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Assessing The Sustainability Of Income Changes Among Beneficiaries Of The Rural Employment Support Program For Poor Women In Bangladesh

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Abstract:
Background: *The Bangladesh Rural Development Board (BRDB) plays a key role in implementing the Integrated Rural Employment Support Project for Poor Women (IRESPOW), which aims to improve the socio-economic conditions of rural women through training, microfinance, and employment opportunities. Despite short-term success, the sustainability of income changes remains uncertain. Sustainability is defined as the ability to maintain positive outcomes over time, even after external support ends. Previous studies show mixed results, with some indicating income reversion without continuous support. This study evaluates whether income improvements from IRESPOW are sustained, focusing on financial independence, decision-making power, and reinvestment in key areas.*
Materials and Methods: *This study conducted in rural Bangladesh, assessed the sustainability of income changes among IRESPOW beneficiaries using a cross-sectional design with both quantitative and qualitative methods. A sample of 383 women was selected through stratified random sampling. Data were collected through questionnaires and interviews, focusing on income, training, microfinance, and empowerment. Descriptive and inferential statistics were applied, along with thematic analysis of interview data. The study aims to provide insights into the long-term impact of rural development programs on women's economic empowerment.*
Results: *The correlation analysis revealed that factors such as age, education, family size, savings deposited, loan received, and loan utilization showed no significant relationship with income change. However, loan repayment behavior had a strong positive correlation (r = 0.498) with income changes. Training received (r = 0.130), income-generating activities (r = 0.120), and land possession (r = -0.120) also showed significant correlations. The regression analysis explained 26.7% of income change variance, with significant predictors being income change, loan repayment behavior, and loan utilization, while other variables had limited influence.*
Conclusion: *This study highlights the positive impacts of the project, including increased income, empowerment, and social participation. However, long-term sustainability is uncertain due to challenges like resource access, social dynamics, and financial management. The study emphasizes the need for consistent follow-up, market access, skill development, and addressing gender inequality to ensure lasting success and sustainability in future projects.*

Key Words: *BRDB, IRESPOW, Beneficiaries*

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I. Introduction

The Bangladesh Rural Development Board (BRDB) plays a central role in the execution and monitoring of rural development programs, including the Integrated Rural Employment Support Project for Poor Women (IRESPOW). As a key government institution, BRDB ensures the effective distribution of resources, the provision of essential training, and the accessibility of microfinance options, all of which are critical components of IRESPOW (BRDB, 2020). Through its extensive network in rural areas, BRDB supports the empowerment of rural women by facilitating their access to economic opportunities, which is essential for poverty alleviation and sustainable development (Hossain & Alam, 2019). BRDB's focus on poverty reduction and social empowerment aligns with the goals of IRESPOW, which seeks to improve the socio-economic conditions of poor women in rural Bangladesh (BRDB, 2021).

The Integrated Rural Employment Support Project for Poor Women (IRESPOW) in Bangladesh is designed to improve the socio-economic conditions of poor women in rural areas by providing them with sustainable livelihood opportunities. The program aims to address key challenges such as unemployment, poverty, and gender inequality, which disproportionately affect rural women (Rahman, 2015). By offering skills training, microfinance, and employment opportunities, the initiative seeks to enhance women's income while empowering them socially and economically (Islam & Hossain, 2017). Given the success of the program, there is an increasing need to assess whether the income changes experienced by beneficiaries are sustainable in the long term.

Sustainability in rural development programs is typically understood as the capacity of a program to continue delivering positive outcomes over time, even once external support is no longer available (Khan, 2019). The United Nations Development Programme (UNDP, 2018) emphasizes that sustainable income changes are not just about increased earnings; they also involve beneficiaries' ability to maintain or enhance their economic well-being despite facing obstacles. The success of such initiatives depends on various factors, such as the skills acquired by participants, their access to essential resources, and their capacity to navigate changing market dynamics (Chowdhury, 2020).

Previous studies have shown mixed results regarding the long-term impact of income-generating programs on rural women. While some have found that such initiatives contribute to short-term financial improvements, others indicate that income changes often revert without continuous support (Sultana, 2016). Research by Alam (2021) highlights the need for continuous monitoring to assess the sustainability of income growth among women in rural Bangladesh, particularly in relation to social, economic, and cultural factors. These factors can either enhance or hinder the sustainability of income changes (Haque & Karim, 2017).

This study aims to explore the sustainability of income changes among beneficiaries of the IRES program in Bangladesh, evaluating whether the improvements in income are maintained over time. It will consider aspects such as financial independence, women's decision-making power, and their ability to reinvest in education, health, and other key areas. This research seeks to provide valuable insights for policymakers to better design future interventions to support rural women in maintaining long-term financial stability and empowerment.

II. Materials And Methods

The study was conducted in rural areas of Bangladesh, where IRESPOW aims to empower poor women. A cross-sectional study design was employed, combining both quantitative and qualitative methods to assess the sustainability of income changes among beneficiaries. A sample of 383 women from diverse socio-economic backgrounds was selected using stratified random sampling to ensure comprehensive analysis. Data collection involved structured questionnaires and in-depth interviews, focusing on income levels, participation in skills training, access to microfinance and perceived empowerment (Rahman, 2015). The study's independent variable is project participation, while the dependent variable is income changes. Control variables, including age, education, profession, family size, land possession, savings, saving repayment behavior, loan received, loan repayment behavior, loan utilization, training received, and income-generating activities, were also considered (Islam & Hossain, 2017). Descriptive and inferential statistics, including correlation and regression analysis, were used to analyze the data (Chowdhury, 2020). Thematic analysis was applied to the qualitative interview data to identify recurring themes about the program's impact. Ethical guidelines were strictly followed to ensure informed consent and confidentiality. However, the study's limitations include potential biases in self-reported income and the inability of the cross-sectional design to fully capture long-term trends (Khan, 2019). Ultimately, this research aims to provide valuable insights into the long-term effects of rural development programs on poor women's economic empowerment in Bangladesh (UNDP, 2018)

III. Result And Discussion

Table 1 presents the possible range, observed range, mean, standard deviation (SD), and coefficient of variation (CV%) for 11 selected characteristics- age, education, family size, land possession, savings deposited, savings repayment behavior, loan received, loan repayment behavior, loan utilization, training received, and income-generating activities- of the beneficiaries of the IRESPOW project in the current study. These descriptive statistics provide an overview of the distribution and variability of key factors related to the participants' income, offering insights into the diversity and trends within the study population.

Table No. 1: Possible Range, Observed Range, Mean, Standard Deviation, and Coefficient of Variation of the Selected Characteristics of the Respondent Beneficiaries.

Selected characteristics	Unit	Possible Range	Observed Range	Mean	Std. Deviation	Variance	CV (%)
Age	No. of years	-	56	40.20	7.770	60.37	19.33
Education	Schooling years	-	7	3.16	1.352	1.82	42.75
Family Size	No. of person	-	7	5.21	1.275	1.62	24.48
Land Possession	Decimal	-	55	11.89	7.221	52.14	60.73

Savings Deposited	000 tk.	-	35	6.50	4.249	18.05	65.36
Saving Repayment Behavior	Score	-	3	1.20	0.542	0.29	45.34
Loan Received	000 tk.	-	770	294.13	123.702	15302.10	42.06
Loan Repayment Behavior	Score	1-3	3	1.29	0.602	0.362	46.76
Loan Utilization	Score	0-100	100	92.99	10.308	106.25	11.09
Training Received	days	0-30	30	11.84	9.906	98.13	83.70
Income-Generating Activities	Score	0-12	12	6.67	4.216	17.77	63.23
Income Change	Score	0-180	180	78.27	30.065	903.87	38.41

The data provides an overview of IRESPOW beneficiaries across different age groups. The "Middle Aged" category (31-45 years) represents the majority, comprising 58.75% of the total beneficiaries. The "Young" category (≤30 years) accounts for 13.05%, with a relatively high coefficient of variation (CV) of 19.33%, indicating considerable variation in the age group's data. The "Old" category (>45 years) includes 28.20% of the beneficiaries, though the lack of further statistical details for the middle-aged and old groups limits a deeper analysis of the variability within those categories.

Table no 2: Distribution of the IRESPOW beneficiaries according to their age

Categories (years)	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Young (≤30)	50	13.05	40.20	7.770	19.33
Middle Aged (31-45)	225	58.75			
Old (>45)	108	28.20			
Total	383	100.00			

The distribution of IRESPOW beneficiaries by educational qualification shows that the majority have completed primary (39.69%) and Junior School Certificate (JSC) education (40.99%). A small proportion of beneficiaries have completed only primary education (5 beneficiaries) or above secondary education (13 beneficiaries), highlighting a relatively low level of higher education among the group. The "Can sign only" category has the highest coefficient of variation (42.75%), suggesting significant variability in the level of literacy or education within this group.

Table 3: Distribution of the IRESPOW beneficiaries according to their educational qualification

Categories (Schooling years)	IRESPOW Beneficiaries		**Mean**	**Standard deviation**	**CV%**
	Frequency	**Percent**			
Can sign only	5	1.31	11.89	7.221	42.75
Primary education (≤5)	152	39.69			
JSC education (6-8)	157	40.99			
Secondary education (9-10)	56	14.62			
Above secondary education (>10)	13	3.39			
Total	383	100.00			

The distribution of IRESPOW beneficiaries by family size shows that the majority come from medium-sized families (45.2%), followed by small families (37.6%) and large families (17.2%). The "Small family" category has a relatively low coefficient of variation (24.48%), indicating less variability in family size among beneficiaries in this group. The data suggests a moderate concentration of beneficiaries from families of 5 to 6 members, with a notable portion also coming from smaller families.

Table no: 4 Distribution of the IRESPOW beneficiaries according to their family size

Categories (No. of person)	IRESPOW Beneficiaries		**Mean**	**Standard deviation**	**CV%**
	Frequency	**Percent**			
Small family (≤4)	144	37.6	5.21	1.275	24.48
Medium family (5-6)	173	45.2			
Large family (>6)	66	17.2			
Total	383	100.0			

The distribution of IRESPOW beneficiaries based on land ownership shows that nearly half of the beneficiaries are landless, comprising 49.9% of the total. A significant portion (44.6%) holds marginal land (16-30 decimal), while only a small percentage possess small (2.9%) or medium-sized land holdings (2.6%). The "Landless" category exhibits a high coefficient of variation (60.73%), indicating considerable variability in land ownership within this group. This suggests that landlessness is a prevalent issue among the beneficiaries, with wide disparities in land distribution.

Table no: 5 Distribution of the IRESPOW beneficiaries according to their land position

Categories (decimal)	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Landless (≤15)	191	49.9	11.89	7.221	60.73
Marginal (16-30)	171	44.6			
Small (31-45)	11	2.9			
Medium (>45)	10	2.6			
Total	383	100.0			

The distribution of IRESPOW beneficiaries according to their savings deposits indicates that the vast majority (92.4%) have small savings deposits. A small proportion of beneficiaries hold medium (5.7%) or large savings deposits (1.8%). The "Small savings deposits" category exhibits a high coefficient of variation (65.36%), suggesting considerable variability in the amount of savings among this group. This highlights the overall low savings capacity of the beneficiaries, with a significant disparity in the financial resources available to them.

Table no: 6 Distribution of the IRESPOW beneficiaries according to their savings deposits

Categories (000 tk.)	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Small savings deposits	354	92.4	6.50	4.249	65.36
Medium savings deposits	22	5.7			
Large savings deposits	7	1.8			
Total	383	100.0			

The data on savings deposit behavior among IRESPOW beneficiaries shows that the overwhelming majority (92.4%) consistently make regular deposits. A smaller proportion of beneficiaries deposit savings irregularly (5.7%) or infrequently (1.8%). The "Regularly deposited" category has a coefficient of variation of 45.34%, pointing to moderate inconsistency in deposit frequency among those who save regularly. This indicates that while most beneficiaries engage in regular savings, their deposit patterns exhibit significant variation in terms of consistency.

Table no: 7 Distribution of the IRESPOW beneficiaries according to their savings deposit behavior

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Regularly deposited	354	92.4	1.20	0.542	45.34
Irregularly deposited	22	5.7			
Seldom deposited	7	1.8			
Total	383	100.0			

The IRESPOW beneficiaries' loan distribution shows that a large proportion (92.4%) have received micro loans, whereas fewer beneficiaries received small loans (5.7%) or medium loans (1.8%). The micro loan category has a high coefficient of variation (65.36%), suggesting significant differences in the loan amounts granted to beneficiaries. This points to a wide variation in the size of micro loans, indicating that while most beneficiaries receive micro loans, the loan amounts differ greatly among them. The data reveals disparities in how loans are distributed, with no uniformity in the amounts received by the beneficiaries.

Table no: 8 Distribution of the IRESPOW beneficiaries according to their loan received

Categories (000 tk.)	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Micro loan received	354	92.4	1.29	0.602	65.36
Small loan received	22	5.7			
Medium loan received	7	1.8			
Total	383	100.0			

The distribution of IRESPOW beneficiaries based on their loan repayment behavior shows that the majority (59.3%) make regular repayments, while a significant portion (33.9%) repay their loans irregularly. Only a small percentage (1.8%) make seldom repayments. The "Regular repayment" category has a coefficient of variation of 46.76%, indicating moderate variability in the consistency of repayments within this group. This suggests that although most beneficiaries adhere to a regular repayment schedule, there is considerable variation in the consistency with which they meet their repayment obligations.

Table no: 9 Distribution of the IRESPOW beneficiaries according to their loan repayment behavior

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			

Regularly repayment	227	59.3	1.20	0.542	46.76
Irregularly repayment	130	33.9			
Seldom repayment	7	1.8			
Total	26	6.8			

The data on loan utilization among IRESPOW beneficiaries reveals that the majority (89.3%) make full use of their loans, while a smaller group (9.66%) partially utilizes their loans. A minimal percentage (1.04%) does not utilize their loans at all. The "Non-utilized loan" category has a high coefficient of variation (46.76%), signifying considerable variation in the extent of loan usage across beneficiaries. This indicates that, while most beneficiaries fully utilize their loans, there are notable differences in how loans are used, suggesting unequal application of loan funds among the group.

Table no: 9 Distribution of the IRESPOW beneficiaries according to their loan utilization

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Non-utilized loan	4	1.04	92.99	10.308	46.76
Partial loan utilization	37	9.66			
Full loan utilization	342	89.30			
Total	383	100.00			

The data shows that a majority of IRESPOW beneficiaries (31.33%) received 3 days of training, while 29.24% received more than 30 days of training, indicating a mix of brief and extensive training experiences. A smaller proportion (12.79%) received no training at all, suggesting that most beneficiaries participated in some form of training. The variation in training received, reflected by the standard deviation and CV%, highlights the diverse training needs and levels within the program.

Table no: 10 Distribution of the IRESPOW beneficiaries according to their training received

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
No training received.	49	12.79	11.84	9.906	83.70
Training received 3 days.	120	31.33			
Training received 7 days.	102	26.63			
Training received more than 30 days.	112	29.24			
Total	383	100.00			

The IRESPOW beneficiaries' income-generating activities are predominantly focused on "Others" (85.6%), with fewer beneficiaries involved in non-agriculture (9.4%), agriculture (3.7%), and small trading (1.3%). The "Agriculture" category shows a high coefficient of variation (49.01%), indicating considerable variation in the agricultural activities undertaken by the beneficiaries. This suggests that, while most beneficiaries engage in income-generating activities outside agriculture, there are substantial differences in the types of activities they pursue.

Table no:11 Distribution of the IRESPOW beneficiaries according to their income-generating activities

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Agriculture	14	3.7	2.22	1.09	49.01
Non Agriculture	36	9.4			
Small Trading	5	1.3			
Others	328	85.6			
Total	383	100.0			

The distribution of IRESPOW beneficiaries according to their occupation shows that the majority (53.0%) are engaged in agriculture-related labor. A significant portion is involved in small trading (21.67%), while the remaining beneficiaries (25.33%) are involved in other income-generating activities (IGAs). The "Agriculture-related labor" category has a high coefficient of variation (63.23%), indicating considerable variability in the types of agricultural work performed by beneficiaries. This suggests that while most beneficiaries are involved in agriculture-related labor, there is significant diversity in the specific nature of these occupations.

Table no: 12 Distribution of the IRESPOW beneficiaries according to their occupation

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
Agriculture-related labor	203	53.00	6.67	4.216	63.23
Small traders	83	21.67			
Other related IGA	97	25.33			

Total	383	100.00			

The data on IRESPOW beneficiaries' income changes shows that the majority (92.17%) have experienced a small change in income, with 7.83% reporting a medium change. A large portion (78.27%) has not seen any change in income, with a coefficient of variation of 38.41%, reflecting moderate variation in income changes among beneficiaries. This suggests that, while most beneficiaries experience small increases in income, there is considerable variability in income changes across the group.

Table no: 13 Distribution of the IRESPOW beneficiaries according to their Change income

Categories	IRESPOW Beneficiaries		Mean	Standard deviation	CV%
	Frequency	Percent			
No change in income	-	-	78.27	30.065	38.41
Small change in income	353	92.17			
Medium change in income	30	7.83			
High change in income	-	-			
Total	383	100.00			

The correlation analysis reveals that several factors have no significant relationship with income change, such as age, education, family size, savings deposited, loan received, and loan utilization. However, loan repayment behavior showed a strong positive correlation (r = 0.498), suggesting that better loan repayment behavior is linked to increased income changes. Additionally, training received (r = 0.130), income-generating activities (r = 0.120), and land possession (r = -0.120) also displayed significant correlations with income change, highlighting their potential influence on the economic outcomes of the beneficiaries.

Table no 14: Relationship between selected characteristics of the beneficiaries and change their income

Selected characteristics	**Correlation co-efficient (r)**
Age	0.048 NS
Education	0.060 NS
Family Size	-0.043 NS
Land Possession	-0.120*
Savings Deposited	-0.029 NS
Saving Repayment Behavior	0.033 NS
Loan Received	-0.082 NS
Loan Repayment Behavior	0.498**
Loan Utilization	0.068 NS
Training Received	0.130*
Income-Generating Activities	0.120*
Income Change	0.160**

NS= Not significant
* = Significant at 0.05% level
** = Significant at 1% level

The regression analysis indicates that the model explains 26.7% of the variance in income changes, with an adjusted R-squared of 0.224. Significant predictors of income change include income change itself (B = 0.148, p = 0.002), loan repayment behavior (B = 0.093, p = 0.062), and loan utilization (B = 0.094, p = 0.063), with p-values approaching significance. Other variables, such as age, family size, land possession, and training received, did not significantly contribute to explaining income changes (p > 0.05), suggesting limited influence on the dependent variable in this context.

Table no 15: Regression analysis showing the standardized regression co-efficient indicating contribution of the respective independent variables on the dependent variable

	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t	Sig.
(Constant)	1.918	.371	5.175	.000
Age	.011	.049	.235	.815
Education	.067	.038	1.742	.082
Family Size	-.052	.030	-1.743	.082
Land Possession	-.022	.040	-.561	.575
Savings Deposited	-.018	.046	-.391	.696
Saving Repayment Behavior	.090	.088	1.026	.306
Loan Received	-.083	.056	-1.489	.137
Loan Repayment Behavior	.093	.050	1.869	.062
Loan Utilization	.094	.050	1.866	.063
Training Received	.048	.085	.572	.568

	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t	Sig.
Income-Generating Activities	.017	.037	.457	.648
Income Change	.148	.046	3.195	.002
Multiple R =	0.517			
R Square =	0.267			
Adjusted R Square =	0.224			
Std. Error of the Estimate =	0.733			
F Value =	6.259			
P =	0.000			

IV. Conclusion

This study highlights both the positive impacts and challenges of the project. While it improved primary income, economic empowerment, and social participation, long-term sustainability remains uncertain due to factors such as resource access, social dynamics, and financial management. Although training and loans are critical, the lack of consistent follow-up and market linkages may hinder long-term success. Beneficiaries' ability to adapt and manage loans effectively is crucial for sustaining income improvements. The study underscores the need for broader support, including market access, skill development, and financial literacy. Additionally, addressing social and structural barriers, such as gender inequality and infrastructural gaps, is vital to ensuring sustainability. Despite limitations like self-reported data and a cross-sectional design, these findings offer valuable insights for future projects. Ultimately, sustainability depends not only on initial support but also on long-term capacity to maintain and build on these gains. Future interventions should provide sustained, integrated support to ensure lasting economic empowerment for rural women in Bangladesh.

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