of agricultural debt manageability by monthly farm income group. Mean scores progressively rise with income, indicating that higher-income farmers perceive debt as slightly more manageable. Income group 1 has the lowest mean (2.821, SD = 1.520), and income group 5 has the highest mean (3.155, SD = 1.247). Standard deviation values vary moderately across income levels, with larger dispersion in the lower-income categories. The coefficient of variance decreases from 0.539 in income group 1 to 0.395 in income group 5, demonstrating more consistent replies from higher-income farmers. Overall, mean score differences are minimal, indicating that perceptions of agricultural debt manageability are essentially consistent across income levels.

**Table-11, Assumption Checks: Test for Equality of Variances (Levene's)**

| F | df1 | df2 | P |
|---|---|---|---|
| 2.699 | 4.000 | 515.0 | .030 |

The table shows Levene's test for equality of variances for the proposition "agricultural debt is manageable" across income levels. The test is significant (F = 2.699, df1 = 4, df2 = 515, p = 0.030), implying that the assumption of equal variances is broken. This means that answers varied significantly across income groups. ANOVA results should therefore be regarded with caution, and strong post-hoc tests that do not require equal variances may be more appropriate for further study.

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