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Evaluating the Socio-Economic Analysis of Agricultural Labourers for Wages Gap and Differences in Modern Livelihood

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The research assesses the socio-economic status of agricultural worker, wage inequalities, and livelihood changes in contemporary agriculture. With India's Agricultural sector significantly transforming through mechanization and institutional change, worker shortages and varying wages have risen as key issues. The paper intends to discuss the effects of modernization and technological change on job security, income stability, and living conditions of Agricultural workers. A mixed-method strategy, involving a combination of both qualitative and quantitative methods, was utilized. A structured questionnaire-based data collection took place among 150 Agricultural laborers in the Siwan district of Bihar on a stratified random sampling basis. Analytical software like MS Excel and SPSS were employed to evaluate the correlation, variation in means, and regression analyses. The result indicates a direct positive correlation between socio-economic standards and remuneration, demarcating variance in education levels, income profiles, and jobs stability. Modernization and the process of technological change have a critical impact on livelihood sustainability and job security, where mechanization is a force both enhancing efficiency and displacing labor. The research highlights the call for equitable wage policy and inclusive labor sustainability strategies to reconcile agricultural productivity with rural economic stability.

Keywords: farm laborers, wage disparity, livelihoods

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1. Introduction

The transition in sectoral composition from agriculture to non-agricultural sectors serves as a significant measure of economic progress. India, like other nations, is experiencing similar transformations (Srivastava et al., 2020). The agricultural industry in India has seen a notable transformation in recent years, with a conspicuous labor shortage noted on rural farms, phenomena previously deemed improbable in the Indian setting (Thomas, 2012). Until recently, Indian agriculture was characterized by a surplus of agricultural labor, with a significant section of the workforce engaged in it even when not really necessary. This labor remained underutilized owing to the residual nature of agricultural jobs. A likely cause of this over-supply was the poor productivity and pay in agriculture, which prompted increased labor absorption to achieve a subsistence income for family activities. This resulted in an inverse correlation between labor productivity and labor absorption (Alha, & Yonzon, 2011).

The agricultural labor force is seen to possess superior living conditions compared to their colleagues elsewhere in the nation, due to their collective bargaining strength. The scarcity of labor supply and resulting elevated salaries constitute a significant impediment to enhancing food production, particularly rice, in the state (Devi, 2012). The expansion of labor regulations to agriculture aims to enhance the wages and living circumstances of agricultural labourers. Nonetheless, transaction costs have risen due to the additional time devoted to managing labor data and resolving salary disputes. The cost of labor has increased due to the compensation for overtime, including work performed on public holidays and Sundays (Visser, & Ferrer, 2015). Paid leave (including Sundays and notice periods) must account for the value of non-monetary benefits. Increased labor expenses may result in the replacement of in-house labor by owned equipment, contracted machinery, or contracted labor (Brandt, & Ncapayi, 2016). A greater income signifies an enhanced quality of life for agricultural laborers, although it has specific repercussions for agriculture. Without efficient agricultural mechanization and further strategies to mitigate the diminished labor supply, elevated wages may increase production costs, hence exerting inflationary pressure on the economy (Sneha, et al.,2024).

In India, the majority of laborers and their families are employed in agriculture, relying on agricultural income for their sustenance (Kumar, et al., 2020). The majorities of the impoverished resides in rural regions and are employed in agriculture, receiving lower income compared to the non-agricultural sector (Baysan et al., 2024). The average productivity of employees in agriculture is inferior to that of other industries. The disparity in salaries between rural (agricultural) and urban (non-agricultural) sectors indicates a potential misallocation of labor spatially (Baysan et al.,2019). The discrepancies between rural and urban regions partially arise from variations in labor market results. Specifically, the interplay of diverse work outcomes and labor wages may partially explain the relative disadvantage experienced by those residing outside urban areas (Ananian, & Dellaferrera, 2024).

Labor in commercial agriculture often gets a monetary salary together with in-kind compensation. The cash compensation is typically disbursed weekly or monthly and often included a year-end bonus (Smalley, 2013). These benefits differ across kinds of farms. For instance, on livestock farms, workers often get milk and may be granted privileges to graze a certain number of animals on the premises. Cultivation rights permit a laborer to farm a certain tract of land; the farmer may further provide seeds and fertilizers. Rations often include maize meal, meat, canned commodities, and vegetables. Farmers may offer housing or designate an area for their laborers to construct their own residences (Wilkinson et al., 2020).

The aim of this research is to assess the socio-economic status of Agricultural labourers, with a specific focus on wage differences and living differences in contemporary agriculture. It aims to examine the effect of modernization and technological changes on employment security, economic stability, and overall quality of life among Agricultural workers. By analyzing labor market conditions, rural-urban migration, and structural change in agriculture, the research attempts to gain insight into equitable wage structures and sustainable livelihood strategies for Agricultural labourers in modern India.

This contribution of the study for knowledge of socio-economic differences among Agricultural labourers through the examination of wage differentials and livelihood contrasts against the backdrop of modernization and technological change. It brings to the fore the implications of structural change in agriculture for employment security, income stability, and standards of living. The research further identifies the implications of labor migration, mechanization, and labor market forces in rural livelihoods. It furnishes empirical observation by proposing recommendations for equitable pay scales, remunerative labour practices, and better socio-economic status of the Agricultural labourers under contemporary farming regimes.

There are seven sections in the paper. The first part is introduction of the document. A literature review on the socio-economic analysis of Agricultural labourers for wages gap and differences in modern livelihood presented in section 2. Section 3 and 4 delineates the objectives and hypotheses of the investigation. Research Methodology is given under section 5. The outcome is presented in section 6 of the document. Section 7 presents a discussion of the outcomes. Section 8 presents a conclusion and future scope for further study. References have finally been included

2. Review of Literature

The notion and implementation of livelihood have evolved through many phases in the progression of Western nations. Efforts are undertaken to improve the sustainability of farm families' livelihoods and to augment the role of sustainable improvement of their livelihood capital in reducing the rural-urban income disparity **(Wu, Y., et al., 2024)**. Similarly **(Amayo, F., et al., 2021)** Investigated the methodologies of agriculture and their application influences the achievement of livelihood results. Despite the aspirations of rural women to achieve favorable results, their efforts are undermined by inadequate agricultural techniques. On the other hand **(Yu, H., Chen, et al., 2024)** examining the effects of various farmland transfer methods on farmers' income inequality might elucidate the factors contributing to the income disparity among farmers. Meanwhile **(Giller, K. E.,et al., 2021)** stated that agriculture is crucial for family food security and income; our findings elucidate the need for off-farm work for many individuals.

It examined the outcomes of the growing population of sub-Saharan Africa, the anticipated agricultural growth, and the significance of agriculture in future economic development.

The inelastic demand for labor means that pay increases did not lead to a corresponding reduction in labor use, resulting in higher labor costs in agricultural production**(Srivastava, S. K., et al., 2020)**.Likewise **(Davidova, S.,et al., 2022)** examined the disparities in labor conditions between organic and conventional dairy farms. All elements of working conditions are influenced by whether a farm is organic, albeit this is not the only determinant. Numerous factors affect working conditions, including the manufacturing environment and labor demographics. Moreover **(Nye, C. 2021)** studied farm labor contributors predominantly, though not exclusively, originate from an agricultural background, entering through one of three avenues: direct experience, further or higher education, or post-travel. Additionally, constraints at farm, local, and national levels affect the capacities and opportunities accessible to prospective farm workers. Such limits eventually impact the capacity to attract personnel and address labor shortages in the industry, as well as to appropriately align people with employers.

The existing literature points to several determinants of Agricultural labor livelihoods such as income inequality, land transfer, farming practices, and off-farm work. Yet, there is a large research gap concerning the socio-economic analysis of wage inequalities and livelihood variations among Agricultural labourers in contemporary farming environments. There are very few research studies that look into how structural transformation in farming, organic versus conventional working environments, and changing labor requirements create wage variations. An analysis of the influence of labor composition and rural-urban migration on labor market performance also remains under-explored, and therefore more research is needed on fair wage structures and livelihood resilience.

3. Objectives

i. To assess the socio-economic conditions of Agricultural labourers, including their education, living standards and financial stability.

ii. To evaluate the impact of modernization on Agricultural labourers job security and livelihood sustainability.
iii. To evaluate the impact of technological advancements on Agricultural labourers job security and livelihood sustainability.

4. Hypothesis

H1: There is a significant relationship between the socio-economic conditions (education, living standards and financial stability) and the wages of Agricultural labourers.
H2: Modernization has a significant impact on Agricultural labourers' job security and livelihood sustainability.
H3: Technological advancements significantly affect Agricultural labourers job security and livelihood sustainability.

5. Research Methodology

This study follows a mixed-methods research approach through qualitative and quantitative design in an attempt to thoroughly explore the impact of modernization, technological advancements, and socio-economic variables on job security, sustainability of livelihoods, and remuneration of Agricultural laborers in the Siwan district of Bihar region. The research uses a descriptive and exploratory approach, specifically targeting Agricultural laborers with a stratified random sampling technique and a sample of 150. The data are collected from primary sources using a structured questionnaire and secondary sources. Statistical tools such as MS Excel and SPSS are utilized and analytical methods like mean, standard deviation, correlation, and regression are utilized for analyzing the impact of independent variables—modernization, technological advance, and socio-economic variables (e.g., education, level of living, and economic security)—on the dependent variables—job security, livelihood sustainability, and remunerations of Agricultural laborers.

6. Results

Demographic Variables

Sr. No.	Demographic Characteristics		N	%
1	Education Level	Graduate and above	26	17.3%
		Higher Secondary Education	34	22.7%
		No Formal Education	14	9.3%
		Primary Education	43	28.7%
		Secondary Education	33	22.0%
2	Living Standards	High	48	32.0%
		Low	43	28.7%
		Moderate	45	30.0%
		Poor	14	9.3%
3	Financial Stability	Highly Unstable	14	9.3%
		Moderately Stable	34	22.7%
		Stable	59	39.3%
		Unstable	43	28.7%
4	Wages of Agricultural Laborers	Below 10,000	14	9.3%
		10,000 to 15,000	43	28.7%
		15,000 to 20,000	33	22.0%
		20,000 to 25,000	34	22.7%
		Above 25,000	26	17.3%
5	Employment Type	Contractual	51	34.0%
		Daily Wage	34	22.7%
		Part-Time	42	30.0%
		Permanent	23	15.3%

The demographic profile indicates a fluctuating range of socio-economic statuses among the respondents. On the educational front, the highest percentage (28.7%) has achieved completion of primary level, followed by 17.3% with graduate degrees and above. A significant percentage (22.7%) achieved higher secondary level, while 9.3% have no education. Differences in living standards are indicated with 32% being high, 30% being moderate, 28.7% being low, and 9.3% being poor. Assessments of financial stability indicate 39.3% of individuals being stable, 28.7% being unstable, and 9.3% being highly unstable. The classification of wages of agricultural laborers indicates 28.7% falling in the ₹10,000 to ₹15,000 category, while 17.3% earn more than ₹25,000. The nature of work is largely contract-based (34%) and part-time (30%) and only 15.3% with permanent work.

These results indicate significant disparities in education, income, and employment security that may have implications for socio-economic progress and overall quality of life.

H1: There is a significant relationship between the socio-economic conditions (education, living standards and financial stability) and the wages of Agricultural laborers.

Hypothesis	Factor			Correlation		Hypothesis Result
		Mean	SD	Pearson Correlation (r)	Sig value	
H1	Socio-economic Conditions	8.8667	3.19535	.974	.000	Supported
	Wages of Agricultural Laborers	3.1000	1.25719			
**. Correlation is significant at the 0.01 level (2-tailed).						

The hypothesis (H1) examines the correlation between socio-economic conditions and Agricultural laborers' salaries. The average score for socio-economic conditions is 8.87, with a standard deviation of 3.20; in contrast, the average salary for Agricultural laborers is 3.10, with a standard deviation of 1.26. The Pearson correlation coefficient (r) is 0.974, which is an extremely strong positive correlation between socio-economic conditions and Agricultural laborers' salaries. The significance level ($p = 0.000$) affirms the reality that this correlation is statistically significant at the 0.01 level (2-tailed). The hypothesis is therefore confirmed, and it identifies that socio-economic conditions have a significant impact on the salaries that Agricultural laborers earn.

H2: Modernization has a significant impact on Agricultural laborers job security and livelihood sustainability.

Hypothesis	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Hypothesis Result
H2	Modernization > Job Security and Livelihood Sustainability	.175	.031	4.695	2.167	.032	Supported

The regression test for H2, which tests the impact of modernization on the security of jobs and the sustainability of livelihoods, reveals a beta coefficient of 0.175, confirming a positive relationship between the two variables.

The R^2 of 0.031 indicates that 3.1% of the variance in job security and livelihood sustainability is accounted for by modernization. The F-statistic of 4.695, combined with the t-value of 2.167, indicates the statistical significance of the model. The p-value of 0.032, which is less than the commonly accepted 0.05 cut-off, confirms the significance of the relationship. Based on these findings, Hypothesis H2 is confirmed, revealing that modernization has a positive impact on the security of jobs and the sustainability of livelihoods.

H3: Technological advancements significantly affect Agricultural laborers' job security and livelihood sustainability.

Hypothesis	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Hypothesis Result
H3	Technological advancements > Job Security and Livelihood Sustainability	.506	.256	50.860	7.132	.000	Supported

The hypothesis (H3) looks at the effect of technological development on job security and livelihood sustainability. The results from the regression analysis reveal a beta coefficient of 0.506, indicating a moderate positive correlation between technological development and job security and livelihood sustainability. The R^2 of 0.256 indicates that technological development accounts for 25.6% of the explained variation in job security and livelihood sustainability. Also, the p-value of 0.000 (below 0.05) supports that the relationship is significant at a high confidence level. Based on these findings, the hypothesis (H3) is verified, which implies that technological innovation has a positive impact on job security and livelihood sustainability.

7. Discussion

Agricultural labourers persist in working on land that has transitioned to corporate or industrial ownership due to the resultant implications. They may lose their means of subsistence due to the land being repurposed for the construction of factories and industries **(Suharyanto, A., et al., 2021)**. Conversely, less discerning Agricultural borrowers exhibit indifference, therefore misallocating agricultural finance for unproductive uses **(Kaur, & Gupta, 2018)**.

The degree to which smallholders benefit from the adoption of organic farming and the expanding organic market remains contentious due to various constraints, including elevated labor costs, labor shortages, reduced yields from organic practices, insufficient marketing infrastructure, and financial obstacles unique to smallholders **(Sahu, R. S., et al., 2024)**. Additional adaptation strategies encompass modifications to conventional agriculture, both on-farm and off-farm diversification, engaging the family in income generation, minimizing farming expenses, exercising frugality in post-harvest practices, transitioning land from coffee cultivation to alternative crops, and acquiring loans while liquidating owned assets. Smallholder farmers use these tactics to endure the prevailing economic realities **(Irawan, 2025).**

8. Conclusion

The socio-economic profile of Agricultural labourers stresses the persistent wage disparities and livelihood vulnerability in the context of agricultural modernization. The findings suggest sweeping gaps in wages, employment security, and living conditions with modernization and technological forces having a key role in determining job security and livelihood sustainability. While mechanization improves efficiency, it also lowers labor demand and thus requires policy interventions for equitable wage structures. Future studies need to investigate adaptive methods of labor inclusion in contemporary agriculture, sustainable mechanization policy, and fair wage structures to promote the socio-economic prosperity of Agricultural labourers without compromising agricultural productivity and rural economic stability.

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