Report on

Final Impact Evaluation of UPP-UJJIBITO Component Under Food Security 2012 Bangladesh - UJJIBITO

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Final Impact Evaluation of UPP-UJJIBITO Component Under Food Security 2012 Bangladesh - UJJIBITO

For

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The study was conducted with the broad objective of assessing "Final Impacts of UPP-Ujjibito Component Under Food Security 2012 Bangladesh – Ujjibito" under an agreement signed with PKSF.

The Ujjibito project is not a simple project; it is a project with multi-dimensional interventions covering three results – economic wellbeing, health and nutritional wellbeing and social wellbeing. As such a complex questionnaire was designed. Given the limited time, which is very common in impact assessment study, we had to recruit quite a large number of enumerators after thorough training. Thanks to those enumerators who spent almost a month to collect the data with patience. The continuous support of the management of Innovision has been crucial in data collection and management. Thanks to the senior management of the Innovision.

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ACRONYMS

ANC	Antenatal Care
ASA	Association for Social Advancement
ATT	Average Treatment
BDHS	Bangladesh Demographic and Health Survey
BDT	Bangladesh Taka
BIDS	Bangladesh Institute of Development Studies
BMI	Body mass index
BRAC	Building Resources Across Communities
BRDB	Bangladesh Rural Development Board
CCT	Conditional Cash Transfer
DD	Dietary Diversity
DNI	Direct Nutrition Interventions
DPS	Deposit Premium Scheme
EE	Economic Empowerment
EHFP	Enhanced Household Food Production
EU	European Union
FAO	Food and Agriculture Organization
FP	Family Planning
FWV	Family Welfare Visitor
HCR	Headcount Rate
HDDS	Household Dietary Diversity Score
HFP	Hands Free Profile
HH	Households
IFA	Iron Folic Acid
IGA	Income Generating Activity
IMEC	Interuniversitair Micro-Electronica Centrum
IYCF	Infant and Young Child Feeding
LGED	Local Government Engineering Department
MBBS	Bachelor of Medicine and Bachelor of Surgery
MDG	Millennium Development Goals
MFI	Micro finance Institutions
MNP	Multiple Micronutrient Powder
MUAC	Mid Upper Arm Circumference
NGO	Non-Governmental Organization
NNS	National Nutrition Services
OLS	Ordinary Least Squares
ORS	Oral rehydration salts
PG	Poverty Gap
PKSF	Palli Karma-Sahayak Foundation
PLW	Pregnant and Lactating Women
PNC	Post Neonatal Care

PRIME	Programmed initiative for Monga Eradication
PSM	Propensity Score Matching
PwD	Person with Disability
RSD	REMP-2 Skill Dev. Training
SAM	Severe Acute Malnourished
SDG	Sustainable Development Goals
SE	Social Empowerment
SPG	Squared Poverty Gap
SUN	Scaling Up Nutrition
UAO	Upazila Agriculture Officer
UFO	Upazila Fisheries Officer
UGDG	UPP-General Development Group
ULO	Upazila Livestock Officer
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UPP	Ultra Poor Program
USD	UPP- Skill Development Training
USET	UPP-Self Employment Training
UYVT	UPP-Youth Vocational Training
VAD	Vitamin A Deficiency
WAD	Women and Development
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive Summary

1. The study was conducted to evaluate impacts of UPP-Ujjibito components on different socio and economic outcomes. From the perspective of continuity and comparing the outcomes, it followed the sample design of the Mid-term evaluation. The program has two distinct groups – RERMP and UPP-Ujjibito. Under the RERMP, the distressed poor households were offered employment in their road construction programs under the scheme 'cash for work'. In order to make the participating women sustainable, the design required that the participating woman save BDT 50 out of her wage of BDT 200. The employment is given for 24 months. On the other hand, the UPP-Ujjibito component is expectedly to bring the participants of the UPP and upscale their activities with training and some specific interventions. The social interventions included dietary diversity and child nutrition, empowerment of women and children through social organizations.

2. The project was intended to achieve three core results. They are (1) Economic empowerment (reflected in higher standard of living); (2) Health and Nutritional Wellbeing (reflected in dietary diversity and child nutrition), and (3) Result-3: Social Empowerment (reflected in social cohesion, dignity and decision-making).

3. In conducting the study, we have generally followed the design of Mid-term evaluation. Total sample comprises of program participants (2500 HHs) and control (1000 HHs including 400 additional sample control HHs). There were some attritions in the sample observations. In all possible cases, we have replaced with the HHs in the similar category from the same areas. After completion of the data collection, total number of samples was 3,409 that includes 560 RERMP participants, 1807 UPP-Ujjibito participants and 1,042 control samples.

4. The findings were derived through descriptive and econometric analysis of the data. The report comprises of seven chapters. Three separate chapters have been prepared on the three core results of the program. Chapter Four focuses on economic wellbeing. Chapter Five is on health and nutritional wellbeing, and Chapter Six is on Social Wellbeing. Finally, chapter seven provides analysis of the findings and policy implications.

5. Economic Wellbeing:

Generally, the project is aimed at achieving economic wellbeing of the UPP-Ujjibito through training of different types. Training programs included general awareness of the members, self-employment, skill development and vocational training. The RERMP participants, conceptually, can join micro finance program after two years with LGED program of 'cash for work'. We have found that RERMP and control households are generally similar in economic characteristics. Impacts were conducted by comparing UPP-Ujjibito and RERMP participants, and between UPP-Ujjibito and control households. However, impacts were also derived for the treatment households in comparison to control households. Given the nature of the UPP-Ujjibito interventions, the critical intervention was training. As such, in this study, economic impacts capture impacts of training. They key issue is the impact of training.

First, training has positive significant impact on employability. Treatment households with training have higher employability than the treatment households without training and the control households with no training. However, impact at the household of training will be determined by number of adult members. Therefore, joint interaction of training and adult along with intercept determines the degree of employability. It was found that employability increases by one-third when adult receives training. The difference-in-difference showed that average number of earning members of treatment households was 1.69 persons compared to baseline number of 1.50 person. The difference was statistically significant. Similar results were found when compared with number of earners in control households.

Second, as noted in Table-1, UPP-Ujjibito participants with training are economically better-off than the RERMP and control households. They have higher income, expenditure, savings and investment. Higher economic outcomes are evident for all the UPP-Ujjibito households with access to different types of training. These results were also corroborated by the estimates of difference-in-difference for the UPP-Ujjibito households. However, intensity of economic impacts was higher for the households with access to vocational training. This is also corroborated by the field observation. Differences in economic outcomes of the RERMP and control households are not statistically significant.

Table 1: Key Economic Outcomes

	Average	**REMP-2 VS Others**		**Control VS Others**	
		Gap	**t-value**	**Gap**	**t-value**
	Monthly				
REMP-2 Skill Dev. Training (RSD)	8835	-		-639	-1.63
UPP- Skill Dev. Training (USD)	13080	4245	9.91	3606	9.72
UPP-Self Employment Training (USET)	13032	4197	9.22	3558	8.86
UPP-Youth Vocational Training (UYVT)	13844	5009	5.26	4370	4.71
UPP-General Dev. Group (UGDG)	11986	3151	6.97	2512	6.31
Control Group	9474	639	1.63	-	
	Expenditure				
REMP-2 Skill Dev. Training (RSD)	11135	-		-1943	-3.23
UPP- Skill Dev. Training (USD)	16733	5598	8.52	3655	6.42
UPP-Self Employment Training (USET)	17820	6685	9.56	4742	7.68
UPP-Youth Vocational Training (UYVT)	18907	7772	5.2	5829	4
UPP-General Dev. Group (UGDG)	17158	6023	8.69	4080	6.68
Control Group	13078	1943	3.23	-	
	Average Accumulated Savings (Among savers)				
REMP-2 Skill Dev. Training (RSD)	4449	-		-153	-1.29
UPP- Skill Dev. Training (USD)	5468	1019	10.16	866	10.5
UPP-Self Employment Training (USET)	6092	1643	11.78	1490	12.24
UPP-Youth Vocational Training (UYVT)	6225	1776	6.68	1623	6.31
UPP-General Dev. Group (UGDG)	5401	952	9.46	799	9.58
Control Group	4602	153	1.29	-	
	Average investment (among investor)				
REMP-2 Skill Dev. Training (RSD)	25800	-		21198	-0.2
UPP- Skill Dev. Training (USD)	33759	29310	3.65	29157	4.07
UPP-Self Employment Training (USET)	40149	35700	3.37	35547	3.68
UPP-Youth Vocational Training (UYVT)	35552	31103	2.85	30950	2.85
UPP-General Dev. Group (UGDG)	37441	32992	3.66	32839	4.02
Control Group	29498	25049	0.2	-	

Third, the RERMP HHs appear to be weaker and are less better-off than the UPP-Ujjibito. This was expected, as the RERMP participants were the most vulnerable extreme poor. Their initial economic conditions were lower than those of the UPP-Ujjibito participants.

Fourth, the UPP-households with access to self-employment training and vocational training had higher income than the UPP-Ujjibito participants with general development training and UPP-skill development training participating households.

Fifth, as UPP-Ujjibito has higher impacts on income, it is quite logical to estimate that monthly expenditure of treatment households was higher than the control households. The DiD estimates showed that the treatment households in 2019 has gain of BDT 5,689 from the base expenditure of BDT 7,081. On the other hand, control households had a gain of BDT 2,827 in monthly expenditure. Therefore, the net increase in total expenditure for the treatment households was BDT 2,862. The net difference was statistically significant. The net gains were also noted for the treatment households disaggregated by type of training. It was higher for the treatment households with vocational training. The ability to incur expenditure was lower for the treatment households with general development training.

Sixth, marginal effect on total expenditure and food expenditure as a result on increase in income was estimated. It was found that one percent increase in income increases total expenditure by 0.612 percent, and increases food expenditure by 0.389 percent. Similarly, there was higher impact on non-food expenditure. It was estimated that one percent increase in income increases non-food expenditure by 0.65 percent. This is expected to have impact on the incidence of poverty.

Seventh, there was net gain of savings of BDT2,316 for the treatment households compared to the net savings of BDT2,762 for the control household. With access to credit and net savings, investment of the treatment households was higher compared to the control households. However, access to training through its effects on income and borrowing increased investment by BDT 3,100. Similarly, it also contributed to increase in savings by BDT 3,300 during the last one year. Expectedly, treatment households with vocational training had higher savings.

Eighth, all these economic gains are likely to impact poverty reduction. Our CBN based poverty estimation showed that the incidence of poverty for the UPP-Ujjibito households was lower than the RERMP and control households. The incidence of poverty (59.8 percent) was highest for the RERMP households, followed by 49.6 percent for the control households. The estimates showed that the lowest incidence of poverty (28.7 percent) was evident for the UPP-Ujjibito households with vocational training. The other UPP-Ujjibito households with other types of training had incidence of poverty around 40 percent. The probability of staying poor is higher for the control households compared to the UPP and RERMP households.

Ninth, the critical question is, who are poor? We delved into it with simple approach – mean HH and economic characteristics of the households by poverty type. It may be noted here that 13 percent of the sample households were food poor, and 17.8 percent of the households were extreme poor. Interestingly, the non-poor rate was the highest at56 percent. The question is, why some households continue to be non-poor or extreme poor or moderate poor, and why some households could become non-poor. Table 2 shows the characteristics of the households by poverty type.

Some interesting findings do appear from the table. They are: (i) households with monthly income of less than BDT 9,000 is more likely to be food poor; (ii) higher the amount of income and net savings, higher is the probability of graduation of poverty; (iii) households engage in micro enterprise have lower rate of poverty; (iv) percentage of day labour is highest among the households in food poverty. The graduated households have higher income, higher savings, lower rate of employment in wage labor market, relatively more access to training, more engagement in business and micro enterprises.

Table 2: Characteristics of the households by poverty type

	Uni-dimensional Poverty			
	Food poor	Extreme poor	Moderate poor	Non-poor
Poverty rate	13.34	17.79	12.70	56.18
Monthly income	8947.22	11047.21	12240.1	18384.84
Monthly expenditure	4842.698	6980.805	8174.466	14686.69

	Uni-dimensional Poverty			
	Food poor	Extreme poor	Moderate poor	Non-poor
Savings	2660.089	3028.492	3813.222	4417.835
Household size	4.361656	4.316993	4.107551	4.04305
Ownership of enterprise	0.078431	0.083333	0.102975	0.173067
Cultivable land (bigah)	0.246022	0.364087	0.444525	0.471066
Day labour	0.72549	0.745098	0.617849	0.576764
Cultivation/nursery	0.078431	0.081699	0.086957	0.121369
Fishery and Livestock	0.082789	0.122549	0.08238	0.125519
Vehicle Driving	0.139434	0.137255	0.157895	0.161826
Services	0.122004	0.111111	0.102975	0.13278
Business	0.082789	0.109477	0.146453	0.164938
Household chores	0.814815	0.898693	0.901602	0.899378
Tailoring	0.050109	0.076797	0.098398	0.075726
Others	0.259259	0.197712	0.201373	0.19917
Have training	0.429194	0.46732	0.508009	0.534403

But the question is, how does incidence of poverty by type vary by households by participation status. We present the findings in Table 3. The results show that food poverty, despite forced savings and equal amount of grant, is highest (19.47 percent) among the RERMP households, followed (16.52 percent) by control households. Obviously, lowest (around 8 percent) incidence of poverty is evident for the UPP households in self-employment and vocational training. This also shows that more than sixty percent of the UPP-households had graduated from poverty in 2019. Highest incidence of graduation from poverty (71.23 percent) was found for the UPP households with access to vocational training. It is followed by other groups of UPP-Ujjibito households with non-poverty rate of around 60 percent.

Table 3: Incidence of Poverty by Participation Status

Poverty Type	RERMP	UPP-skill	UPP-Self EMp	UPP-Vocational	UPP-General	Control
Food Poor	19.47	10.49	7.94	8.22	10.28	16.52
Extreme Poor	19.61	14.03	15.31	9.59	16.70	20.82
Moderate Poor	19.91	11.52	15.58	10.96	12.84	10.70
Non-poor	44.21	63.90	61.25	71.23	60.18	51.96

6. Health and Nutritional Wellbeing

The health wellbeing was more concerned with the maternal and child health through awareness about maternity, childcare and development, and family planning. On the other hand, the nutritional wellbeing was concerned with knowledge and awareness about nutritional values, production of proteins and dietary diversity.

Lack of panel data limited the analytical diversity. As such comparison between treatment and control households using the 2019 data set was the prime approach to understand impacts of UPP-Ujjibito on health and nutritional wellbeing. The core findings are as follows:

First, treatment households are more aware of the space required between the births compared to the control households. This is equally true in case family planning knowledge. Higher percentage of UPP-households has family planning knowledge compared to the control and RERMP households. In addition, knowledge about ANC and MNC during pregnancy is also higher for the UPP households

Second, Household dietary diversity is the number of food groups consumed at home over a given reference period. A score was generated. The food groups were classified into three for better understanding of dietary diversity: low (<3 food groups), Medium (4-6 food groups) and High (>6 food groups). The results showed that about 48 percent of the UPP-Ujjibito households had more than six food groups compared to 37.9 percent of RERMP and 37.8 percent of the control households.

Third, dietary diversity is more important for women and children. The UPP women had higher dietary diversity score (4.17) compared to 3.67 for the RERMP and 3.72 percent for the control households. On the other hand, the minimum dietary diversity for the children was higher for the RERMP households than the UPP and control households. The results showed that nutritional status of children has improved through implementation of the program.

Fourth, the econometric analysis showed that UPP-Ujjibito households had higher income from milk and egg. The growth rate of market value of milk and egg was 0.84 percent for these UPP households. In case of income of vegetable production, both the groups – RERMP and UPP households – had higher income. This has contributed to dietary diversity.

Sixth, The UPP_Ujjibito households had contributed to dietary diversity score of the children. The score was higher by 0.179 for this group of households. The dietary diversity score was relatively higher for the women. No significant differences were found in case of nutritional status (over-weight or under-weight) by participation status of the households.

In brief, the program had contributed to improvement in health and nutritional wellbeing through improving dietary diversity and reducing stunting, wasting and under-weight. In some cases they were not significant. Nevertheless, it has provided evidence of the improvement in some process indicators like birth-spacing and some output like dietary diversity.

7. Social wellbeing

Social wellbeing is explained by women empowerment and knowledge about social issues. Several critical interventions were introduced. They are: 1000-day pusti poster, school nutritional forum, pusti gram (nutrition village), kishori club, blood identification, health camp, and vocational training. Impacts on social wellbeing were measured using descriptive statistics and case studies.

The descriptive statistics showed that the project has contributed to women empowerment. The participating households have higher knowledge about the interventions and its implications than the control households. However, better evidence could be observed through case studies. The case studies do suggest that heterogenous evidences. The evidences suggest that the program has uniformly contributed to social empower but of different degree. Social organizations at the village level do play more dominating role in social empowerment.

In brief, social organizations and aware building training have positive impacts on social empowerment. It was evident from the positive impacts of ‘Kishori clubs’. Not only these clubs have created social cohesion by bring girls from all poor and non-poor households, these clubs have been active in providing health-related services like measuring BP and sugar level. These services generate revenue. Consecutively, the clubs are sustainable, and they are more likely to continue even after the discontinuation of the project.

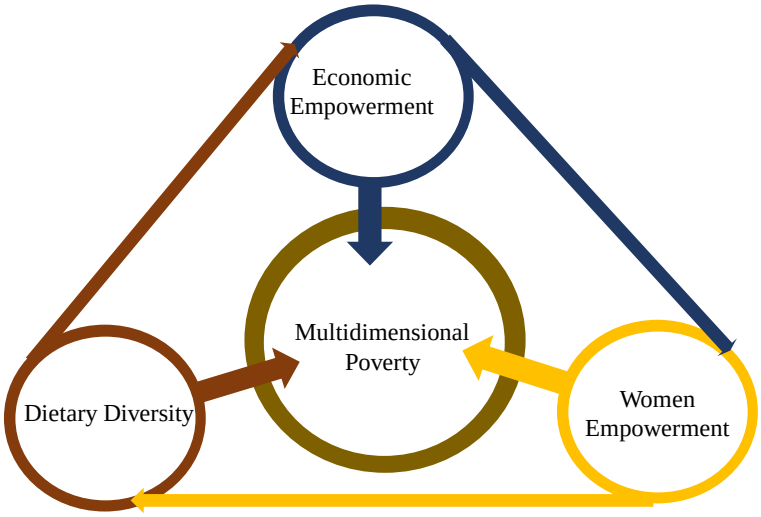
8. What Contributes Most to Sustainable Poverty Alleviation?

We have showed that the program has contributed to economic wellbeing or empowerment, nutritional wellbeing and social wellbeing. The issue, to what extent each of the results has contributed to

sustainable poverty alleviation? We defined sustainable poverty alleviation in terms of graduation from multi-dimensional poverty. We considered twenty items covering six dimensions (food poverty, health and nutrition, standard of living, education, social protection and vulnerability).

Since all the three results are endogenous, the contribution of each result on multidimensional poverty cannot be estimated using single equation. In fact, it requires system equations (structural) model through which endogeneity can be addressed through the inter-relationship among the structural equations. Four equations were perfectly identified in order to enable us to estimate the parameters.

Figure 1: Linkages between multi-dimensional poverty and three results



The findings derived from the system or structural equations are provided below:

- First, intensity of multi-dimensional poverty is very high compared to uni-dimensional CBN based incidence of poverty. For example, graduation from poverty decreased to around 40 percent under multi-dimensional poverty compared to 56.18 percent under uni-dimensional poverty measure. This implies that incidence of multi-dimensional poverty was 60 percent from the 43 percent.
- Second, all three results contribute to reducing multi-dimensional poverty.
- Third, probability of reducing multi-dimensional poverty increases at a higher with increase in dietary diversity, followed by economic empowerment. Women empowerment contributes least but significantly in the process of sustainable poverty alleviation. The results perhaps suggest that dietary diversity and economic wellbeing together will make higher impact on sustainable poverty reduction, as proxied by reduction in multi-dimensional poverty.

But there are some areas of concern. The concerns are not so much related to the interventions of the program. It is more related to social behavior. There is an increasing trend in divorce and separation. It needs to be addressed before it emerges as a major problem. The strengths of the project are effectiveness of vocational training and Kishori Club. Vocational training based on local economy will be more meaningful and perhaps it will have larger impact on solving the problem of unemployment. Kishori club is a fine innovation that can act as a conduit in social transformation.

9. Policy Implications for Future Projects

The findings that have been derived are quite robust. Not only the findings have been derived from descriptive analysis, they have been corroborated by the econometric analysis. Use of different

techniques generated similar results. In light of the robust findings, we derive some important policy implications.

First, UPP-Ujjibito as a program has made significant impact on the overall impact of sustainable poverty alleviation, as proxied by multidimensional poverty. Therefore, there can be a similar project with similar features that will contribute to achieving the sustainable development goals.

Second, training has made significant impact on economic outcomes like income, expenditure, savings and investment compared to other groups. But the participants that had received skill development training and self-employment training had higher economic outcomes, compared to the conventional micro finance groups with general awareness training. Therefore, this finding will have implication in future project development to emphasize on self-employment and skill development training.

Third, the importance and impacts of self-employment and vocational training suggests that access to credit with general two-training day training did not have higher impact. Based on the positive impacts of self-employment training, it can be argued that self-employment skill development training if tied to access to credit will lead to larger impacts.

Fourth, vocational training has made more impacts than any other training interventions. More emphasis should be given on vocational training. What is important is the selection of the training areas. Not all types of vocational training will have similar impacts. It should be decided and imparted based on the economic structure, local demand and future competition.

Fifth, RERMP households have not gained from participation in the project. But all rationale arguments would suggest that the design of RERMP would make the extreme households more sustainable after two years of participation with accumulated. Their conditions were comparable with those of the control households. Several factors may have contributed to it. (i) They were paid wages lower than the market wage. (ii) They were the most vulnerable households, and (iii) they could be connected with micro finance programs only after two years, but not all did. Based on the results and our observations, it can be argued that the RERMP type of interventions could be more effective had they been members of partner organization from the beginning of their participation in the program and had their savings been maintained by the partner organization. This would have made relationship with partner organization deeper and they could be guided into more professional training. The design of RERMP as it stands now needs to be examined, tested further different alternatives and revised, if needed.

Sixth, we have found that monthly income of the UPP-Ujjibito participants even with training has remained more or less around BDT 16,000, though higher than the average monthly income of both RERMP and control households. The income level may be good enough to stay above lower poverty level, but needs extra push through entrepreneurial training. Therefore, we suggest that self-employment training can be scaled up to take them to micro enterprises.

Seventh, although access to credit was given, training was assumed to scale up level of activities. This has proven to be successful, as evident from our analysis. But it was our observations had access to finance been formally linked and targeted as a part of the project design, the project could have made higher impact.

Eighth, day labor remains to be vulnerable. Their economic gains are quite limited compared to other groups. They have very small amount of land. Their livelihood is dependent on wage employment. This problem cannot be easily solved through day labor. Sustainable employment opportunities are required. It can be created through micro enterprise development. On the other hand, multiple income opportunities need to be created. It requires specific investigation and special program design to address the issue of day-labor in unsustainable labor market.

Nineth, it was evident that dietary diversity has higher positive impact on multi-dimensional poverty reduction, after controlling for endogeneity. Training has contributed to it. Therefore, training on nutrition and policy of promoting vegetable, milk and egg production should be an important and integral element in future projects designing; it can be extended to the existing programs.

Tenth, equally important is the role of women empowerment in sustainable poverty alleviation. Interaction in external environment and awareness building do contribute to empowerment. Understanding effectiveness of women empowerment requires long-term observation and study. Nevertheless, our data analysis and field level observations reveal that training has contributed to increasing social and women empowerment. One of the remarkable interventions that we thought have made significant and will be visible in the long run is the role of Kishori club. Not only this intervention has contributed to bringing all the girls under a single platform and building social bondage as well as awareness about social issues. With the kind of role that they have been playing, we strongly argue that kishori club in particular should be part of all project design for poverty alleviation. However, we felt that awareness program should go beyond the women and social issues; it should encompass issues like climate change and deprivation and vulnerabilities.

Eleventh, although at the aggregate level significant achievement has been made in poverty alleviation, the issue of food poverty remains a critical issue. Despite positive impacts of the project, we found that some 13 percent of the samples remain as food poor. We found that these food poor households have some important features – dependent on wage employment for livelihood, relatively low level of access to training, small amount of savings, more exposure to disaster and small landholding. Therefore, we reinforce our earlier suggestion that food poverty is closely linked with higher dependency on wage employment for livelihood. Therefore, as argued earlier, these households need to be specially targeted and linked with development of local economy.

Twelfth, exposure to disaster increases vulnerability. This has been evident from earlier studies and this study. In this study we found that some 15 percent of the households had experienced some idiosyncratic shock during the past one year. The rate has really made them vulnerable. Some 12 percent of the non-poor households experienced idiosyncratic shocks but they could withstand it because of their income level. Nevertheless, it limits their ability to invest. Others are affected. As such, micro insurance becomes a critical issue. Subject to regulatory framework, insurance should be tied to the other financial and non-financial interventions.

In brief, UPP-Ujjibito program is one of the successful programs of PKSF for poverty alleviation in Bangladesh. The critical message that emerges from the study that self-employment training, technical assistance and skill development training makes a difference in graduating from poverty alleviation. Access to financial services will make larger impact when skill development training is tied to it. Multi-dimensional interventions like dietary diversity and women empowerment will make lasting impacts on sustainable poverty alleviation.

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CHAPTER ONE: INTRODUCTION AND OBJECTIVES

1.1 Introduction

What really matters in poverty alleviation? What will constitute sustainable poverty reduction approach? These questions have dominated the literature on development economics and finance. The traditional macro-economic view has always maintained that higher pace of economic growth would solve the problem of poverty. But the evidences are ominous. Income inequality has increased; assets distribution is more skewed than before; and participation in social and political institutions has shrunk; poverty has reduced at a slow pace. Unemployment rate is still high. Why is this dismal picture of the impact of 'growth approach' to development? The critical argument in slow pace of economic growth is its inability to directly strike at the root of poverty. Moreover, spill over effects of the 'growth effect' are also limited. Generally, poverty is structural in nature and inter-generational; it originates from deprivation in accessing socio-economic, financial and political institutions. As Nelson Mandela once said, poverty is human created; and therefore, it can be solved. Indeed, poverty is human created, and poverty is perpetual because of the behaviour of those human beings who have created and/or who have contributed to the process. More humane approach is required to solving the problem of poverty. The failure of 'growth' model based on neo-liberal economic framework has brought the issue of sustainable development in the discourse of human centric development.

The sustainable development strategy is set to make a society more humane with emphasis greater on sustainable poverty alleviation, particularly extreme poverty. The driving principles of sustainable development goals (SDGs) are reducing poverty and hunger, improving health and wellbeing, creating sustainable production and consumption patterns (Lars 2017)[1]. How can these goals be achieved? There are different school of thoughts: for example, system approach (Barbier 1987) and network approach (Söderbaum P. 1998[2]; Blanc D.L. 2015[3]). As argued by Barbier and Burgess[4], a goal of improving livelihoods (reducing poverty and improving health and wellbeing) will require promoting sustainable access to food, healthcare, water and energy while protecting biodiversity and ecosystem. Therefore, the SDG framework integrates social, economic and environmental dimensions of goals. The Venn diagram presents the state of sustainable development (Figure 2) and unsustainable development (Figure 3).

[1] Lars, Josephsen. (2017). "Approaches to the implementation of the sustainable development goals: Some considerations on the theoretical underpinnings of the 2030 Agenda", Economics Discussion Papers, No. 2017-60, Kiel Institute for the World Economy (IfW), Kiel.

[2] Söderbaum P. (1998). "Economics and Ecological Sustainability: An Actor-Network Approach to Evaluation. In: Lichfield N., Barbanente A., Borri D., Khakee A., Prat A. (eds) Evaluation in Planning. The GeoJournal Library, vol 47. Springer, Dordrecht

[3] Blanc, D. L. (2015). Towards Integration at Last? The Sustainable Development Goals as a Network of targets, DESA Working Paper No. 141, UN Department of Economic and Social Affairs, UN.

[4] Barbier, Edward B. and Joanne C. Burgess (2017). The Sustainable Development Goals and the systems approach to sustainability. Economics: The Open- Access, Open-Assessment E-Journal, 11 (2017-28): 1–22

Figure 2: Integration of Environment, Social and Economic Empowerment for Sustainable Development
Adapted from: Klarin, T (2018)

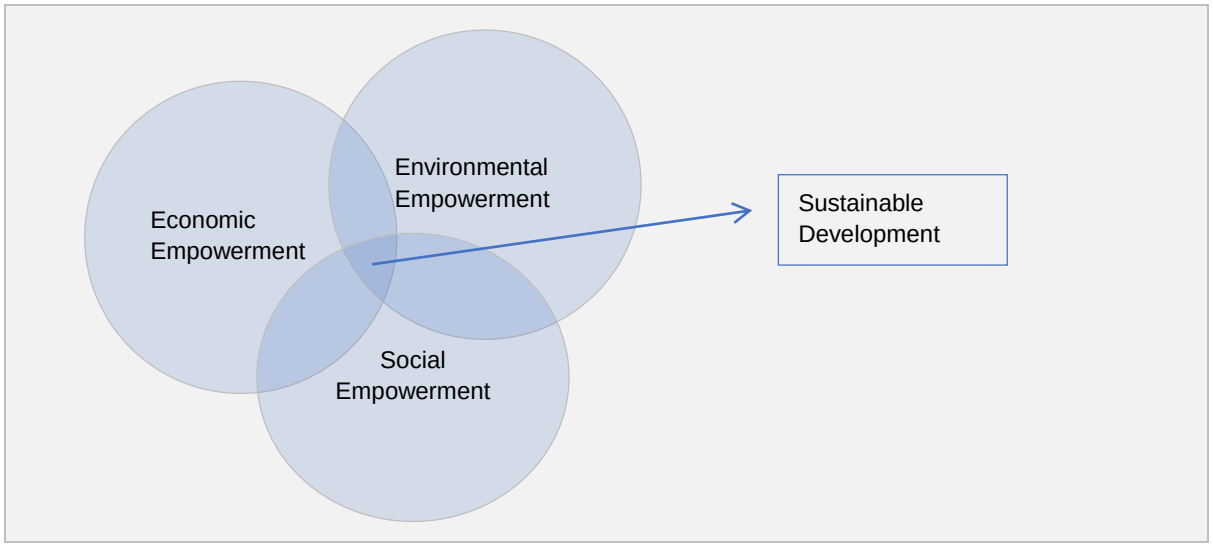


Figure 3: Disjointed Sustainable Development Adapted from: Klarin (2018)

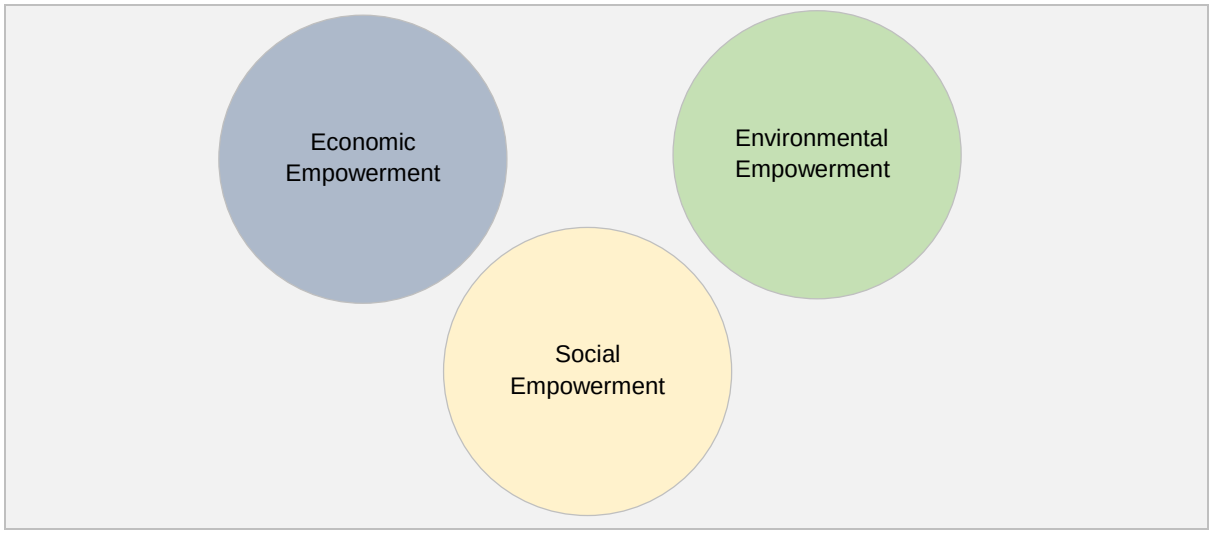


Figure 3 shows that sustainable development requires integration of all the three critical elements – ecology, economic and society. As economic and social behaviour are inter-related, optimum uses of social and economic resources through such inter-linkages. But unregulated behaviour may be ecology-costly. Figure 3 is the disjointed sustainable development with no focused goals. Livelihood and development are central to the concept of sustainable development goals as set by the UN agency.

But how can the goals be achieved? Achieving the goals require micro and macro level actions. The foremost important actions are needed solving the problem of poverty and hunger as well as livelihood. The failure of the 'growth approach' to alleviate poverty has led to direct interventions at the household level and village level. This has led to development of different models for poverty. There is no uniform set of interventions that addresses poverty of different origins. Interventions that work for alleviating structural poverty in some areas, may not work in climate vulnerable areas like the Southern regions or more specifically coastal areas. It has been the lessons derived from development models. In 1970s, access of the poor households to finance and in particular to credit, emerged as a tool for self-employment. Institutions like BRAC, Grameen Bank, ASA and many non-government PKSF partner organizations and micro finance institutions have brought more than 30 million poor individuals and/or households under micro finance institutions. Evidences are quite clear that access to micro finance only

has limited impact on poverty reduction. But the evidences are conclusive that it helps in smoothing consumptions and self-employment creation.

A sustainable poverty reduction approach is inter-linked with sustainable development goals. It requires removal of the constraints that have contributed to all forms of poverty whether it is generational or area specific or state of families. The approach requires access to credit for financing economic activities, training for skill development, savings for investment opportunities, access to different risk minimizing approaches, education for the children for accessing future high-up opportunities, access to health institutions for minimizing health risk, and social empowerment. Return on investment in education of the children will require an investment of more than two decades. But the poor households will require economic upliftment and social participation for economic and social progress. As poverty is human created in most of the cases and it is a result of long-term deprivation. Restoring human dignity will be the final outcome of any sustainable poverty reduction approach.

PKSF over time has implemented quite a large number of poverty-alleviating or minimizing projects over the past two decades. The experiences are diverse, as their programs or projects have evolved over time. In the 90s, the focus was more on financial services. But from the beginning of this century, it has embarked on projects that are core to sustainable graduation from poverty. Lessons[5] can be summarized as follows:

- Access to micro finance alone marginally reduces poverty;
- Marginal rate of poverty reduction increases when access to finance is complemented by non-financial interventions like health, training, education, nutrition and social awareness;
- Intensity of poverty reduction increases for the households with access to multiple income sources and interventions compared to the households with access to only micro finance;
- Probability of sustainable graduation from poverty increases when the households stay above poverty line consecutively for at least three years;
- Program benefits are most likely to be derived significantly after three years of program participation;
- Not all programs can have same level of impacts at the household level;
- Risk minimizing interventions contribute to long run poverty alleviation;
- Access to credit increases marginal productivity of both labour and capital at the enterprise level;
- Higher investment in assets and human resources is one of the critical elements in sustainable poverty alleviation.

These lessons are derived from different impact studies of PKSF projects over the past two decades. BUT the lessons are also derived on who can graduate and who cannot graduate. Evidences are conclusive. They are:

- Two major groups of poor households – day-labour headed households and window or female-headed households – are more vulnerable. They are least benefitted from participation in traditional micro finance;
- Single income dependency poor households are equally vulnerable and do not have ability to cope with even minimum shocks;
- Traditional micro finance program has limited implications in vulnerable areas exposed to covariate shocks;

[5] Interested readers may see, for example, Khandker (1997), Khandker, Khalily and Samad (2016), Khalily (2016), Khalily et. al. (2014), Khalily et. al. (2016), Osmani et. al. (2015). [Reference….]

- Nevertheless, ex-ante access to micro finance has higher resilience in coping with covariate shocks.

In the context of the findings of the previous studies and coping with covariate shocks causing damage to property, we argue that vulnerable households in coastal areas, in particular, will require more than finance. The requirements to address them may be highlighted as follows:

a. Expanded network of MFIs to offer financial services in all areas;
b. Increase marginal propensity to save;
c. Micro insurance or risk fund for property, livestock, and health-related risks;
d. Access to micro credit;
e. Training for effective use of resources and employment opportunities;
f. Technical assistance in effectively utilizing economic resources, particularly funded by loan amount, for maximization of its productivity;
g. Community-level approach to social awareness, demonstration of best practices in resource use through model farms and model *bari*.
h. Participation in local government to ensure community-level initiatives
i. Special programs for the most vulnerable poor households (like female headed households, day labor and beggars)

Considering all these lessons that PKSF has derived over time, it has developed one of the comprehensive programs for sustainable poverty alleviation. The program is known as UPP-UJJIBITO. PKSF started its journey with UPP-Ujjibito in 2012 with special focus on 'reducing poverty and hunger' sustainability in Bangladesh, under the European Union funded "Food Security 2012 Bangladesh – Ujjibito'.

Ujjibito is a comprehensive program. It is a multi-dimensional project covering all elements that are required for reducing poverty and hunger on sustainable basis. This means, it contains the process of 'sustainable graduation' of targeted 325,000 vulnerable and female-headed households from ultra-poverty. The process involves alleviating income poverty, achieving nutrition, increasing asset base and improving social status. Therefore, as envisioned, the project is focused on three-core elements (i) *Economic prosperity (ii) Food and nutritional security, and Social status. The final outcome of the process will be increase in empowerment and human dignity, and in turn 'sustainable graduation'. The end outcomes will be achievements of some SDGs.*

The final outcomes are achieved through two components of the *Ujjibito*: (1) Rural Employment and Road Maintenance Program – 2 (RERMP-2), and (2) Ultra-Poor Program (UPP) – Ujjibito.

The RERMP-2 is oriented towards creating wage employment opportunities for graduation from ultra-poverty. It is not only about offering wage employment for 24 months for the vulnerable and female-headed households; it is about savings-linked payment of wages for sustainable graduation. Of the wage of BDT 150, cash wage payment is BDT 100 and savings of BDT 50 in a bank account so that it accumulates including interest accrued over the period. The women receive at the end of the period BDT 37,500. This is what will take them on the path of graduation from ultra-poverty, as the beneficiary-women will be able to invest accumulated savings in income generating activities. LGED implements RERMP-2 thorough out the country, but under the EU-funded project, it implements RERMP-2 in 23 districts, and the GoB finances the program in 48 districts.

The UPP-Ujjibito component is mandated to expand or improve capacity building of the participants under RERMP-2 (27,400 participants) and UPP beneficiaries (297,600 participants) for 'sustainable

graduation'. It is being implemented in 1,724 unions[6] in four divisions – Barisal, Khulna, Rajshahi and Chattogram division.

The component is aimed at achieving the following three inter-linked results:

- Result-1: Maintain a descent standard of living
- Result-2: Enhance health and physical wellbeing
- Result-3: Improve empowerment of the participants in the society.

The project has been completed in April 2019. The critical issue is, what has been the achievements and impacts of the projects? Have the targeted results been achieved?

1.2. Objectives of the Study

The principal objective of the present study is to assess impacts of Ujjibito. The specific objectives are to assess:

(a) impact of the program interventions on livelihood and sustainable graduation in social and economic terms;

(b) impact of interventions on health and physical wellbeing;

(c) impact of the socio-economic impacts on social awareness, women empowerment, community participation and participation in local events.

1.3. Implications of the Study

The study reveals a conclusive finding that Ujjibito has contributed to reducing multi-dimensional deprivation. We use reducing multi-dimensional poverty as a proxy for sustainable poverty reduction. As per the sustainable development framework, it has been the integrated outcomes of social, economic and nutritional empowerment. When access to finance is given, training in broad term covering economic skills, awareness of dietary diversity, women health and rights contributes to sustainable graduation. Ujjibito is a special type of project that emphasis more on training, nutrition, and women health and rights, mobilization of Kishore and Kishori for social interactions and future development. The positive outcomes of Ujjibito should have implications for future project designing for minimizing socio-economic deprivations and reducing multi-dimensional poverty. From the sustainable development perspective, it is necessary to train the future generations on ecology, economy and society. It is our understanding that Ujjibito, although has limited way promoted some environment friendly economic activities, had not targeted awareness building and training on ecology. This is needed particularly for the *Kishore* and *Kishoris* who will be the users and beneficiaries in future.

[6] This includes 1370 focal unions, 109 unions of Bogra district and 245 unions in coastal upazilas. The coastal upazilas are Laxmipur, Noakhali, Chittagong and Cox's Bazar in Chittagong division. These coastal districts are vulnerable to high intensity of covariate shocks.

Chapter TWO: DESIGN AND OUTREACH OF UJJIBITO

2.1 Introduction

The design and outreach of the *Ujjibito* program is heavily drawn from the 10th Interim Narrative Report on Ultra Poor Programme (UPP) – Ujjibito, June 2019, prepared by PKSF.

Like income poverty, extreme poverty is not caused only by limited access to financial, economic and skills. It is equally a reflection of a vicious cycle of malnutrition. Malnutrition remains a critical obstacle because of its potential effects, particularly on pregnant and lactating mother. There is causality between nutritional status of the mother and low birth weight of infant. Access to resources and improved nutritional status are the core elements of sustainable development. Equally important is the empowerment of women in the family, community and institutions. For lack of empowerment, women have little access to resources, institutions and government facilities. Similarly, apart from the women and the infants, people of disabilities and the people in less accessible areas like char island and river belt are deprived of opportunities.

Therefore, sustainable development requires attainment of some critical goals so that opportunities are equally distributed and deprived ones do have access to resources. The goals need to be directed towards socio-economic empowerment and improved access to health for the ultra-poor and the women and children in particular.

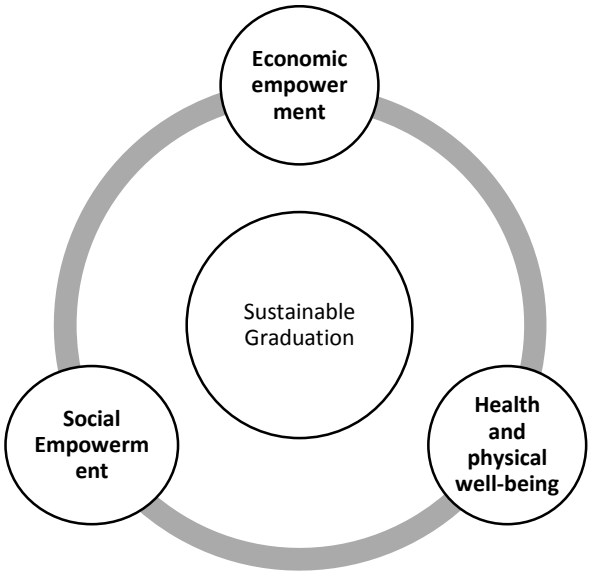


Figure 4: Targeted results for sustainable graduation
Source: Adapted from PKSF (2019)

The UPP-Ujjibito project, as such, has addressed the issue of socio-economic empowerment and health wellbeing of women and children. The project targets the core results of economic empowerment, social empowerment and health and nutritional well-being of 325000 extreme poor households in Bangladesh. This in turn would help to achieve sustainable graduation from poverty and hunger. It is well reflected in Figure 4.

The Figure 4 clearly sets the stage of the possible outcomes of UPP-Ujjibito. The ultimate outcome is sustainable graduation.

2.2 The Project Components

As noted in chapter one, the project has two components: Rural Employment and Road Maintenance Program (RERMP-2) and Ultra-Poor Program (UPP)-Ujjibito. Local Government Engineering Department (LGED) and Palli Karma-Sahayak Foundation (PKSF), respectively, implements RERMP-2 and UPP-Ujjibito components.

Under the RERMP-2, it was targeted to cover some 27400 extreme poor members over a period of two years. LGED provides wage employment opportunities for two years. It is essentially a conditional cash transfer program. Under the arrangement, the participant is paid a wage of Tk.150, of which Tk.100 is given in cash and Tk.50 is deposited by LGED in the name of the participant. The RERMP-2 members are also enrolled as members of the Ultra-Poor Program (UPP)-Ujjibito to receive various services including technical services and skill development training.

On the other hand, Ultra-Poor Program (UPP)-Ujjibito targeted to cover 325,00 extreme poor. Like any other program, under the program, the members receive awareness training and have access to financial services. Specialized trainings are offered to specialized group of members. As of December 2018, a total of 22,259 groups were constituted with membership of some 308,082 individual members - one from each household, were organized under UPP Programme. These groups also included 2740 groups comprising of 27,400 RERMPE_2 members. Given this basic information, based on the number of memberships, UPP-Ujjibito is the dominating component with share of some 92 percent.

2.3 Program Activities

The program activities are specific and well-focused to attain three basic results. *Result-1 is about attaining decent standard of living. Result-2 is about enhancing health wellbeing, particularly of women and girls. Result-3 is about improving social empowerment of the participants.* It may be noted here that with the exception of some specialized training, generally participants in the UPP-Ujjibito are women.

2.3.1 Activities under Result-1: Decent Standard of Living

Low level of income and vulnerabilities in income generation make extreme poor households very vulnerable and deprived of decent standard of living. The state of living becomes more difficult when they are exposed to idiosyncratic and covariate shocks. As a result, they have limited risk-bearing capacity. What can be done to make a decent living for the extreme poor households? Some key steps need to be taken in light of the constraints they are subject to. Extreme poor households will assistance for consumption smoothing, increase in income with diversified income opportunities. For this purpose, they should have access to financial resources, should master new skills to create new economic opportunities or to increase productivity of existing economic activities.

In order to ensure increase in income, the project has provided for interventions to improve capacity, technical assistance and access to government services for increasing productivity, participation in social protection measures for consumption smoothing and learning from demonstration. The detail descriptions of interventions are as follows:

a) Provide capacity building support

Among all the interventions, skill development initiatives are likely to have sustainable impact over the lives of the participants. A number of skill development trainings have been planned and designed under the program. They are as follows:

i. ***2-day long agricultural training for enhancing their knowledge and capacity to produce at the maximum potential.***
   As of December 2018, total 100,411 families have received agricultural training. These include homestead vegetable and crop cultivation, goat/lamb rearing using slate method, cow rearing, beef fattening, crab fattening, semi-commercial vegetable/crop cultivation. That means, almost one-third of the program participants have received this two-day long agricultural training.
ii. ***12-30 day long non-agricultural training for women to work at home either self-employed or wage employed.***
   As agricultural activities are more susceptible to risk, the project focus more on non-agricultural training so that trainees can engage themselves in less risky and more profitable non-agricultural economic activities. This will make them more focused on either self-employment and often wage employment. Non-agricultural trainings include tailoring, bamboo and cane product manufacturing, stitching and handicrafts etc. These trainings are conducted in batches, 25 participants in each batch, for 12-30 days. The non-agricultural trainings are more intensive compared to agricultural trainings. By the end of December 2018, 14,971 participants received non-agricultural trainings.
iii. ***Demand driven 3-month long vocational trainings for building capacity of unemployed*** **youths for the job market.**
   With more education, youth are gradually coming away from agricultural activities in most cases. But there are a good number of unemployed youths in the extreme poor households. They are also unemployed for lack of skills. Under the project, some 1000 youths with the appropriate technical skills were targeted to be trained through vocational training courses (for example, motorcycle mechanic, electrical house wiring, mobile phone servicing and motor vehicle driving). As of December 2018, total 1000 young members already received these technical trainings from different vocational training institutes. It was observed during the field visit that the persons receiving vocational training have stable and higher income level.

b) Technical support and linkage facilities

Extreme poor households mostly depend on agriculture. However, they do not get good return due to appropriate technologies and required advices. The project has made an arrangement to provide extension services through courtyard session, households visit and allocation of vaccination and deworming tablets for the livestock.

i. ***Arrange courtyard session on low-cost agricultural technologies***
   As most of the ultra-poor households are dependent on the agriculture, there is a need to equip themselves with appropriate technologies to get better harvest. Extension services are provided through courtyard session. As of December 2018, a total of 344,005 sessions were conducted at their courtyards since the beginning of the project.
ii. ***Visit households for providing technical supports to their IGAs***
   Apart from courtyard sessions, under the project, Program Officers (Technical) also visit the households individually to cater the need of the project participants. Generally, they supervise the farming and non-farming activities of project participants and provide technical knowledge to overcome the hurdles. Until December 2018, a total of 1,685,822 unit-households were

visited. From these household visits, they could also asses the training needs of the participating households so that they can be included in future training programs.

iii. Provide vaccine and de-worming tablets for the animal

Livestock are the most important assets of the extreme poor households. Often without any appropriate knowledge, it becomes risky for the households. To protect from the risk associated to their livestock, the project has provided for vaccination and deworming the livestock. A total of 1,063,300 units of these services, so far, was provided with the active support from the local livestock offices.

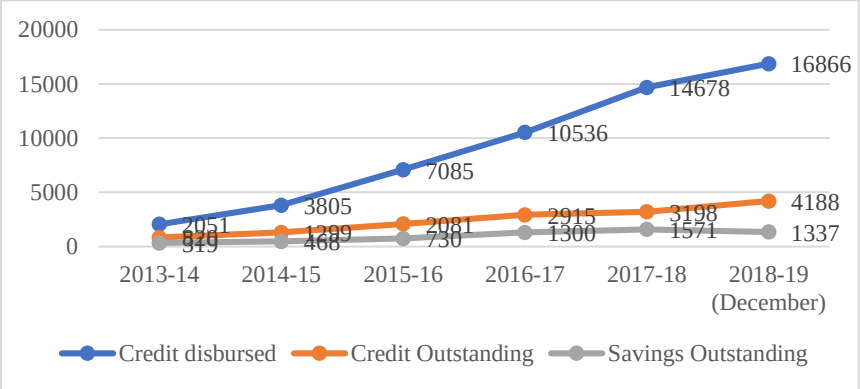
iv. Establish linkage with the government service points such as Upazila livestock, fisheries and agriculture offices

Government agencies offer different services for farming, fisheries and livestock at the upazila level. Poor or disadvantaged groups are generally not well informed about the services. Access to information and linkage with the services are expected to provide better results. This is usually attained through inviting the Upazila Livestock Officer (ULO), Upazila Fisheries Officer (UFO) and Upazila Agriculture Officer (UAO) to conduct relevant training sessions, attend the group meetings, and facilitate the delivery of Government services at the user level.

c) Access to appropriate finance

Access to finance to the extreme poor is important to finance new and/or existing IGAs. Often new initiative and scaling up of existing IGA becomes difficult for finance constraint. Micro finance services provide opportunities for the participants. The partner MFIs in the project offer flexible loan, saving/deposit scheme and credit life insurance for the project participants. They also collect savings from the members. Until now, ultra-poor members have deposited BDT 1336.95 million (equivalent Euro 13.36 million) as savings. On the other hand, a total of BDT 16866.31 million (equivalent Euro 168.66 million) was disbursed as loans to the extreme poor members. In addition, the project has allocated fund named 'risk fund' to help project participants to cope with covariant shocks and other unexpected situations or consequences including death, permanent disability, and critical diseases or medical emergency of a family member. As of December 31, 2018, BDT 2,83,33,000 were disbursed to 5667 individuals from the Risk Fund. The time-series statistics are provided in Figure 5:

Figure 5: Credit and Savings Portfolio of Ujjibito



Source: Adapted from PKSF (2019)

d) Social Protection

Despite targeting the poorest segment of the society, the poverty and vulnerability stratum of the poorest segment are not same. Among many targeted extreme poor households, some of the households such as women headed households, households with disable person, family with no income earner are the most vulnerable in terms of coping with downside risks and shocks with their meagre resource. Thus,

the project has made some provision to lowering the risks of the most vulnerable which includes cash for works, critical support to establish IGAs.

i. Wage-employment opportunity for destitute women

Rural Employment and Road Maintenance Programme-2 engages 13,700 extreme poor members for 2 years (in two phases). BDT 150 per day for two years are paid as remuneration for the work, out of which BDT 50 per day is mandatorily saved and provided BDT 36000 as savings at a time to the participants at the end of each phase. BDT 100 is paid daily for supporting their basic expenses. The project envisaged that extreme poor will invest the lump sum savings in productive activities to generate regular income to meet their food and non-food expenditure.

ii. Extend critical minimum support for the most vulnerable members

Asset transfer is one of the crucial tool of poverty reduction for the most destitute or vulnerable. Under the project, different modalities of asset transfer are made. Participants get grants vermi-compost production, goat rearing, lamb rearing, beef fattening, cow rearing, poultry rearing, small business etc. Sometime, a lump sum has also given for promoting new technologies or interventions. As of December 2018, 12,567 ultra-poor families have received grants from the project. The grant amounts range from BDT 500 to BDT 10000.

e) Demonstration

Agricultural research organization releases new technologies and techniques to increase the production level. The project has provisioned to establish demonstration plot to increase the confidence of the project participants and start such activity. Demonstration will also be used as practical field of new technologies and techniques. The project supports to establish following field demonstrations:

i. ***Semi-commercial vegetable gardening:***

The project provides high quality seeds and technical services in order to increase their crop production. Based on the agro-ecological condition, various types of seeds, such as sweet gourd, bottle gourd, white gourd, spinach, Kalmi, red amaranth, white amaranth, cucumber, brinjal, okra etc. are provided for semi-commercial vegetable gardening. From November 2013 to December 2018, a total number of 28,117 semi-commercial vegetables farms were established with the help of vegetable seeds provided from the project.

ii. ***Model Ujjibito House/Bari:***

As a part of demonstrating best use of homestead, under the project, Adarsha Ujjibito Bari has been designed in such a way where at least 5 productive IGAs are established to create multiple sources of income. Besides, it must have a sanitary latrine and a number of trees spreaded around the household. Some 360 Adarsha Ujjibito Bari by the end of December 2018 under the project.

iii. Establish IGA cluster and vermi- compost village

The objective of establishing IGA clusters is to promote technology based IGAs in closed vicinity for extending their access to markets. Project patronizes those technologies of which have already disseminated through project interventions. Besides, it brings financial benefits to the participants. Primarily, some vermi-compost villages have been established where minimum 10 members of ultra-poor families are involved in producing vermi-compost. It is expected that adding forward and backward linkages with these initiatives may generate further employment for the local people.

2.3.1.1 Outreach under the activities of Result-1

The project has made outstanding strides to attain the targets set under the project. Most of the achievements have been made by June 2017. Over the following two years, it has steadily increased. The summary of the outreach is presented in Table 4 as follows:

Table 4: Outreach for Result-1 as of December 31, 2018

Sl. No	Name of the activities	Target	June 2017	December 2017	June 2018	December 2018
1.	Organize ultra-poor members (No.)	325,000	312,252	311,419	310,182	308,082
2.	Provide employment for destitute women (No.)	27,400	27,400	27,400	27,400	27,400
3.	Arrange courtyard session on low-cost agricultural technological issues (No. of sessions)		224,544	265,900	304,802	344,005
4.	Visit house to house for specific agricultural technical advices (No. of visits)		1,087,643	1,293,216	1,493,619	1,685,822
5.	Impart 2-day agricultural trainings for skill development (No. of participants)	100,000	91,786	99,436	100,411	100,411
6.	Give 12-30 day long non-agricultural training (No. of participants)	15,000	14,000	14,371	14,971	14,971
7.	Deliver 3 month long vocational training (No. of participants)	1,000	795	795	1,000	1,000
8.	Establish Semi commercial vegetable farms (No.)		21,829	24,538	26,439	28,117
9.	Provide vaccine and de-worming tablets for the animal (No. of units)		942,193	991,702	1,076,522	1,076,522
10.	Establish IGA Cluster and Vermi-Compost Producer Village	ongoing				
11.	Link with the Government services point such as *Upazila* livestock, fisheries and agriculture offices	ongoing				
12.	Extend critical minimum support (Grants) for the most vulnerable members (No. of families)		10,956	11,636	14,211	14,211
13.	Set up *Adarsha*(Model) Ujjibito *Bari* (No. of Houses)		357	359	359	360
14.	Flexible credit outstanding (BDT in millions)		2,914.65	3,299	3,198.12	4,187.86
15.	Voluntary savings (BDT in millions)		1,300.4	1,406	1,571.29	1,336.95
16.	Risk fund disbursed (BDT in millions)		3.273	5.91	17.88	28.33

Source: Adapted from PKSF (2019)

2.3.2 Outreach under Result-2

As discussed at the beginning of this chapter, result-2 is directed towards health and physical wellbeing of the poor and disadvantaged people. As women are major participants, it is directed towards more to women and children. There is a two-way positive causality between livelihood and improved health and physical well-being. As such, two types of interventions, health and nutrition-specific interventions and nutrition-sensitive interventions have been taken to combat against food insecurity, malnutrition and poor health.

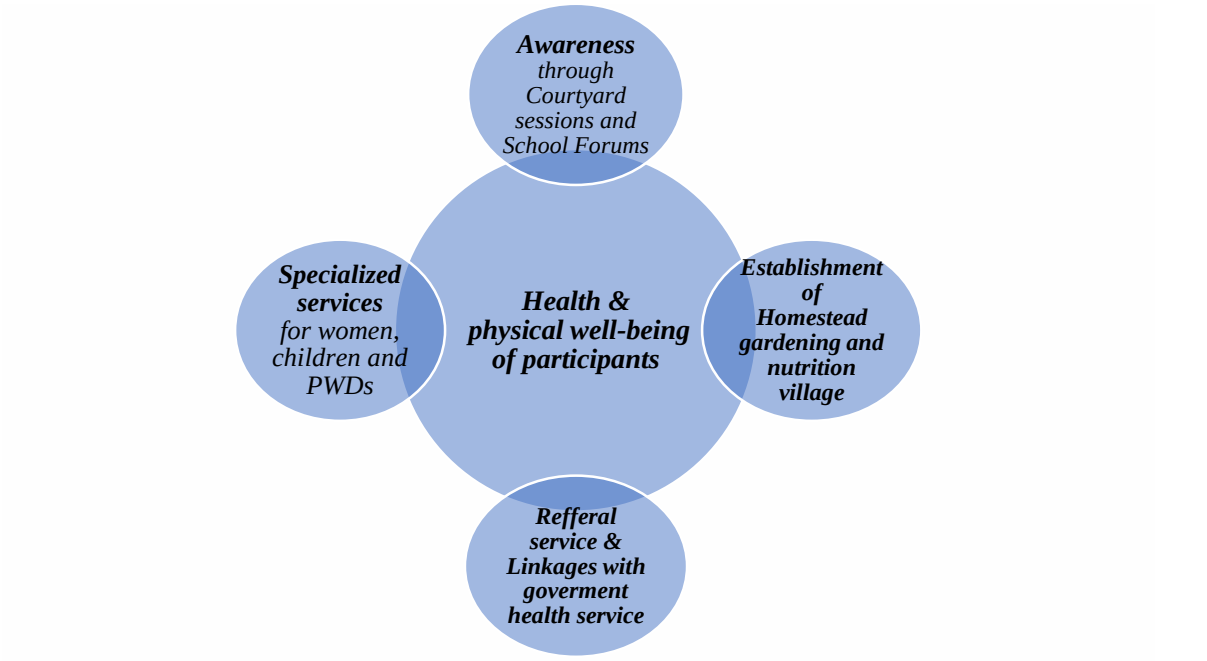
Nutrition-specific interventions include regular counselling on Infant and Young Child Feeding (IYCF); consumption of locally available nutrient-rich food by pregnant women, feeding practices for lactating women and adolescent girls; screening the malnourished children aged below 5 years, pregnant and lactating women; referring the SAM; regular anthropometric measurement of children, pregnant and lactating women; hygiene and hand washing with soap before eating/preparing food, before feeding a child and after defecation.

Nutrition-Sensitive Interventions focus on the improvement of food security and nutritional status of the ultra-poor families. Interventions include distributing vegetable seeds to establish homestead and semi-commercial vegetable garden; vaccinating and deworming their livestock's; contributing to establishment of suitable income generating activities for the most vulnerable families. With a view to bringing demonstration effects to the communities, UPP- Ujjibito project inspires members to establish model farms in every branch.

Besides, the project mobilizes the group activities to create enabling environment for gender equality and organizes different events i.e. observe special day, health and blood grouping camp for empowering women. These efforts ultimately address latent factors of the food security and nutritional dimension of the poverty, gender equality and women empowerment.

This project is particularly involved to raise the awareness on nutrition and primary health care. Through direct counselling by the Programme Officer (Social), the participants receive knowledge on the nutritious food, diseases and their remedies. Different groups and forums have already been formulated to engage the young girls, women, pregnant and lactating mother, school going children. They participate in different events, such as group sessions, competitions, games, and discussions. The following activities, as presented in Figure 6, are particularly implemented to achieve Result-2.

Figure 6: Fourfold activities under Result-2



Adapted from PKSF (2019)

a) Awareness through courtyard sessions and school forum

A total number of 259 Programme Officers (Social) have worked at the field level across the targeted areas. They conducted interactive courtyard sessions/group discussion at the community level. These sessions were conducted on a list of discussion topics among the existing groups. Important and relevant messages are prepared before conducting the session.

As of December 2018, total 3,85,073 sessions were conducted since the beginning of the project. The project also has established Ujjibito Primary School Forums comprised of students from Class III to V to increase awareness among the school going children on health, nutrition and social awareness. There are about 780 primary school forums in the working areas. In each Ujjibito Primary School Forum, a self-help growth monitoring corner (consists of a weight machine, a height measurement tape, a growth monitoring chart and a wall poster on balanced diet) has been installed. Further, the project targets students from class VI to class X to form secondary school forum with an aim to aware them on reproductive health, nutrition, social stigma and other issues related to health and nutrition. As of December 2018; the project formed 667 such forums at different secondary schools in the working areas.

b) Specialized services for women, children and PWDs

Malnutrition remains a critical obstacle especially amongst the extreme poor families. Poor nutritional status of the mother is a key factor for low birth weight infants. The project has a special concentration on malnutrition with special attention to the first 1000 days of life (from pregnancy to the child's second birthday), pregnant and lactating women, women of reproductive age, <2 children, 2 to <5 children. The project undertakes following activities for women, children and PWDs:

i. ***1000 days' intensive healthcare services for mothers and children***
   UPP-Ujjibito provides services titled '1000 days' care' to pregnant women, <2 children and lactating mothers. 1000 days service include Infant and Young Child Feeding (IYCF) counselling on lactation support particularly exclusive breast feeding from birth up to 6 months, encourages mothers to complete full dose of Iron Folic Acid (IFA) and Calcium supplementation, supports management of acute diarrhoea with ORS and Zinc consume nutrition-rich food particularly during pregnancy, organizes group meeting to raise awareness on primary health care, balance diet, cooking practice, water and sanitation, and health hygiene and if needed, individual counselling or family counselling session on pregnancy and post-natal complication and care. They also distribute a poster to every household that has a pregnant mother, <2 children or a lactating mother. By December 2018, a total of 2,85,434 pregnant and lactating mother and <2 years' children were enlisted under '1000 days' care services. Project Management Unit also prepare a 'Health and Nutrition Monitoring Card' in order to monitor the progress of pregnant women, <2 children and lactating mothers.

ii. ***Growth monitoring of 24-59 months' children***
   As monitoring of change is essential for ensuring sound health and growth of 24-59 months' children, the project extends the doorstep services for their anthropometric measurement and growth monitoring which includes Mid Upper Arm Circumference (MUAC), height and weight. These monitoring make an opportunity to track nutritional status regularly, refer SAM (Severe Acute Malnutrition) children to the hospital for nutritional treatment and organize individual counselling or family counselling session on complementary feeding, vaccination, diarrhoea & treatment, deworming and primary health care. A total of 1,11,064 children has received above mentioned services from the project.

iii. Providing special services to PWDs

Amongst the poorest segment, Persons with Disabilities (PWDs) can not avail basic living requirements due to their inabilities in different aspects. Families with PWDs are being addressed with care since the inception of the project. The project provides counselling, training and grants based on their abilities and resources for reducing their vulnerabilities as well as sufferings. The project has also established linkage with Department of Social Welfare of the Government of Bangladesh to include PWDs in the safety-net list. As of December 2018, total 4,541 PWDs were identified from the participant households, 3708 of them received different services including trainings (1169 PWDs received trainings on different trades) from the project.

c) Establishment of Homestead gardening and Ujjibito Nutrition Village for nutritional security

i. Distribute vegetable seeds for homestead vegetable gardening

In Bangladesh, extreme poor people are the most disadvantaged and vulnerable groups. Due to low availability and consumption of vegetables, they are suffering from malnutrition and food insecurity. So vegetable production in the homestead can be good option which can contribute household food as well as nutrition security. Since the beginning, the project has been distributing vegetable seeds to the target participants for homestead vegetable gardening at least two times in a year. As of December 2018, total 10,97,446 unit-households received vegetable seeds from the Partner Organizations implementing UPP-Ujjibito Project across the country.

ii. Ujjibito Pusti Gram (Nutrition Village):

To aware the issues relating to nutrition and health, the project has made an arrangement to establish Ujjibito Pusti Gram (Ujjibito Nutrition Village). Villages with higher density of targeted people living in the cluster, are selected as Ujjibito Nutrition Village. A village can be called Ujjibito Pusti Gram when a cluster fulfilled following criteria:

a. Villagers have intention to learn about nutrition and healthcare services
b. They are also practicing the knowledge of nutrition and health in their daily life.
c. Kishori (Adolescent) Club is also located in or near at a respective village to spread basic information on nutrition and health and encourage people to practice those at their household level.

As of December 2018, a total 709 Ujjibito Pusti Grams was established in the working area of the project.

d) Referral services and Linkages

Acute malnutrition is one of the major causes of death among under-five children in low and middle-income countries. Bangladesh has an estimated 600,000 children with SAM (below 5 years), for a prevalence of 4%. The Government of Bangladesh, along with the development of 'National Guidelines for the Management of Severely Malnourished Children in Bangladesh', keeps provision of admitting and treating all SAM children under-five in its hospital with free-of-charge. The Program Officers (Social) are trained and well instructed to screen and immediately to refer all SAM children to government hospitals at the upazila or the district level. They identify the SAM children, refer the SAM children to the appropriate facility and liaise with the designated Upazila Health Complex. As of December 2018, a total of 4430 SAM children was referred by the Project.

2.3.2.1 Outreach till December 2018 under Result-2

The project has made a significant progress during this reporting period. Table 5 provides the detail of the progress under result 2.

Table 5: Progress of activities under Results 2

SL No	Name of the activities	June 2017	December 2017	June 2018	December 2018
1.	Conduct courtyard session on health, hygiene and nutrition (No. of sessions)	281,222	322,786	373,586	385,073
2.	Undertake anthropometric measurement and growth monitoring (24-59 months children) – (No. of times)	159,534	203,208	246,934	270,600
3.	Extend 1000 days intensive health care services for mother and child (No. of units)	360415	425645	496,047	531,680
4.	Distribute vegetable seeds for homestead vegetable gardening (No. of units)	858,614	951,352	1,066,448	1,097,446
5.	Establish Ujjibito *Pusti Gram* (Nutrition village) (No.)	370	370	370	709
6.	Provide referral services to the SAM children (No.)	4,211	4,211	4,211	4,211
7.	Provide special services to the Person with Disabilities (PWDs) (No.)	3708	3708	3708	3,708
8.	Set up Ujjibito Primary School Forum (No.)	592	659	687	780
9.	Set up Ujjibito Secondary School Forum (No.)	648	648	648	667
10.	Establish linkages with *Upazila* health services and local community clinics	On-going			
11.	Nutrition Corner (Primary School) (No.)	128	128	128	1,447
12.	Ensured Hygiene Toilet and Tipitap for hand washing (No. of families)	57,562	74,335	93,425	113,629

2.3.3 Outreach under Results 3: Social Empowerment

Empowerment of women is critical to sustainable development, as women constitute almost fifty percent of the population. The project had specific interventions to increase social empowerment of women. It is, however, inter-linked with the outcomes of other two result-related activities.

a) Conducting courtyard sessions on wide range of social issues

Awareness programs on diversified social issues are organized to make targeted women aware of. Courtyard sessions are organized at a regular interval. By the end of 2018, quite a large number of sessions was organized. Some 3,85,073 sessions were conducted since the beginning of the project.

b) Coordinate with Local Union Parishad (councils) for selecting eligible families for safety net and other designated services of the Government

It is observed that many disadvantaged people are not getting social safety net support from the GOB but they are eligible to get this. The project has made an arrangement to identify eligible households and coordinated with the local Union Council to include them.

c) Bringing back drop-out children to primary school through individual home visits

Any family can be economically sustainable if one child is educated in a poor family. But often poverty forces some children to drop out of school. The project aimed at bringing the dropout children back to school through counseling the children and their parents. Some 2451 dropout children were sent back to school and readmitted by December 2018.

d) Organizing Community Events to raise awareness

Community events engage the rural people and make them aware of the social issues and their rights of livelihoods. These community events include activities encircling social issues, gender and empowerment issues, food and nutrition issues etc. Besides, blood grouping and health campaign are also being organised along with the community events to achieve greater efficacy of the character of that particular day. The partner organizations of PKSF organise different events to celebrate special days, such as World Health Day, World Women's Day, International Day of Persons with Disabilities, and World Immunization Day to engage the members of the project and to disseminate knowledge to the people. Since the beginning of the project to December 2018, total 1270 different events were organized with the active assistance of the project.

e) Adolescent Club

The project has formed almost 1000 adolescent girls clubs and 40 adolescent boys clubs to make them aware of and vigilant against the social evils. Through these clubs, 10,000 girls and 1,000 boys have been organized to socialize, exchange views, sharing experience and develop life skills. These clubs find some spaces for them to engage themselves in health camps and organizes education related activity like sports, cultural and social events. Generally, it is located at the residence of the President of the club. During our visit, we were quite impressed with the kind of activities they are engaged. In addition to social group activities, they have been equipped and trained with some medical instrument to provide some basic services like measuring blood pressure and sugar level that generate some revenue to make the clubs sustainable. The most important element is the cohesiveness and bondage among the members coming from different background. Under the project, grant is provided to the best performing club.

2.3.3.1 Outreach for Result-3

A total of 62,706 courtyard session on social issues were arranged for raising awareness of the participants. The information on the outreach is provided in Table 6 as follows:

Table 6: Progress of the activities under Result 3

SL. No.	Name of the activities	June 2017	December 2017	June 2018	December 2018
1.	Conduct courtyard sessions on wide range of social issues (No. of sessions)	281222	322786	373586	385073
2.	Coordinate with Local Union Parishad (councils) for selecting eligible families for safety-net and other designated services	Ongoing			
3.	Bring back pupils to primary school (No.)	2237	2395	2422	2451
4.	Organize community events to raise awareness (No. of events)	399	563	884	1270
5.	Establish Ujjibito *Kishori* (Adolescent) club for raising awareness. (No.)	916	1031	893*	986

* On-going clubs. Source: Adapted from PKSF (2019)

Chapter THREE: Research Framework and Sampling Design

3.1 Introduction

We structure the chapter into four segments. They are: (i) framework of the study or Theory of Impact Assessment; (ii) Sampling design; (iii) Data collection and analysis; and (iv) Report writing.

3.2 Research Framework: Theory of Impact Assessment

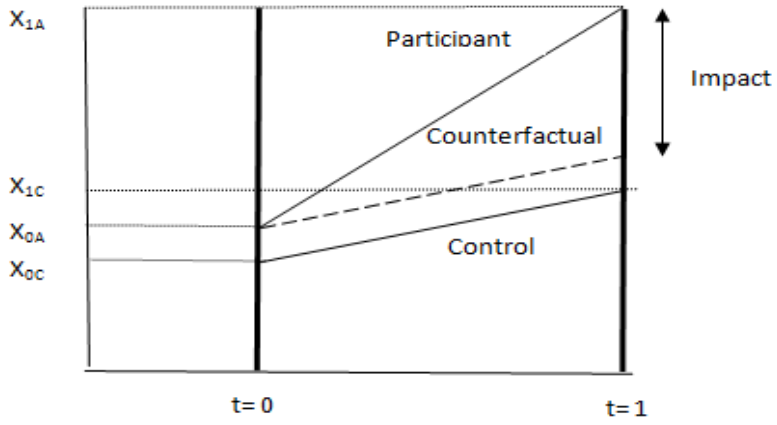
To assess the impact of a program, one should get the difference in the outcome of a treated individual with that of the same individual if he/she was not being treated. Since this is not possible to observe both outcome of an individual in a given time point, so researchers need to find a proper counterfactual group who has the same potentiality/probability of being selected by the program but has not been treated. So the basic problem of impact assessment is to identify the proper control group. Ideally the researchers select an area or group of individuals who were characteristically identical to the treated group but were not treated.

After selecting the control group (counterfactual of treated group), one can simply calculate the difference between treated group and control group and interpret the difference in a certain indicator as the outcome of the program. But there is a possibility that the difference in the indicator is not entirely due to program, i.e. the impact of program might get mixed up with other factors which might influence the outcome as well. Particularly this type of problem arises due to *selection bias*. Selection bias may take place from two possible channels: (i) program providers may place the program purposively and (ii) the individual might self-select them in the program. The other potential sources of selection bias are: (a) Hawthorne effect of intervention on treatment group; (b) spill-over effects - contamination of control groups by treatment groups; and (c) fungibility of microcredit (Hulme 2000; Khalily; Khandker et. al.). The individual might self-select them into the program for both observable and unobservable characteristics. For example, one might choose to participate in a microfinance program just because he has more entrepreneurial capacity and thus more capable to use various financial instruments. So if we compare him with a non-participant individual, the difference may not be the outcome of treatment only, difference in entrepreneurial ability may be making the difference. While attempt to estimate the impact in the presence of unobserved characteristics, this unobserved variable enter into the error term of the regression equation. Assumption of no correlation between error terms and explanatory variables violated, because the treatment variable is now correlated with error terms through the unobserved variables. As a result, the coefficient of treatment variable is no longer unbiased. In addition to the issue of selection bias, there are some other problems. They are: (i) address the issue of graduation and no longer active borrower or drop-out from the microfinance industry; (ii) attrition bias, that is, some households or samples may drop out sample list due to permanent migration/long term migration, death, or simply refuse to continue furnishing data and some households may split within the given program period; (iii) since money is fungible, loan funds can be used for many purposes so it is difficult to determine how they were actually used and what benefits were realized; and (iv) many factors other than microfinance, such as macroeconomic shocks, education, and participation in other poverty program influence changes in household poverty.

The most critical issue to address in impact assessment is selection bias. Without addressing the problem, it is not possible to identify the exact magnitude of impact. Requirements are: (i) creating matching groups of participants and control households; and (ii) controlling influence of unobservable

characteristics. The most important requirement is matching group. There are techniques to do it. First, one can specify criterion for identifying target group of households or participants in the program, and strictly select the targeted program participants and control. Second, use some econometric technique like Propensity Score Matching (PSM) to make observations more balanced. Once these are used and identified homogenous group of observation, measurement of impact is simple. Generally speaking, impact assessment data should be ideally available for benchmark and mid or end-line. That means, we assume to have data at two points (initial year t_o and end-year t_1). When this is available, we can easily measure impacts, as demonstrated in Figure 7.

Figure 7: Theory of Impact Assessment



To explain the figure, let us consider two persons – A (program participant) and C (control). At the initial year, t_o, pre-intervention outcome of A was x_{0A}. After receiving the intervention his/her outcome indicator increases to x_{1A}. How much did the household gain? It is $(x_{1A} – x_{0A})$. Is it gain from the program participation? No, because external factors may have also played into it, and also control household may have gained during the period. We do not need to worry about external factors as those will be same for both participant and control. We need to derive the net benefits from the program, net of gains of control group. Let us assume, net outcome of control household increased was $(x_{1c} - x_{0c})$. Now we will be in a situation to derive net project impact, which will be $[(x_{1A} – x_{0A}) - (x_{1c} - x_{0c})]$. This is an approximation of the impact using outcomes of the households at two points. The estimation technique is known as Difference-in-Difference. Actual impact is the differences between outcomes of participants and counter-factual (how much benefit would a participant have forgone if he/she did not participate in the program) groups. Unfortunately, both the situations of an individual at the same time cannot be observed. That is why, impact assessment is so tricky and difficult. It all depends on our ability to identify control group that is characteristically similar to the participating groups, i.e., both participating and control households are homogenous in nature.

Given the three-targeted results, we explain the process of interventions impacting outcomes. The basic objective of the project is to ensure sustainable graduation from ultra-poverty through impacts of different interventions. There are two broad groups of activities – wage employment and cash savings through RERMP-2, and interventions under *Ujjibito* that include socio-economic interventions.

The wage employment and savings under RERMP-2 is expected to contribute to consumption smoothening and accumulation of savings. This accumulated savings at the end of year two will be a source of investment for income generating activities. We expect these interventions to influence income, assets accumulation, crisis coping and food security on sustainable basis.

The other set of interventions through *Ujjibito* is quite comprehensive. That includes training and technical assistance for higher economic productivity, credit for investment and employment creation,

risk fund for risk minimization and coping with shocks, health and social awareness for reducing health-related risks and accessing to health services; social awareness and clubs for empowerment, homestead vegetable gardening for improving nutritional intake, and finally, best practices for model housing for ensuring better use of resources. All these interventions are likely to have impacts on income, productivity, asset accumulation, better use of resources, nutritional intake, poverty, investments and savings, in addition to ultimate outcomes of sustainable graduation from ultra-poverty, and social empowerment.

The UPP-Ujjibito program implemented a broad set of development interventions for each of the three main results. The main objective of the study is to evaluate the impact of the main interventions on the targeted set of results.

There are three groups of households: participants under RERMP-2 (Group-A), participants under UPP-Ujjibito (Group-B) and control (Group-C) households. Therefore, assessment is made by comparing outcomes between:

- Group-A and Group-B. This will be made if it appears that there are significant number of RERMP-2 beneficiaries that did not participate in Ujjibito program. In this case, differences in outcomes will show us which of the two interventions has higher impact on targeted outcomes.
- Group-A and Group-C. This will show us net benefits of cash wage-payment and savings on different outcomes compared to control households.
- Group-B and C. This will provide information on whether Ujjibito program participants are better-off compared to control households.
- Program participants (group A and B) and non-participants (Group-C). It will show global impact of the project by comparing outcomes of the program participants (regardless of nature of participants) and control households.

All these outcomes have been assessed in the context of program specific interventions. The questions that guided us are as follows:

- Is the program participating households better-off?
- What is the impact of training and technical assistances on different outcomes of Ujjibito households compared to participating households with no access to training, and also control households?
- What is the impact of access to financial services only compared to the households with access to both financial and non-financial interventions and control households?
- What determines sustainable graduation from ultra-poverty compared to both program participants and non-participants?
- What have been the impacts of nutritional awareness on nutritional inputs?
- Do nutritional inputs have any impact on economic outcomes?
- Have the project interventions contributed to women awareness?

Answers to these questions provide information on the extent of impacts of program impacts on economic empowerment, nutritional capability and social empowerment. This section provides a discussion on the global methodology of impact assessment. But the issue, what interventions need to be considered in assessing results-based impacts. How will the project interventions influence final targeted impacts (results)? Answers can be derived from the theory of change for each targeted result.

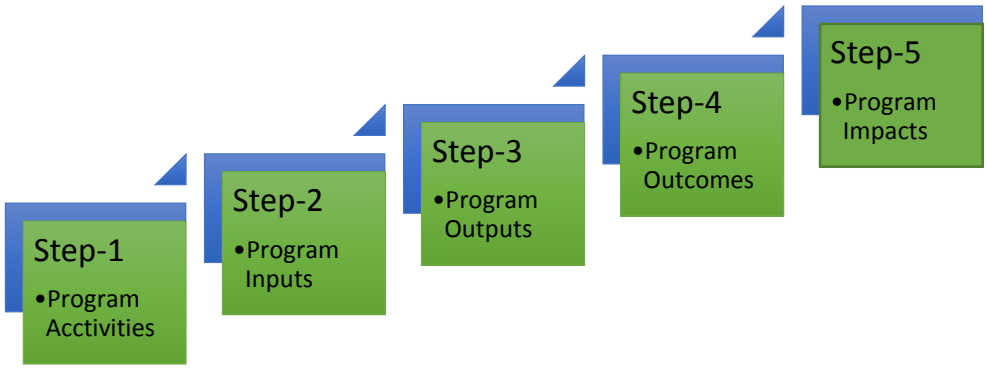
3.3 Theory of Change

Theory of changes is different for each targeted result. The targeted results, as noted earlier, are as follows:

- Result-1: Goal of descent standard of living
- Result-2: Health and nutritional wellbeing
- Result-3: Social empowerment.

Any theory of change for project interventions follows a process. Process starts from project activities to inputs to outcomes and finally to impacts. It may be presented in Figure 8.

Figure 8: Process in Theory of Change



The process starts with identifying program activities. Based on the program activities, program inputs (or interventions) are identified, as shown in step-2. In step-3, program output indicators are identified and measured. This leads to program outcomes. In final step, program impacts based on program goals, are identified and measured. However, the process may involve some more steps like primary and intermediate outputs. It will depend on the nature of the project. However, in our case, although primary and intermediary outputs may be identified, we have identified the broad steps in the process of theory of change.

3.3.1 Theory of Change for Descent Standard of Living

The goal of decent standard of living (result 1) for the targeted ultra-poor households are expected to be achieved mainly through four interventions of the program: a) capacity building support for skill development, b) technical support and linkage facilities, c) appropriate financial support, d) social protection. The ultimate objectives of these interventions are to increase income, savings, investment, asset accumulation and reduce food insecurity of the households in a sustainable way. All these outcomes will have final impact on descent standard of living. Standard of descent standard of living will be defined in the context of economic outcomes and poverty alleviation.

As identified, five targeted activities have been identified and implemented under the Ujjibito to achieve targeted result-1. The activities are training for capacity building, technical assistance, financial services, social protection and demonstration. It may be noted here that financial support or services are interventions of the UPP-Ujjibito. It is provided by the partner organizations as a part of their normal activities. This implies, financial services were not supported under the Ujjibito. Therefore, interventions are, in broad sense, non-financial services that include training and awareness building and technical assistance. Outcomes of these interventions will be increase in income, consumption, assets and

production. The end-line impacts will be increase in consumption, in turn poverty, diversified diet and human dignity.

Given the relationship between inputs and outputs as well as final impacts, Figure 8. provides the theory of change for the result-1. It contains list of activities, inputs, outputs, outcomes and final impacts.

3.3.2 Theory of Change for Enhancement of Health and Physical wellbeing

There are four activities employed for attaining Result 2 (i.e., enhancement of health and physical wellbeing). These activities mainly focus on building awareness for enhancing health, nutrition and hygiene practice of the target population. Figure 8 shows a theory of change of these activities leading to final impacts. Although there are some differences in primary, intermediate and final outputs of the activities, these lead to generate some common outcomes and common impact as illustrated. This calls for finding the combined effects of the activities instead of individual effect.

The activities focus on two aspects in a broad sense. They are nutrition-related and special health awareness for women and children as well as for persons with disabilities. The dietary diversity includes establishment of homestead gardening. It sets to improve nutritional inputs that will have impacts on dietary diversity and productivity. On the other hand, courtyard sessions are expected to improve understanding about nutrition and women and children health care. The special care health services for women and children focus on all aspects of health and nutrition. The ultimate outcomes are expected to be reduction in health-related shocks, improvement in nutritional status. Consequently, final impacts are likely to be improvement in economic status and increase in human dignity. The theory of change for Result-2 is reported in Figure 8.

3.3.3 Theory of Change for Social Empowerment

Empowerment in the society is the final outcome. Theory of empowerment will suggest that social empowerment of an individual in a society will depend on his/her ability place in the society that is determined by economic wellbeing, access to socio-political institutions. To look at it from a different perspective, any ultra-poor remains poor because she does not have economic resources to generate sufficient income, no access to education, no access to economic and social infrastructures and access to asymmetric information.

The design of Ujjibito includes specific interventions for improving social empowerment of the program participants. Interventions include courtyard sessions, coordination with local government for access to social safety net programs, back-to-school program for the dropout, communication actions for raising social awareness and adolescent club. While these interventions are expected to contribute to improving empowerment, results one and two are also likely to influence, as social empowerment as argued above are determined by economic achievement and access to information and social infrastructure. Therefore, we approach measuring impacts on program interventions on social empowerment through direct and indirect mechanism. It is direct when the specified interventions contribute to improving empowerment; and it is indirect when result one and two impacts positively to improving empowerment.

Achievement of result-1 ensures higher economic wellbeing and technical education for maximization of income and assets. On the other hand, result-2 focuses on health and physical wellbeing. This will be achieved through access to health services and homestead based economic production for maximizing nutritional intake, in addition to improving awareness.

Achieving the targeted goals of result-1 and result-2 will essentially empower individuals and households. It is assumed that gains from program participation will be higher than that of non-participants. Therefore, it is expected that social empowerment of the program empowerment will be higher because of the higher gains in results-1 and result-2. Therefore, it will be explained by the determinants of result-1 and result-2.

Table 7 provides linkages between interventions of result-3 and ultimate outcomes under result-3.

Table 7: Theory of change in program impacts due to Result-1 interventions

Program activities	**Program inputs**	**Primary outputs**	**Final outputs**	**Outcomes**	**Impact**
a. Capacity Building Support	2 days long agricultural training Twelve to 30 days long non-agricultural training 3 months long vocational training	Increase in awareness and ability on: Improved technology in agricultural production Non-agricultural Activities and IGAs Various technical skill	Use of better technology in agriculture Investment/involvement in IGAs Employment creation	Increase in agricultural production Increase in non-farm income Increase in salary income	Increase consumption Diversified diet Improved economic status Increased social dignity
b. Technical Support and Linkage Facilities	Courtyard session on low cost technologies Household level agricultural advises Provide vaccine & deworming tablets: Linkage with government services	Increase in awareness on low cost technologies Technical knowledge on coping with production related hurdles Increase in use of vaccine & deworming tablets: Better connection with government services	Reduction in cost of production Smoothing production process Lower morbidity and mortality rate	Increase in net-income from agricultural production Higher agricultural output Increase in net-earning from livestock rearing	Increase consumption Diversified diet Improved economic status Increased social dignity
Appropriate Financial Support	MFI mebership of ultra-poor Flexible savings Fl Flexible loan Ri Emergency fund for crisis	Creating opportunity of the ultra-poor household for joining MFIs	Increase in Savings Borrowing for IGAs Borrowing for crisis management	Investment Better risk protection	Increase consumption Diversified diet Improved economic status Increased social dignity
Social Protection:	i. Need based asset transfer ii. Small grant	Increase in productive assets Increase in cash flow	Increase in livestock and productivity of IGAs	Increase in income from sale Increase in consumption	Increase consumption Diversified diet

Program activities	Program inputs	Primary outputs	Final outputs	Outcomes	Impact
				from own production	Improved economic status Increased social dignity
Demonstration	Semi Commercial Vegetable gardening Model Ujjibito House	Increase in awareness about Semi Commercial Vegetable gardening Access to high quality seeds. Diversification of sources of production or income			Increase consumption Diversified diet Improved economic status Increased social dignity

Table 8: Theory of change in program impacts due to result-2 interventions

Program activities	Program inputs	Primary outputs	Final outputs	Outcomes	Impact
Courtyard session and school forums	Interactive courtyard sessions with the participants and their family members Establishing growth monitoring corner Hanging Growth monitoring chart Hanging wall poster on balanced diet	Building awareness on health, hygiene and nutrition of the participants and family members Building awareness on health, nutrition and social issues of the children of class III-V Building awareness on reproductive health, nutrition, social stigma and other issues related to health and nutrition	Improvement in health status Improvement in nutritional status	Low level of health shock High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity
Specialized services for women, children and person with disabilities (PWDs)	1000 days intensive health care services for mothers and children	Building awareness on exclusive breast feeding, full dose of Iron Folic Acid and Calcium supplementation Awareness for managing acute diarrhoea with ORS and Zinc	Improvement in health status Improvement in nutritional status	Low level of health shock High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity

Program activities	Program inputs	Primary outputs	Final outputs	Outcomes	Impact
		Awareness on consumption of nutrient-rich food, balanced diet, proper cooking practice Awareness on water, sanitation and hygiene practice			
	Growth monitoring 24-59 months children	Identifying and sending severe acute malnourished (SAM) children to hospital Building awareness on complementary feeding, vaccination, diarrhoea and treatment, deworming and primary health	Improvement in health status Improvement in nutritional status	Low level of health shock High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity
	Providing special services to PWDs	Reducing sufferings through counselling and training	Increased mental wellbeing of the disable individuals and their family member Increased devotion to the work by the family members	High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity
Establishment of homestead gardening	Distributing vegetable seed Disseminating basic information on nutrition and health through Kishori Club	Increase in access to vegetable seeds Increase in awareness regarding nutrition and health	Improvement in health status Improvement in nutritional status	Low level of health shock High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity
Referral services and linkages	Organizing health camps Identifying and sending severe acute malnourished (SAM) children to hospital	Increase in access to health services	Improvement in health status	Low level of health shock High productivity Low level of health expenditure High educational outcomes	Improved economic status Increased social dignity

Table 9: Theory of change in program impacts due to result-3 interventions

Program activities	Program inputs	Primary outputs	Final outputs	Outcomes	Impact
a) Conducting courtyard sessions on wide range of social issues	Courtyard sessions on demerits of: illiteracy, child marriage, malnutrition, dowry system, acid violence, and the benefits of women empowerment	Increase in awareness about demerits of illiteracy, child marriage, malnutrition, dowry system, acid violence Increase in awareness the benefits of women empowerment	Change in practices on Child marriage Child nutrition Dowry system Acid violence Increase in participation of women in decision making	Decline in illiteracy, child marriage, malnutrition, dowry system, acid violence Increase in women empowerment	Increase in wellbeing and social dignity Improved empowerment
b) Coordinate with Local Union Parishad (councils) for selecting eligible families for safety net and other designated services of the Government	Identification of families for safety net and other designated services of the Government	Inclusion of identified ultra-poor households in safety net and other designated services of the Government	Increase in income from safety net programs Increase in use of government services	Increase in income and consumption of households Ability to cope with the crisis	Increase in wellbeing Improved empowerment Improved economic status Increased social dignity Improved empowerment
c) Bringing back drop-out children to primary school through individual home visits	Counselling of school children and parents	Increase in awareness about the effects of non-completion of school	Increase in school completion rate	Higher achievement of educational qualifications	Increase in wellbeing Improved economic status Increased social dignity
d) Organizing Community Events to raise awareness	Community events	Increase awareness of extreme poor on social issues and rights of livelihood	Change in practices on Child marriage Child nutrition Dowry system Acid violence Increase in participation of women in decision making	Decline in illiteracy, child marriage, malnutrition, dowry system, acid violence Increase in women empowerment	Increase in wellbeing and social dignity Improved empowerment
e) Adolescent Club	Formation of adolescent club	Awareness about adolescent nutrition, general and reproductive health, demerits of early marriage, eve teasing and sexual harassment	Change in practices on adolescent nutrition, general and reproductive health, early marriage, eve teasing and sexual harassment	Reduction of child and maternal mortality, early marriage, eve teasing	Increase in wellbeing and social dignity Improved empowerment

3.4 Challenges in Impact Assessment and Estimation Strategy:

Both descriptive and econometric approaches have been undertaken for analysis of the impacts of program interventions on expected different outcomes. Why can we not assess impacts using descriptive approach? Impact assessment of financial services and non-financial services is not easy because of some severe problems, as noted below:

- Adverse selection (institutions may choose to operate in economically better-off areas or may select relatively less-risky enterprising participants based on available information);
- Fungibility of fund (interchangeability of usage of fund);
- Spill-over effects of external factors (external knowledge or learning from neighbourhood may influence outcomes) as well as of program interventions on the control groups;
- Access to multiple projects operating in and outside the areas;
- Moral hazard problem (ability to violate terms and conditions of the loan contract);
- Contamination of the environment due to external programs during the program implementation;
- Self-exclusion from program participation;
- Differences in unobservable characteristics of both program participants and non-participants.

Some of these problems may equally be present in control areas. They may include access to non-Ujjibito programs, present of external factors like government programs (example of contamination of environment). All these problems or factors may influence outcomes that may be net positive or negative. Therefore, a real impact assessment that is technically and scientifically sound should use quantitative econometric analysis to control for all the problems, as noted above. Nevertheless, descriptive analysis provides sufficient indication on the possible outcomes of the project. It may often be for convenience to provide descriptive information on outreach and outcomes for non-technical readers.

3.5 Analytical Framework:

3.5.1 Descriptive Analysis

Descriptive analysis focuses on understanding household characteristics, like socioeconomic and other control variables of both factual and counter-factual group.

Tabular and graphical analysis will be made to identify the trend to quantitative and qualitative socioeconomic indicators that have been specified in the design of Ujjibito. These tables and graphs will represent information particularly on the nature and intensity of inputs received and outcome variables like poverty, wealth, savings, empowerment, access to health services by participants and non-participants and also by district or division or by regional characteristics like coastal belt. Special efforts will be made to clearly show portray pictures of changes in interventions received and outputs (outcomes) produced.

3.5.2 Econometric Analysis

We have strongly argued that actual intensity of impacts can be measured only using appropriate econometric technique. One of the necessary conditions in impact assessment of anti-poverty program is homogeneity of both participants and non-participants (control) not only in economic conditions but also expectedly of similarity in unobservable characteristics. But the fundamental problem that still remains is the issue of factual and counter-factual of same individual at the same time. Counter-factual of not joining will be the state of benefits derived had the individual participated in the program. On the

other hand, counter-factual of joining a program will be state of benefits to have forgone had the individual not participated in the program.

The technique that we frequently use is Difference-in-Difference (DiD). Given the unobservable characteristics of the participants and the control households, the DiD technique is expected to capture program impacts. The unobservable characteristics remain constant over time. Therefore, the effect of unobservable characteristics will be zero over time. Hence, the difference in outcomes using panel data will provide information on program impacts. The use of DiD is constrained by time-series panel data that is not always available and that is also costly.

Although use of panel data makes it convenient to measure outcomes of program interventions, it becomes difficult to measure a reliable outcome when cross-sectional data. Often regression technique is used, but the data may not be balanced and matched. It can be ensured through what is known as Propensity Score Matching (PSM).

Therefore, we contemplate to use two econometric techniques, as argued above, in assessing impacts of Ujjibito. They are:

- Difference-in-Difference
- Propensity Score Matching

We provide little description of each of the techniques for better understanding of the estimated outcomes.

3.5.2.1 Propensity Score Matching Technique

We use what has come to be known as impact assessment of a program. Impact assessment requires a group affected by the program intervention, and a control group not receiving the program to compare the outcomes. Then, the difference between the two groups is defined as the impact of the program. Using the PSM technique, the average socio-economic indicators, like income, expenditure etc. of households that received *Ujjibito* interventions to that of control groups and the baseline condition of the component receivers and the condition at the time of survey can be compared.

As argued earlier, PSM can be used to balance distribution of both participating households and control households when non-experimental design is adapted. Through balancing, it removes expectedly effects of selection bias. Balanced households are also matched because it is derived based on the known characteristics of both groups of households. Because of balancing and matching of the distribution of treatment and control households, differences in mean outcomes of these groups can be estimated and statistically tested as significant or insignificant. Matching procedures based on this balancing score are known as propensity score matching (PSM).

Let Y_1 be the outcome that would result if an individual receives any service from Ujjibito and Y_0 the outcome that would result if the same individual does not receive any service. Let D = {0, 1} denote the binary indicator of Ujjibito component (D = 1 if 0 otherwise). For a given individual i, the observed household income is then $Y_i = Y_{0i} + D_i (Y_{1i} – Y_{0i})$.

Therefore, we can attempt to identify the effects of Ujjibito component given below

- The average treatment effect: $E(Y_1 – Y_0)$ is the average difference, like, income between the two groups.

- The average treatment effect on the treated is $E(Y_1–Y_0 |D=1)$. This parameter is the one receiving most attention in the evaluation literature and measures the average income difference between the income that households receiving Ujjibito interventions and the income that they would get if they had not received it.
- The average treatment effect on the non-treated: $E(Y_1 – Y_0 |D=0)$ is the average income difference between the potential or expected income that the entrepreneurs who did not receive service (D=0) would get if they had ($E(Y_1)$) and the real income that they earned (Y_0);

Net average treatment effects (ATT) of program interventions can be derived by taking the differences of ATT of both program participants and non-participants.

3.5.2.2 Difference-in-difference (DiD)

This estimation of impact assessment relies on the comparison of participant and non-participant before and after the intervention. The basic of DiD estimation is already summarized in Equation (i). While estimating the DiD, it is assumed that the unobserved heterogeneity is time invariant and uncorrelated with the treatment over time. The regression framework to estimate the Difference-in-difference is as follows:

$$Yit= \alpha + \rho T_{it} + \gamma_t + \beta T_{itt} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (v)$$

In the equation above β on the interaction between the treatment variable and the time variable gives the average DiD effect of the program. Not only the β, understanding the interpretation of others coefficient is also important. Following table gives the interpretation of all coefficients:

α	Average Y of control group before intervention
α + ρ	Average Y of treatment group before intervention
γ	Common growth/change in Y after intervention
α + γ	Average Y of control group after intervention
α + ρ + γ + β	Average Y of treatment group after intervention
(α + γ) – α = γ	Difference in Y of control group
(α + ρ + γ + β) – (α + ρ) = γ + β	Difference in Y of treatment group
(γ + β) – γ = β	Difference-in-difference (Impact of program on Y)

3.6. Sampling Frame: Using the Mid-Term Evaluation Sampling Strategy

The sampling frame depends on the level of analysis: whether it is at the aggregate level or district or division level. From the perspective of end-line or final impact assessment, it is more desirable to follow the mid-term sampling design. This will allow a comparison of the outcomes between mid-line and end-line outcomes. It will also enable to assess impacts from the benchmark data set.

We have examined the sampling design of the mid-term evaluation. The design is suitable for aggregate level analysis; perhaps that was the intended objective of the design. Stratified sampling strategy was adapted to for mid-term impact evaluation. The design is as follows:

1. **Stage-One:** All districts under the program were selected;
2. **Stage-Two:** At least one upazila (depending on the number of upazila in a district) from each district was randomly selected

3. **Stage-Three:** One branch of the implementing the program was selected.
4. **Stage-Four:** No union was selected although union was identified as the unit for program implementation in project document. The probable rationale for not selecting union is the fact that branch implements the program. As such all participants under the selected branch are part of population for the purpose of household level sample selection.
5. **Stage-Five:** Households were randomly selected from the list of participants of the program under a branch.

Required household level samples were adjusted in the mid-term evaluation to ensure that sufficient samples are available for disaggregated impact of different interventions like training, wage payment, social awareness, nutritional and health interventions. As reported in the project document and mid-term evaluation report, there are two components of the project (RERMP-2 & UPP-Ujjibito) that cover 28 Districts, 188 Upazilas and 1724 Unions in 4 Divisions. A total of 767 branches of 38 implementing partner organizations has been implementing the project interventions.

In order to analyze project impacts at the aggregate level, it is desirable that all districts are considered in the sampling design. The mid-term evaluation report, in the first stage, as noted above, considered all the 28 districts of the project area have been considered for the purpose of impact assessment.

They selected one upazila randomly from each district with maximum of five upazilas, and two upazilas from each district with upazilas of more than five. This made the number of selected sample upazilas to 43. They selected one implementing branch from each randomly selected upazila that made number of sample branches to 43. We will follow the same number and same branches for a consistent analysis. Distribution of samples is shown in Table 10.

Table 10: Distribution of Samples - District, Upazilas, Branches And Beneficiaries

Location	RERMP-2	UPP Ujjibito	Total	Selected number for the study
District	23	28	28	28
Upazila	153	188	188	43
Branch	767	767	767	43
Union	1370	1724	1724	Not considered
Beneficiaries	27,400	2,97,600	3,25,000	3,249 (Actual surveyed 3024)

Source: Mid-term Evaluation Report, Ujjibito.

In each of the selected branch the beneficiaries has been stratified into five groups identified and listed by 5 categories of beneficiaries – (i) wage payment; (ii) skill development training; (iii) non-agriculture training for self-employment for women; (iv) vocational training; and (v) other beneficiaries for financial services and health wellbeing. In the mid-term evaluation report, total sample of beneficiaries of a category was allocated to the branches proportional to the number of beneficiaries of the particular category in the branch. Then allocated sample of that category were identified from the total number of beneficiaries of that category by following systematic sampling technique. The sixth group is the control households – selected at least one upazila from each district where the program was not implemented. The distribution of samples, as selected in the mid-term evaluation, is presented in Table 11.

Table 11: Estimated sample size by category of beneficiaries with number actually interviewed in Mid-term Evaluation

Sl. No.	Categories of beneficiaries	Estimated Sample size	Actually interviewed in mid-term survey
1	27,400 beneficiaries in cash-for-work programme under RERMP-2 of LGED for skill development training on IGA under UPP Ujjibito	569	570
2	71000 UPP members for skill development training on IGA	573	598
3	15,000 young women member of UPP for self-employment in Tailoring, making bamboo and cane products, embroidery etc..	576	600
4	1,000 youth of UPP for vocational training on electrician, repairing of machineries	355	85
5	325,000 beneficiaries for other interventions under UPP and RERMP-2 component for health and physical wellbeing (counseling/awareness on practical nutrition home based vegetable production, hygiene, reproductive health)	576	577
Total		2,649	2430
6	Control Sample Size (576) estimated from total population size 325,000 has been adjusted to 600 as per decision of the meeting held on 24 September 2017 with PKSF officials at PKSF office.	600	594
Grand Total		3,249	3024

Sample size from each category of beneficiary was determined by using the standard statistical formula with 95% confidence level and design effect of 1.5.

We have few observations on the sampling design:

- First, we believe number of control households in the mid-term evaluation should have relatively higher. It should have been at least 1,000.
- Second, the use of systematic sampling technique in selecting program households or beneficiaries appears to be little problematic as little is known on the location and distribution of program participants.
- Third, union and village level sampling of beneficiaries could be sampled in the mid-term evaluation that would make environmental factors less uncontrollable;

Despite these problems or limitations of the samples, there is one strong part of the sampling design that is consideration of all districts in the design. It allows for more representative aggregate level of analysis.

Considering the problems and the strength, **our approach to sampling design** is as follows:

- Follow the sampling design of mid-term evaluation in principle. Based on the list of the households, we tried to figure out whether the samples can be associated with specific village.
- Increase sample of control households from 600 to 1000.
- Total samples were around 3,500.

3.4. Data Collection

Data has been generally collected on three results and the specified interventions using structured questionnaire that contains several parts. The first part focuses on household demographic and economic profile. Second part contains questions to gather information on interventions and result-1. The third part includes questions that address all the dimensions of result-2. The fourth part includes questions on the interventions and perceptions of the households about empowerment.

We tend to follow the questionnaire as has been used in the mid-term evaluation, but we need to expand to incorporate additional questions to ensure availability of information and data for the purpose of impact analysis.

In addition to data collection through structured questionnaire, we intend to organize quite a number of FGDs on different aspects of interventions and the Ujjibito design in areas under each branch.

Similarly, a representative number of case studies will be selected for insightful understanding of the impacts. Such case studies will be conducted broadly in two geographical areas – coastal and non-coastal. Then from each area we plan to prepare case studies of success and failure stories on each of the segments and traits of Ujjibito.

Chapter FOUR: Assessing The Economic Impact

4.1 Introduction

Credit, the borrowing of a borrower from a lender either from a low cost institutional source or from a high cost informal sources, is considered to act as the bridge between the present and the future or is an instrument of meeting the excess demand for capital by the enthusiastic entrepreneur. Credit can also help to tackle the consumption uncertainty directly or through income generation process. Therefore, access to credit especially to the low cost credit can improve the economic well-being by enhancing economic activity through the productive usages of credit. Sometimes credit alone is not sufficient for expected impact on outcome and therefore, additional complementary interventions can augment or bring the expected result. The credit complementary training could therefore be the important way of improving the lives of the poor people. The flourishing microcredit sector in Bangladesh prompted a numerous researcher to find the impact of the access to microcredit on various outcomes of borrowing individuals/households. Plethora of studies suggest that verily microcredit improve the economic well-being of the people.

Hossain (1986[7]) examined the impact of microcredit on the rural credit market, on capital accumulation by the borrower, on employment and income generation, and on alleviation of rural poverty. The author concluded that the productive usage of the credit helped the poor to accumulate both working capital and fixed capital, cattle ownership had increased, productivity of capital was higher in the early stage of investment, and the low-cost borrowing with higher capital productivity, the borrower gained extra income as well as positive accumulation of asset which helped them to enhance the income of the households. The incremental income helped the households to come out of poverty. Rushidan et.al. (1996[8]) examined the impact of credit program on employment creation and productivity of poor. They found that the labour force participation among women had increased and the marginal productivity of female worker had also significantly increased. They concluded that credit program, in general, improved the overall productivity in agriculture, non-agriculture and livestock production. Zaman (1999[9]) showed that microcredit contributed to mitigate the vulnerability contributing factor. He reviewed that the provision of microcredit found to be a strong instrument in crisis coping mechanism through diversifying income generating activities, building assets and empowering women (Montegomery et.al., 1996[10]; Morduch, 1998[11]). Khandker (2000[12]) showed that microcredit reduced borrowing from informal sources, the high cost source of borrowing, and increased voluntary savings.

In the post MDG era, the countries in the globe have set the 17 goals titled the Sustainable Development Goals (SDGs) to finish the unfinished MDGs within 2030 along with the inclusion of various goals to make the world more peaceful and prosperous in the future. In this global setting, the poor especially the ultra-poor people will be on the top of the agenda. The first goal, therefore, focused on eradicating extreme poverty in all its forms everywhere. This goal targets to ensure the equal rights of men and

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[7] Hossain, M. (1986). *Credit for alleviation of rural poverty: the experience of Grameen Bank in Bangladesh* (No. 4). Bangladesh Institute of Development Studies.

[8] Rushidan, I. R., Pitt, M., & Khandker, S. R. (1996). Role of Targeted Credit Programs in Promoting Employment and Productivity of the Poor in Bangladesh. *published in 'Credit Programs for the Poor: Household and Intra-household Impacts and Program Sustainability*, *2*.

[9] Zaman, H. (1999). *Assessing the poverty and vulnerability impact of micro-credit in Bangladesh: A case study of BRAC*. World Bank, Development Economics, Office of the Senior Vice President and Chief Economist.

[10] Montgomery, R., Bhattacharya, D., & Hulme, D. (1996). Credit for the poor in Bangladesh. The BRAC rural development programme and the government Thana resource development and employment programme.

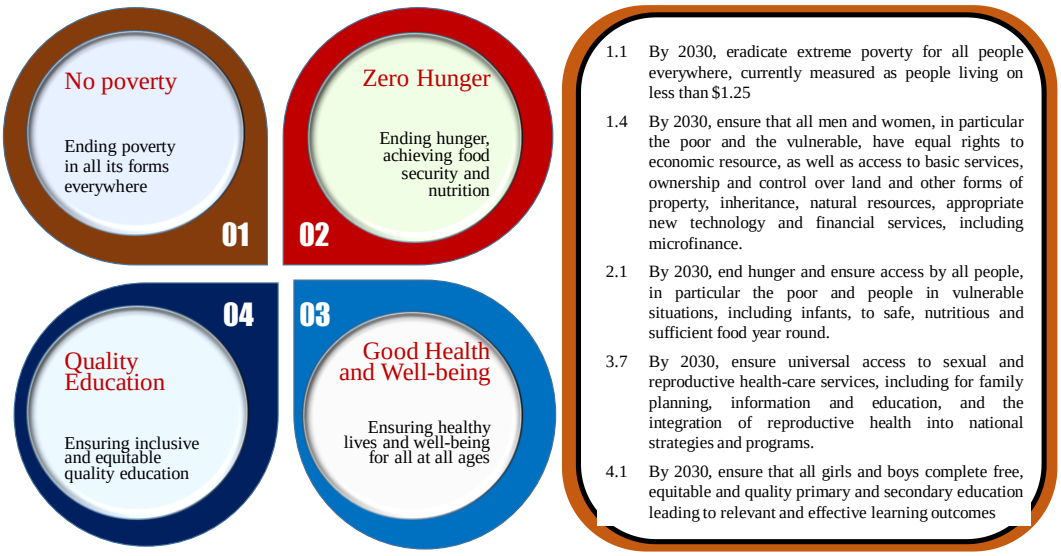
[11] Morduch, J. (1998). *Does microfinance really help the poor?: New evidence from flagship programs in Bangladesh*. Research Program in Development Studies, Woodrow School of Public and International Affairs.

[12] Khandker, S. R. (2000). Savings, informal borrowing, and microfinance. *Bangladesh Development Studies*, *26*(2-3), 49-78.

women to economic resources as well as access to basic services, ownership and control over property and inheritance, and access to financial services. The second goal focused on ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture. In particular, the second goal targets to end all forms of malnutrition, to double the agricultural productivity and to double the income of the small-scale food producers, women, and family farmers through ensuring the access to land and productive resources. The third goal aims to ensure healthy lives and promote well-being for all at all ages and the fourth goals aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

The elimination of extreme poverty and hunger and the assurance of better health and quality education will require the micro-level and macro-level investment so that decent and profitable income generating activities can be established at family level. Therefore, it will be quite relevant of analysing the impact of capacity building training programs on employment and income, the impact of the provision of access to financial services on employability as well on overall well-being of the household, and the impact of such intervention on household level investment and capital accumulation.

Figure 9: Selective SDGs and related targets



Source: Constructed based on SDGs Documents of UNDP

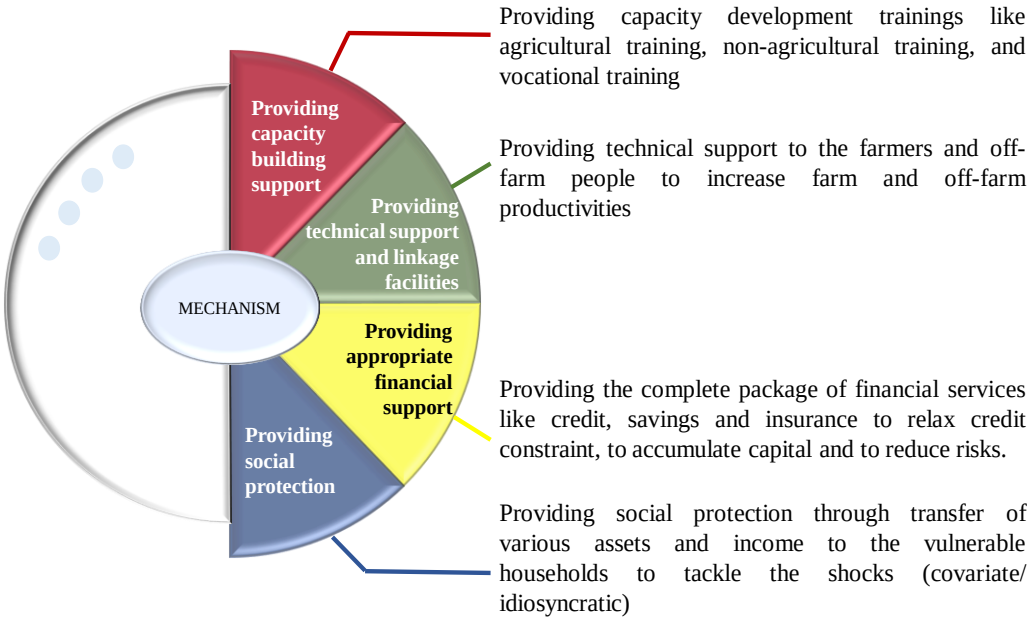
The Figure 9 portrays the first four SDGs and selective indicators of these four goals which are associated with the current study. As argued earlier, it is essential to ensure employment opportunities and earning opportunities to achieve these goals. The better access to resources is assumed to have positive impact on access to quality education, access to health services, and in aggregate on alleviation of poverty and hunger.

This chapter will provide a description of the impact of UJJIBITO project on various economic indicators of the households: it includes income, consumption, savings, investment, asset accumulation, and poverty. The analysis will help us to understand whether the development project has contributed to the targets of the selective SDGs or not and it will give us some empirical evidences of the significance and relative size of the impact of such intervention.

The Economic Framework: Mechanism of Uplifting the Poor

One of the key objectives of the project is to maintain a descent standard of living. The question is how to maintain this or how to uplift those who are below the standard? The mechanism, based on the project documents, is presented in Figure 10.

Figure 10: Mechanisms of uplifting the poor to the decent standard of living



Source: Constructed based on the project document by authors (2019)

The project implementers tried to provide capacity building support through (i) 2-day long agricultural training; (ii) 12-30 days non-agricultural training, and (iii) 3-month long vocational training. They also tried to provide technical support and linkage facilities to equip the farmers with appropriate technologies (including knowledge) to increase productivity of agricultural activities including livestock through (i) courtyard sessions; (ii) visit to farm houses; (ii) vaccination and deworming tablets for livestock; (iv) linkage with local level government services and offices for agricultural development. A complete package of financial services were also arranged for the incumbent participants, for example, they provided financial support through (i) credit, (ii) savings and (iii) risk minimizing risk fund. Risk fund has been created as a risk-minimizing instrument in case of any shock that a member of the participating households faces. Finally, they provide social protection to some households through (i) asset transfer like livestock to those who can't access government social protection programs, and (ii) small grants for innovation and technologies or interventions like vermin compost.

It is presumed that the provision of capacity building support and technical support will enhance the economic decision of the households, for example, investing in new IGAs, or expanding existing one, and thereby to increase the employment opportunity within the household. On the other hand, the social protection can provide support to the vulnerable group to maintain a decent standard of living. Hence, the question is "Is the program successful in creating employability through the technical support? And has the incidence of poverty among the beneficiary household declined?" It is commonly believed that the opportunity of access to financial services will create the investment opportunities and thereby the employment opportunities which will ultimately contribute in household's earning and thereby on consumption. The level of consumption will ultimately determine the level of standard of the households. This conceptual framework is presented in Figure 11.

Figure 11: Conceptual framework

This framework explains how the provision of access to capacity building training, technical supports, financial services, and risk mitigating allowances helps the poor people to access economic resources and to invest on IGAs or to be employed in high earning sector. Therefore, the new investment and the better employment will enhance the income and the incremental income induces spending on food, non-food items, education, and health services as well as increase the asset base (financial and non-financial). The sustained change in employment and income will help the poor to come out of poverty and to lead a standard of living in future. The sustainable development of the poor requires long-term investment on employment creation and judicious management of financial resources.

The nature of access to resources and investment depends on the characteristics of the households, characteristics of the locality including market characteristics, and innate capabilities of the decision maker. To analyze the casual relationship among variables we have considered multiple regression models to control the effects of the potential explanatory variables.

Source: Authors (2019)

4.2 Analytical Approach

The analysis of each content of economic variables has been done separately. Each section contains the descriptive and econometric analysis of the variables. The impact of the program on various economic indicators includes number of earning members in the household, the income and consumption expenditure pattern, the investment, the savings and the standard of living measured by poverty statistics like incidence of poverty. The descriptive analysis has focused on comparing the average of the specific economic variable between the treatment and control group.

4.2.1 Occupation, Employment and Income

Employment is the source of income and therefore, key determinants of welfare of an individual. In a simple microeconomic sense, individual faces the trade-off between leisure and work. To attain a certain level of welfare, individual has to work and has to forego a certain level of leisure. When people want to work and there is no scope of work, they may have to live a miserable life or a poor life. But leading a miserable life is not expected. According to the universal declaration of human rights of the general assembly of the United Nations, Article 25(1) “everyone has a right to a standard of living adequate for the health and well-being of themselves and their family, including food, clothing, housing, medical care, necessary social services and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond control.”[13] In the human rights system state and an organized society has to create the conditions and opportunities for its citizens – the right to work, access to food, access to education, access to shelter, access to health and ensure human rights for all citizens so that they can overcome the state of poverty. Poverty can be viewed narrowly as the deprivation of basic human needs (Yunus, 1987[14]) or as entitlement failure.

Opportunity to work may be created broadly three ways: the formal salaried employment, wage-employment, and self-employment. The scope of formal salaried employment is limited and not

[13] Assembly, UN General. "Universal declaration of human rights." *UN General Assembly* (1948).

[14] Yunus, Muhammad. *Credit for self-employment: A fundamental human right*. Grameen Bank, 1987.

everybody is fortunate enough even to find wage employment, for example women, in many countries where the tradition of female employment is limited. Yunus (1987) mentioned that wage-employment is not a happy road to reduce poverty. Poverty alleviation must be a continuous process of creation of assets so that at any cycle of economy, individual can cope with idiosyncratic or covariate shocks. Self-employment has more potential of improving the asset-base than wage-employment. Average return to self-employment is higher than wage rate (Rushidan and Khandker, 1996).

Self-employment has been receiving a great deal of attention recently. Measures to promote self-employment (and small businesses generally), such as employment legislation, large firm and local authority assistance to the self-employed, guaranteed loans etc., are being actively considered by policy makers. The selection of occupation or dependence of the household on the sources of income plays critical role in household livelihood strategy. Households typically depend on either wage income, non-wage income or in some case on both wage and non-wage income due to the demographic composition of the households or the opportunity of economic activity. It is empirically found that the wage dependent households are vulnerable to poverty or any economic shock than the non-wage dependent households. So self-employment activity gains more due to high return. Now, the question is that the households having the potency of establishing self-employment activity can establish smoothly or easily. From many literatures, it is found that capital constraint locks the innate business capacity. The constraint is severe for the poor or the poorest households. But access to capital of such households opens up a world of self-employment opportunity and moving out of severe poverty or simply poverty.
In a World Bank study of lending for small and microenterprise projects, three objectives were most frequently cited (Webster et.al., 1996[15]): (i) to create employment and income opportunities through the creation and expansion of microenterprises; (ii) to increase the productivity and incomes of vulnerable groups, especially women and the poor; (iii) to reduce rural families' dependence on drought-prone crops through diversification of their income-generating activities. The matured microfinance has become successful to a great extent to provide the credit services along with non-credit services to the poor or moderate poor, but the major portion of the ultra-poor or hard core poor remained underserved. In any country there are un-served or underserved enterprises and households, ranging from the ultra-poor, who may not be economically active, to small growing enterprises that provide employment in their communities. This range or continuum constitutes the demand side for microfinance services. Often the supply side does not offer a corresponding continuum of services. MFIs need to supply services that fill the gaps and integrate the un-served groups into the market (Microfinance Handbook). PKSF develops a loan product apt for those underserved or ultra-poor households. It is functionally difficult to promote sole self-employment activity among the ultra-poor households of which majority is dependent on daily wage based activity and hence adopt dual sector - wage and non-wage employment.

Finance is essential for establishment or promotion of self-employment activity. From the earlier stage of development, credit or loan is playing a crucial role in financing the undertaken project. There was always a latent demand for credit for finance. Some households have access to such credit using pledges. The pledges exclude many of potential poor entrepreneurs from the credit services. The emergence of microfinance has overcome this problem to a great extent and is playing an important role in the promotion of self-employment in traditional activities. The expansion of microfinance in Bangladesh has been rooted in the expectation that it can help generate self-employment, which can ultimately solve both the problems of unemployment and of poverty (Halder, 2003[16]). In Bangladesh, BRAC's major programmatic foci are the promotion of self-employment (microfinance, and technical support) and human development (non-formal education and health services) (Hulme and Moore,

[15] Webster, Leila M., Randall Riopelle, and Anne-Marie Chidzero. *World Bank lending for small enterprises, 1989-1993*. The World Bank, 1996.

[16] Halder, Shantana R. "4. Poverty Outreach and BRAC's Microfinance Interventions: Programme Impact and Sustainability." *IDS bulletin* 34, no. 4 (2003): 44-53.

2007[17]). Prof. Yunus said, "At Grameen Bank, I have tried to demonstrate that credit for the poor can create self-employment and generate income for them". The objective of Grameen Bank was to reduce poverty, to empower women through encouraging the development of new business or the diversification of existing business. Like Grameen Bank, the goal of MFIs as development organizations is to serve the financial needs of un-served or underserved markets as a means of meeting development objectives.

Credit, an important means of lubricating trade, commerce and industry, plays a powerful economic, social and political role in the economy. Credit creates entitlement to resources. Sometimes, credit is called a powerful economic weapon and so this has to be managed effectiveness and efficiently. This is because in one hand a better managed credit can equip a dispossessed individual to give a fight against economic odds around him or her, on the other hand, poor managed credit can even make the individual vulnerable to economic odds. One fundamental question in credit literature is 'does credit create employment opportunity?' Mondragon (2014[18]) estimated the effect of the contraction in the supply of credit to households on the level of employment during the Great Recession and found that the contraction of the supply of credit to households declined the employment during the Great Recession. The elasticity between the size of credit to household and the level of employment was estimated at 0.3 suggesting the incremental credit created employment opportunity. Credit market disruptions, however, may limit the effects. Chodorow-Reich (2013[19]) investigated the effect of bank lending frictions on employment outcomes. He showed that bankruptcy reduced one-half of the employment. Moyi (2013[20]) tried to reveal the link between credit constraint and employment opportunity and concluded an insignificant direct relationship between these two but relationships found significant when credit constraint is associated with access to workspace, access to technology, and business formalities. The relationship between financial development and employment is evident in the literature. For example, Pagano and Pica (2012[21]) modeled and predicted that financial development increased employment and/or labor productivity and wages and Boustanifar (2014[22]) found that banking reform increased the employment growth.

The literature on finance and financial development do reveal that finance creates employment opportunities and employment growth. But question still remains on what kind of finance can bring this auspicious result and in the era of microcredit question prevails like does microcredit create employment and if so it does create self-employment! Some studies examined these kinds of questions. Rushidan and Khandker (1996[23]) examined that microcredit program was successful in expanding the opportunities of self-employment and Khandker (1996[24]) found that such credit opportunities increased the rural non-farm activities through relaxing credit constraints. Pitt (200025) found that the group based

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[17] Hulme, David, and Karen Moore. "Assisting the poorest in bangladesh: Learning from BRAC's 'targeting the ultra-poor'programme." In *Social protection for the poor and poorest*, pp. 194-210. Palgrave Macmillan, London, 2008.

[18] Mondragon, John. "Household credit and employment in the Great Recession." (2014).

[19] Chodorow-Reich, Gabriel. "The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis." *The Quarterly Journal of Economics* 129, no. 1 (2013): 1-59.

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microcredit program opened up the scope of production credit for non-agricultural activities for the landless and assetless rural households which increased self-employment labor hours and reduced wage-employment labor hours through increasing sharecropping and land leasing. Khaleque (2011[26]) showed that there is higher chance of shifting from wage-employment to self-employment among the credit recipient households compared to their counterfactual. Banarjee et. al. (2010)[27] also showed that access to micro credit contributes to micro enterprise development through financing new enterprises and scaling up production.

As the literature on credit suggests that access to credit creates employment opportunity and induces the household to be self-employed in agriculture or non-agriculture. The income source of the household may change from the low return activity to high return activity or the credit can increase the number of earning member within the family. The Ujjibito project has taken up programme to increase employment and income for the ultra-poor group of people through skill development and other income generating training as well as providing financial and technical support to the poor. Thereby, it is expected that Ujjibito will also bring the kind of impact of credit program on employment and income of the borrowing or service recipient households. As noted earlier, Ujjibito provides training given access to credit. This is little different for the RERMP participants; they join the program as members after they have completed their participation in the LGED-driven earth-digging activities. It is expected that over time, it will have impact on occupational diversification. Table 12 shows the occupational distribution of the participating households compared to control households.

Table 12: Distribution of primary occupation of household members

	REMP-2	UPP- Skill Dev. Training (USD)	UPP-Self Employment Training (USET)	UPP-Youth Vocational Training (UYVT)	UPP-General Dev. Group (UGDG)	Control Group
Labor	37.92	23.67	20.24	19.74	21.79	27.29
Cultivation and Nursery	1.35	5.83	5.4	6.58	5.05	3.35
Fishery and Livestock	4.85	6.39	2.89	3.95	4.76	4.27
Vehicle Driving	6.84	6.11	6.77	5.7	6.2	6.05
Services	4.13	4.21	6.85	5.7	5.7	4.8
Business	5.01	5.33	5.63	12.28	5.92	6
Household chores	30.05	37.52	31.43	36.84	41.41	38.67
Tailoring	0.56	2.02	12.25	1.32	1.88	1.08
Others	9.3	8.92	8.52	7.89	7.29	8.49

Source: Survey Data (2019)

Note: The percentage is estimated among the household members who do not belong to the category disable, incapable, students, children, and unemployment.

We find that day laboring is key occupation of the household members and over 30 percent of the household members excluding disable, incapable, students, and unemployed members are involved with various household level activities. Around 38 percent of the household members of REMP-2 group are involved with day laboring and 27.3 percent among the control households. On the other hand, some 20 to 24 percent household members of the treatment group are dependent on day laboring. The engagement with business is high among the UYVT group, approximately 12.3 percent household members of UYVT household members and around 12.3 percent household members of USET group get income from tailoring. Tailoring is very much low among other types of households. Around 23

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percent women of USET group do tailoring while 21.7 percent of men of UYVT group are engaged with various businesses (See appendix to this chapter). Does this mean UPP-ujjibito has higher impacts on different outcomes? Does this mean, training has impacted the outcomes? These questions are addressed in this chapter.

Estimation Strategy

We start with a simple econometric framework where we compare between treatment and control group in the endline survey.

$$Y_{ij} = \delta_0 + \delta_1 T + \delta_2 \boldsymbol{H_{ij}} + \delta_3 \boldsymbol{X_j} + v_{ij} \quad (1)$$

where Y_{ij} is the outcome of interest for a household *i, T* is an indicator for program participation–whether a household participated in a specific program or not. Thus, we construct a treatment dummy variable that took the value of '1' if the household fall in the treatment group and '0' if the household is in the control group.

$\boldsymbol{H_{ij}}$ is a vector of the household characteristics namely socio-economic status, dependency ratio, characteristics of household head and other control variables? The vector $\boldsymbol{X_j}$ contains location-fixed effects and v_{ij} denotes a stochastic error term.

To estimate the impact of the interventions designed for achieving decent standard of living we start with measuring the impact of MFI membership with the expectation that all the ultra-poor households under the UPP-Ujjibito program are covered by microfinance institutions for increasing their access to financial services. In contrast, we assume that ultra-poor households in the control area are not covered by MFIs.

$$Y_i = \alpha_0 + \beta_1 MFI_i + \beta_2 \boldsymbol{H_i} + \beta_3 \boldsymbol{X_j} + v_i \quad (2)$$

where Y_i represents either income or consumption or savings of the household *i and* MFI is a dummy variable indicating whether the household is a member of microfinance institution or not. One of the key issues for measuring the impact of the four broad interventions on standard of living is that although each of these components is independent from one another in terms of program perspective they are complementary to each other. For example, if an ultra-poor individual become a member of a MFI as a targeted beneficiary of the project also participates in one of the training programs mentioned above, she will be more capable of utilizing the benefits of access to financial services offered by MFIs. Therefore, the empirical strategy should take into consideration of the both individual and joint effect of the interventions.

As discussed above, around 100 thousand families received 2-days long agricultural training under UPP-ujjibito program. In order to evaluate the impact of the agricultural training program we re-write equation 2 in the following way:

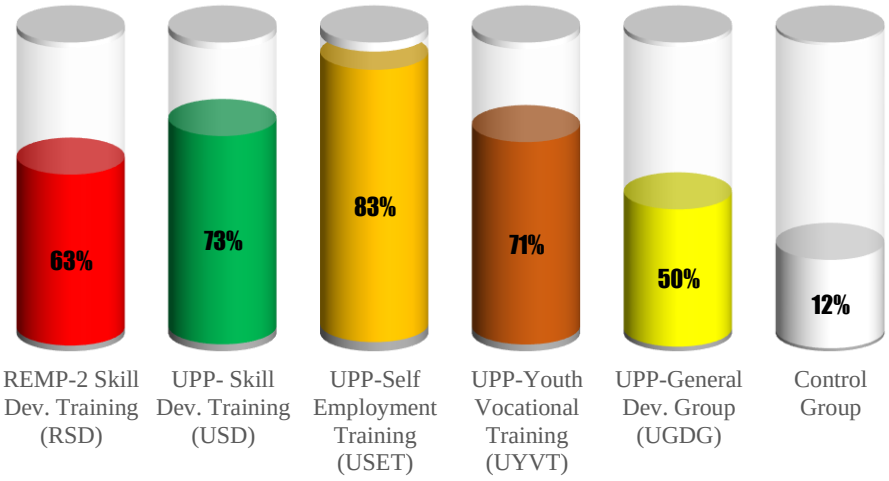
$$Y_i = \alpha_0 + \beta_1 MFI_i + \beta_2 \boldsymbol{H_i} + \beta_3 \boldsymbol{X_j} + \delta_1 AgTr_i + \delta_2 MFI_i \times AgTr_i + v_i, \quad (3)$$

$AgTr_i$ indicates whether the household received 2-days agricultural training or not. $MFI_i \times AgTr_i$ is an interactive dummy variable that will help us to see whether income or consumption is higher for MFI members compared to non-MFI members (control-group) and that the differential be greater in the training recipients.

Impact of training on employability

Conceptually, the number of earning members or employment opportunity for household depend on the number of adult members in the household. Such relationship is expected to prevail among various groups of the households. The current program aims to create employment opportunity among the household members by providing various trainings. We have defined the training variable based on three training opportunities: training on agriculture, on non-agriculture and vocational. We find that among six groups of households, a part of each group has some sort of training facilities. The percentage of households having training facilities is presented in Figure 12. From the figure we find that around 78 percent of the UPP self-employment group have received training facility, 65 percent of the UPP-skill development group have training facility, among UPP-general group 40 percent have training facilities, and even around 15 percent of the control households have training facilities. Therefore, it will be biased to estimate the effect of training on various economic indicator among the treatment group and the control group.

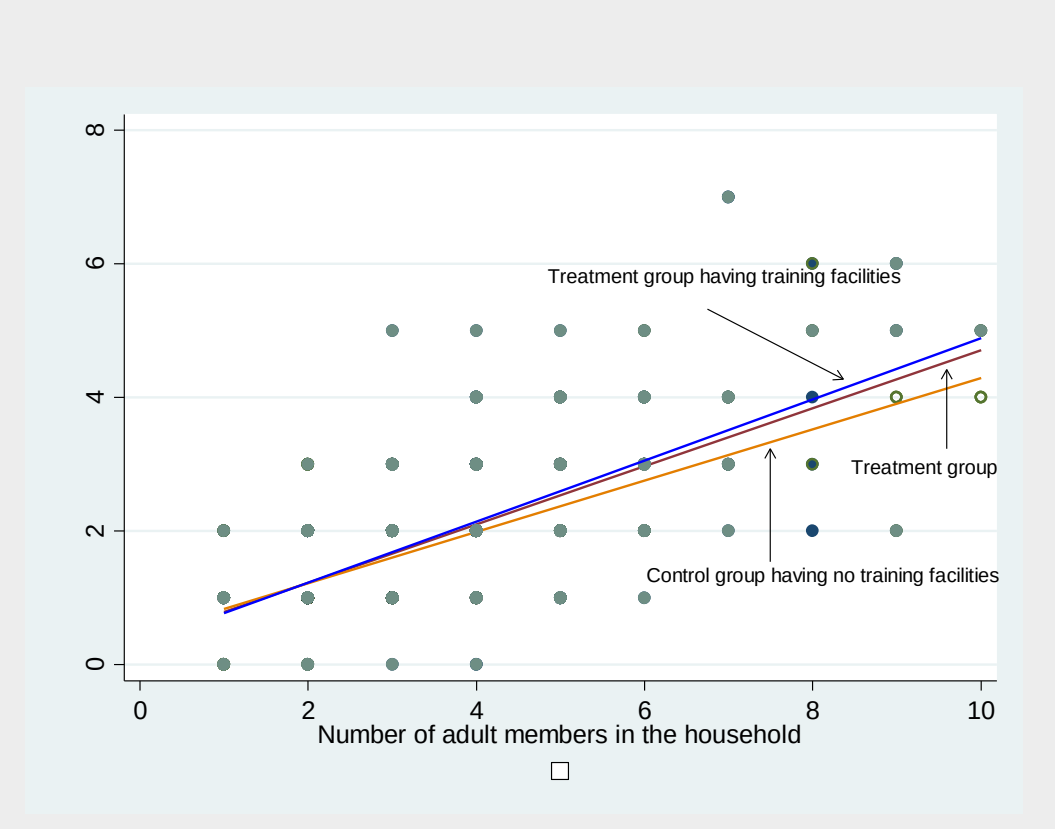
Figure 12: Percentage of households having training facilities



Source: End line survey (2019)

To estimate the impact of the training program on employability of the adult household members, we have grouped the households into three groups: (i) the overall treatment group, (ii) the treatment group having training, and (iii) the control group having no training. The bivariate relationship between number of earning members and number of adult members in the households among the three groups are presented in Figure 13. The figure shows that employability among the adult members is higher for the treatment households with training compared to the treatment households without any training and control households.

Figure 13: The employability among the treatment and control group



Source: End line survey (2019)

Note: The training variable considers treatment households who have received training and the control households who have not received any training.

The figure shows that the incremental number of adult members in the household increases the number of earning members in the household. But more markedly, the rate of employability differs by the nature of the training opportunities by the household members. The figure shows that the rate of employability is high among the treatment households to the control households who have no training facilities. The rate of employability is even high among the treatment households who have received the training facilities compared to the treatment households who have not received any training facilities as well as control households who have no training facilities. This relationship suggests that training enhances the change of employability of the household members (Table 13). The robustness is also reflected in the coefficient of training dummy using the 'Errors in Measurement' technique.

Table 13: Impact of training on employability (Number of employees in the household)

	OLS Method		**Errors in measurement**	
	Coefficient /se	**Coefficient /se**	**Coefficient /se**	**Coefficient /se**
Number of adults	0.341***		0.341***	
	(0.012)		(0.012)	
Training dummy (yes=1)	0.113***	0.231***	0.126***	0.259***
	(0.030)	(0.035)	(0.034)	(0.039)
Years of schooling of HH head		0.009***		0.010***
		(0.003)		(0.004)
Years of schooling of spouse		0.013***		0.014***
		(0.003)		(0.004)
Constant	0.589***	1.266***	0.583***	1.222***

	OLS Method		Errors in measurement	
	Coefficient /se	**Coefficient /se**	**Coefficient /se**	**Coefficient /se**
	(0.047)	(0.061)	(0.048)	(0.066)
note: .01 - ***; .05 - **; .1 - *;				

However, employability will be higher for the households with some adult members. How has it contributed to employability? Is it training that has increased employability of adult members? This can be examined through interaction of both training and adult members.

The visual relationship between these two variables among the two groups of households – treatment group having training facility vs control group having no training facilities – hardly tells us the significance of the differences in the rate of employability. To understand, the sources of differences in employability, let us formulate the following regression model:

$$Y_i = \beta_1 + \beta_2 Training + \beta_3 Adult + \beta_4 (Adult \times Training) + u_i \quad (3)$$

Here, the dependent variable Y_i measures the number of earners in the household; training is the binary variable containing zero value for those control households who have no training facilities, and 1 for the treatment households who have training facilities. The adult variable is continuous in nature and contains the members who are over 14 years old. In this simple setting, we are assuming that the stochastic disturbance term is uncorrelated with the given explanatory variables and it holds the necessary assumptions of the classical linear regression model. The slope coefficient of the training variable, β_2, is the intercept drift of the regression line and the coefficient β_4 is the slope drift of the regression model. Therefore, the rejection of the hypothesis, $H_0: \beta_2 = 0$ implies that the average earning member among the treatment households having training facilities have different intercept of their regression result compared to the control households having no training facilities. On the other hand, the rejection of the hypothesis, $H_0: \beta_4 = 0$, implies that among the treatment households having training facilities have different slope of their regression result compared to the control households having no training facilities. The estimated regression result of the regression model 1 is reported in Table 14.

Table 14: The impact of training on employability

	Differential Intercept and Slope		No intercept drifter but allowing slope drifter	
	Coefficient	Standard Error	Coefficient	Standard Error
$Training$	-0.044	0.080	0.00	-
$Adult$	0.296***	0.022	0.304***	0.015
$Adult \times Training$	0.063**	0.026	0.05***	0.01
$Constant$	0.661***	0.064	0.63***	0.04
DF	2527			
R^2	0.24			
Source: End line survey (2019)				
Note: .01 - ***; .05 - **; .1 - *; R^2 value of the restricted regression model is estimated at 0.431.				

The employability equation among the treatment households having training facilities is obtained as follows:

$$E(Y|Training = 1) = 0.62 + 0.36 Adult \quad (4)$$

On the other hand, the employability equation among the control households having no training facilities is given as follows:

$$E(Y|Training = 0) = 0.66 + 0.29Adult \quad (5)$$

The two employability equations for the two groups show that the rate of employability is high among the treatment households having training facilities compared to the control households having no training facilities. The slope drifter, β_4, is found statistically significant at one percent level of significance. The additional adult in the household increases the employability of a member of the household by 0.3 holding the effect of other variables constant. The intercept drifter is statistically significant but the slope drifter is individually statistically significant. But are the intercept and slope drifter simultaneously different, i.e., will the training recipient treatment households possess dissimilar regression compared to the control households having no training facilities? The null hypothesis under dissimilar regression among the comparison group can be formulated as $H_0: \beta_2 = \beta_4 = 0$ which suggests that intercept drifter and slope drifter are absent in the regression. To test the hypothesis, we have estimated the restricted F-statistics value which is 12.8. With 2 numerator degrees of freedom and 2525 denominator degrees of freedom, we find that the critical F-value at 5 percent level of significant is around 3.00 and even at 1 percent level of significance that is 4.61. Therefore, comparing the critical F-value and computed F-value we can conclude that the training recipient treatment group has dissimilar regression compared to the control group having no training facilities.

Now, if we control the intercept drifter, then we can find that the employability per adult becomes 0.304, that is, per 3 adults, at least one can be employed whereas the intercept term of both of the group becomes 0.63 and the slope drifter declines to 0.05. The low intercept of the employability equation of the treatment households who have training facility rather enforces the higher employability which is also reflected by the negative coefficient of the training variable in the regression model.

What are the other potential factors that determine the employability of the members of the households? To see this, we have considered number of adult members in the household, the education level of the household head and spouse, the training dummy, distance from the nearest market, and set of district dummies. The number of earning members in the household is considered as dependent variable. We are proposing four regression models: the first two models follow the simple OLS methods and the last two models use regression techniques controlling potential sources of measurement errors.

$$Y_i = \alpha_1 + \alpha_2 Adult + \alpha_3 Training + \alpha_4 Market_{Distance} + \alpha_j District_j + u_i \quad (6)$$

$$Y_i = \lambda_1 + \lambda_2 YS_{head} + \lambda_3 YS_{spouse} + \lambda_4 Market_{Distance} + \alpha_j District_j + u_i \quad (7)$$

The simple pairwise correlation among the variables are reported in Table 15. We find that there is high level of association between the number of earning members and the number of adult members in the households and there is positive association between the number of earning members and years of schooling of the household head and spouse. The table shows that the years of schooling and number of adult members in the household are positively correlated and the inclusion of the variable “number of adults in the household” and years of schooling of the household head and spouse may suffer from multicollinearity problem. To avoid the multicollinearity problem, we have estimated the training effect on the number of earning members controlling the number of adult members in the household while the years of schooling variables have been omitted and the number of adult member variable has been omitted to examine the training effect along with the years of schooling variables.

Table 15: Pairwise correlation among variables

	Number of earning member	Number of adult member	Years of schooling of HH head	Years of schooling of spouse	Have training (yes = 1)	Distance from market
Number of earning member	1					
Number of adult member	0.4762	1				
Years of schooling of household head	0.0863	0.0739	1			
Years of schooling of spouse	0.0998	0.1455	0.3054	1		
Have training (yes)	0.1394	0.1273	-0.0474	-0.0546	1	
Distance from market	0.0041	-0.0149	-0.0194	-0.0123	-0.0367	1
Source: End line survey (2019)						

To control the potential measurement errors in the variables we have estimated the regression models based on the reliability score of 0.9 out of 1. The OLS results and the error corrected regression results are reported in Table 16.

The model 1 shows that an extra adult member in the household increases the number of earner in the household by 0.34 holding the effects of other variables constant, alternatively, for an additional 3 adult members in the household, one member can contribute to the household earning. The coefficient of the training variable is found positive and it shows that the training recipient treatment households have more earning member compared to control households who have no training facilities. The coefficient value of the training variable suggests that the employability is 0.09 unit higher among the training recipient treatment group. The impact of the training on the employability is found statistically significant. The impact of the training is found more if we control the education of the household head and education of the spouse rather the number of adult in the households. The results do confirm that training and education of the household head and spouse positively contribute in earning of the household holding other things remaining the same. The error correction model 3 shows that training effect is more pronounced among the training recipient treatment group and model 4 shows that training significantly contribute to household earning.

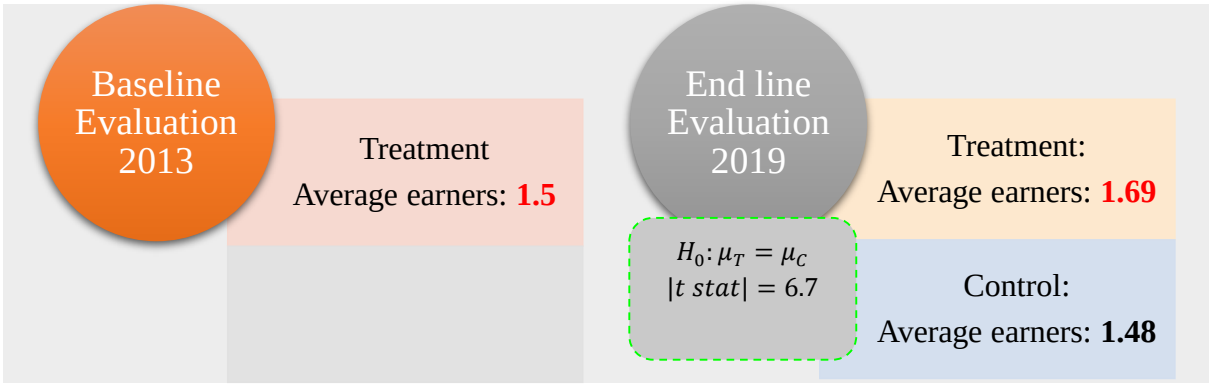
Table 16: Impact of training on employability

Explanatory Variable	OLS Method		Errors in measurement	
	Model 1	Model 2	Model 3	Model 4
	Coefficient / se	Coefficient /se	Coefficient /se	Coefficient /se
Number of adult members	0.340***		0.340***	
	(0.010)		(0.010)	
Have training (yes=1)	0.086***	0.188***	0.096***	0.211***
	(0.027)	(0.031)	(0.030)	(0.034)
Years of schooling of head		0.010***		0.011***
		(0.003)		(0.003)
Years of schooling of spouse		0.013***		0.014***
		(0.003)		(0.003)
District Dummies	Yes	Yes	Yes	Yes
Constant	0.588***	1.267***	0.582***	1.225***
	(0.041)	(0.052)	(0.042)	(0.056)

Explanatory Variable	OLS Method		Errors in measurement	
	Model 1	Model 2	Model 3	Model 4
	Coefficient / se	Coefficient /se	Coefficient /se	Coefficient /se
note: .01 - ***; .05 - **; .1 - *;				
Source: End line survey data (2019) Note: Insignificant variables are not presented here.				

These results demonstrate that training increases employability, and the marginal impact of adult member on employability also increases. This can be derived from the difference in the number of earning members of treatment households and the control households. It is reported in Figure 14

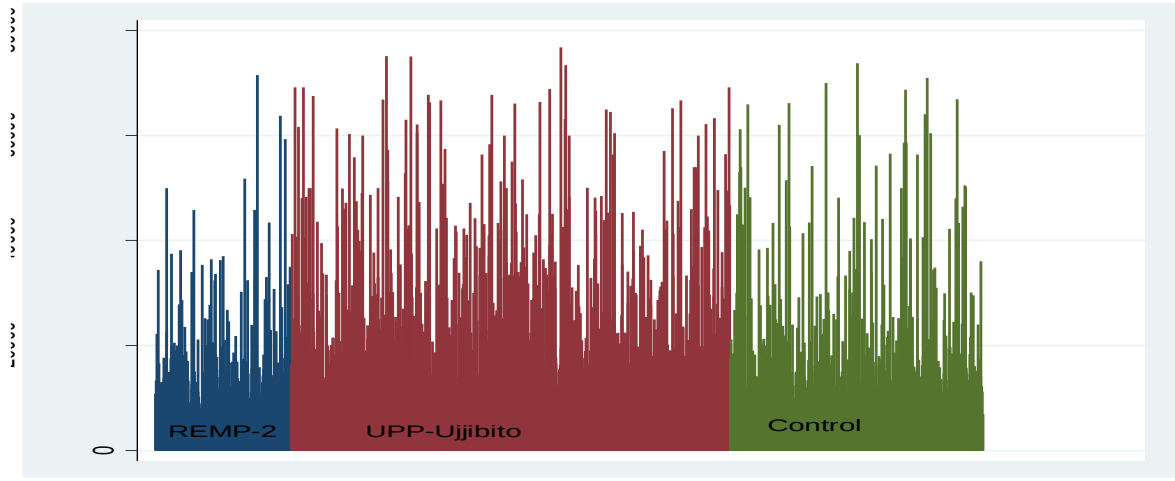
Figure 14: The percentage of earning members of participant and control households



Source: Baseline evaluation (2013) and End line Survey Data (2019)

The baseline statistics shows that on average 1.5 members of the program participant households are involved with earning activities. The end line survey data shows that the number of earning members of the participant households has increased from 1.5 member in 2014 to 1.69 member in 2019. In the end line survey, the average number of earning members of the control households has been estimated at 1.48 members. Under the homogeneity assumption on the household size and economic activities during baseline, the result clearly shows that the percentage of earning member has increased among the participant group compared to the control group and the difference is found highly statistically significant.

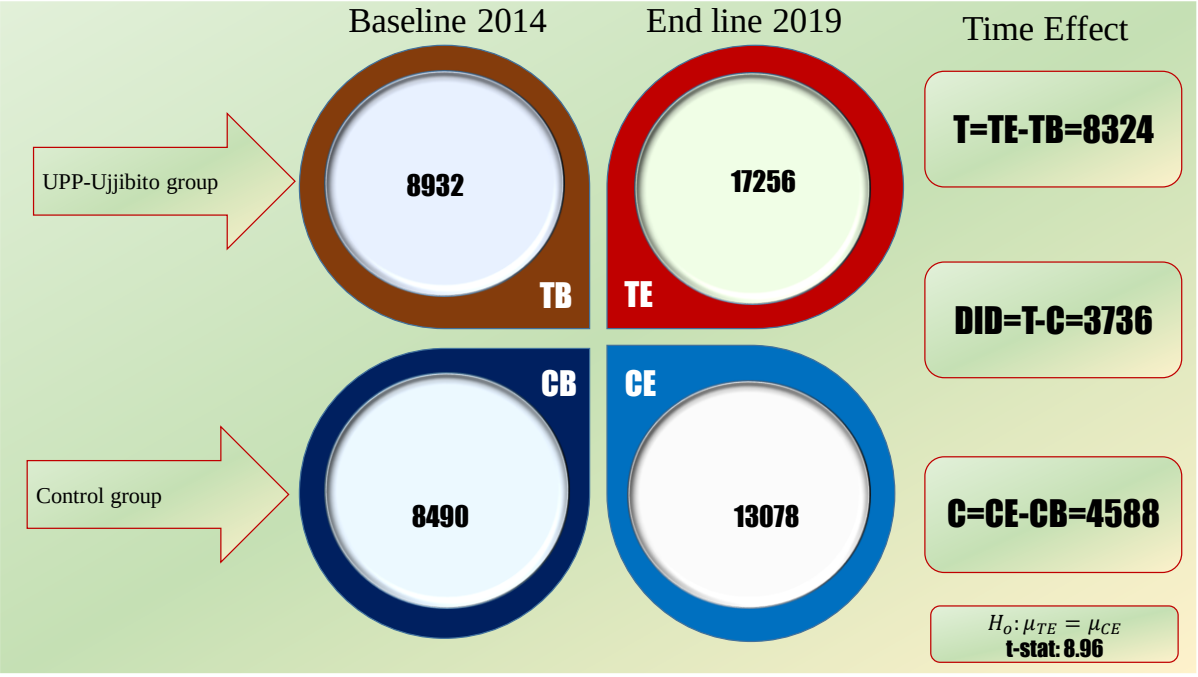
Figure 15: Spike plot of monthly household income



Source: Survey Data (2019)

The average number of earning member is found higher among the treatment group and hence it is expected that this will be reflected in the average earning of the household. We have aggregated income from various sources of the households. The spike plot of income shows that income of the UPP-Ujjibito group is mostly higher compared to REMP-2 group and the control group as well.

Figure 16: Average monthly income of the project beneficiaries and control households

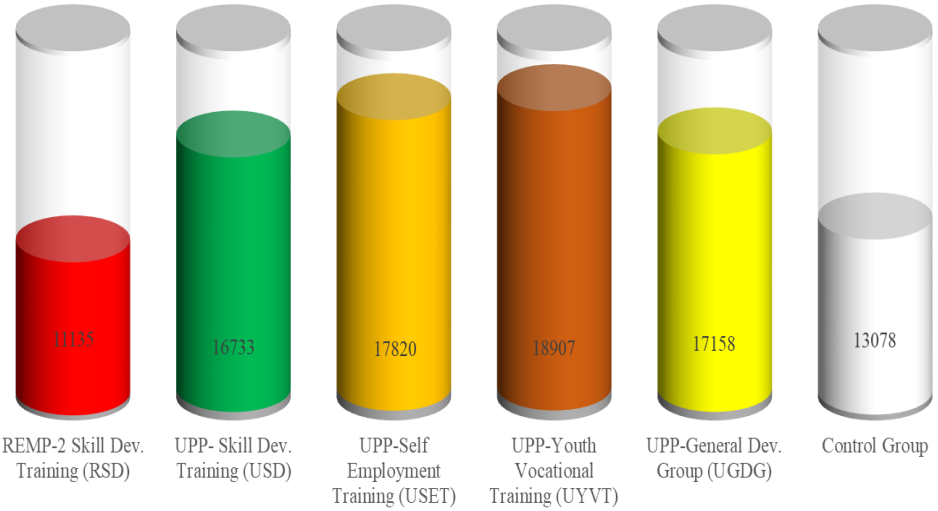


Source: Baseline survey and end line survey

Note: The average monthly income of the control group in the baseline has been estimated based on the assumption that the control and treatment households were homogenous in terms of monthly income.

The baseline study shows that the average income of UPP-Ujjibito member was around BDT 8932 which becomes almost 1.93 times higher in 2019 and it stands at 17256. The time effect of the UPP-Ujjibito household is found around BDT 8324. The result shows that income grows around 20 percent annually among the treatment household. On the other hand, the average income of the control household is estimated at around BDT 13078 in 2019 and the time effect based on homogeneity assumption is estimated around at BDT 4588: annual income growth is around 10.8 percent. The DID estimate is found to be around BDT 3736, around 8.4 percent annual income growth due to the program. The mean differences, time effect and program effect (DID), are found statistically significant. One question like “does training really matter for enhancing income? If yes, what type of trainings are more influential?” This question can be answered if we look at the average income of various households of the survey. We find that the average income of the REMP-2 households is the lowest among the households, on average BDT 11135 per month, and the average income of the control household is lower compared to the treatment households, around BDT 13078 per month. The result shows that the average monthly income, BDT 18907 per month on average, of the UPP-Youth vocational training recipient households is the highest and the average monthly income of other training recipient households is similar, for example, the average income of the households having self-employment training facility is around BDT 17820 per month on average.

Figure 17: Average monthly income of various types of households



Source: End line survey (2019)

The other statistics the standard deviation, the first quartile, median, and third quartile measures of income variable is reported in the following table (Table 17). The table shows that there is substantial variation in income among various group. The variance is the highest among UGDG group and the least among REMP-2 group. The quartile values of the income variable of each of the group shows that the income difference among household prevails at first quartile level, median level and third quartile level. The average income of the richest 25 percent treatment households is over BDT 20000 per month while that is below 15000 among REMP-2 group and 15150 among control group.

Table 17: Monthly household and per capita income

	Monthly (Household)				
	Average	SD	Q1	Q2	Q3
REMP-2 Skill Dev. Training (RSD)	11135	8661	5908	8809	13228
UPP- Skill Dev. Training (USD)	16733	11998	8673	13250	20333
UPP-Self Employment Training (USET)	17820	12011	10000	13920	21708
UPP-Youth Vocational Training (UYVT)	18907	12918	10175	15075	24134
UPP-General Dev. Group (UGDG)	17158	13124	8516	13295	20817
Control Group	13078	10924	6719	10014	15150
	Per capita monthly income				
REMP-2 Skill Dev. Training (RSD)	3002	2079	1742	2380	3535
UPP- Skill Dev. Training (USD)	3982	3010	2233	3124	4733
UPP-Self Employment Training (USET)	4131	2925	2338	3369	4996
UPP-Youth Vocational Training (UYVT)	4191	2788	2417	3317	4797
UPP-General Dev. Group (UGDG)	4083	3018	2203	3151	4931
Control Group	3480	2680	1952	2667	3848
Source: Survey Data (2019)					

The previous studies like Hossain (1984, 1988, 2002), BIDS (1990), IMEC (1995, 1999), Rahman (2005), and Khalily et.al. (2010, 2011) show that the program participants have higher monthly per capita income / monthly income per household compared to the control or non-participant households (Table 18). However, the level of impact varies from 10 percent to 82.3 percent. The per capita monthly scenario by various household types are similar to the aggregate monthly household income. The per capita income differential is almost over 500 among the treatment households compared to the

treatment households and the differential is nearly over 1000 among the richest 25 percent of the households of each group whereas the differential is less than 300 among the lowest 25 percent of the households.

The descriptive analysis shows that there is difference among various household groups like RERMP, USD, USET, UYVT, UGDG and control. It is found that the average income of the

Table 18: Impact of credit program on income in major related studies

Source	Name of the Organization Studied	Indicator (monthly average)	Partici pants	Control/ Non-participants	% Difference
Hossain, 1984	GB	Income per capita	1762	1346	30.9
Hossain, 1988	GB	Income per capita	3524	2523	39.7
BIDS, 1990	BRDB	Income per HH	6204	4260	45.6
BIDS, 1990	BRAC-RDP	Income per HH	2844	1560	82.3
IMEC, 1995	Proshikha	Income per HH	22244	17482	27.2
IMEC, 1999	Proshikha	Income per HH	48635	43584	11.6
Hossain, 2002	GB	Income per HH	18134	14204	27.7
Rahman, 2005	PKSF	Income per HH	4842	3247	49.1
Khalily et.al., 2010	PRIME-2	Income per HH	4450	4042	10.1
Khalily et.al., 2011	PRIME-3	Income per HH	5127	3807	35.7
Khalily et.al., 2011	FSVGD & UP	Income per HH	5224	4463	17.0

Note: The PRIME and FSVGD&UP programs are implemented by PKSF.

the RERMP-2 group is the lowest and the second lowest average monthly income is among the control households. This suggests that the RERMP households are more vulnerable than the control households. In other cases, it will appear that there are no significant differences between the outcomes of the RERMP and control households. As such, we compare the training outcomes of UPP-Ujjibito compared to these two groups. The descriptive analysis has so far provided a short understanding of the impact of the program on the indicators. The simple measures of central tendency or measures of variation does not reveal the true story rather they give us a short picture of the impact. Human decision making process is quite complex and economic decision is far complex. To understand the impact of the program on various economic indicators in a controlled way, we have used various regression techniques.

To find whether the differential effects are statistically significant or not, we are estimating four regression models:

Model A: $Y_i = \beta_1 + \beta_{ht}^{j} H_{ht}^{j} + u_i$

Model B: $Y_i = \beta_1 + \beta_{ht}^{j} H_{ht}^{j} + \beta_{en}^{et} E_{en}^{et} + u_i$

Model C: $Y_i = \beta_1 + \beta_{ht}^{j} H_{ht}^{j} + \beta_{en}^{m} E_{en}^{m} + \beta_{hc}^{c} H_{hc}^{c} + u_i$

Model D: $Y_i = \beta_1 + \beta_{ht}^{j} H_{ht}^{j} + \beta_{en}^{m} E_{en}^{m} + \beta_{hc}^{c} H_{hc}^{c} + \beta_{dd}^{d} D_{dd}^{d} + u_i$

Model A will give us the monthly average income of various household categories. Model B includes types of employment in the households in addition to the household categories. The employment variables include day laboring number of household members, number of household members involved with cultivation/nursery, number of household members involved with fishery and livestock rearing, etc. The third model, Model C, includes some household characteristics like the ownership of enterprises, the amount of landholdings, etc. in addition to the variables in model B while the fourth model, Model D, includes a set of district dummies.

The regression results are reported in table (Table 19). We find that compared to the control households, the average income of USD group is higher by BDT 3655, of USET group by BDT 4742, of UYVT group by 5829, and of UGDG group by 4080. Each differential coefficients are found statistically significant.

Model B shows that one additional service holder in the household contributes around BDT 9205 holding the effects of other variable constant. The marginal contribution of a tailor to the household is around BDT 3263. The additional day labor in the household contributes around BDT 2011 to the household monthly income holding the effects of other variables constant and the contribution of a day labor is the lowest compared to other occupations. The results show that compared to the control households an incremental number of employees in the treatment households significantly contributes to the household monthly income. Model C and Model D reveal similar results in model B. Model C shows that ownership of micro enterprise increase the monthly household income by around BDT 3292 ceteris Paribas whereas an incremental cultivable land holding (decimal) increases the average income of the treatment households compared to the control households. The inclusion of a set of district dummies adjusted the marginal effects of the respective variables but do not alter the signs and significance of the variables.

The income differential coefficients are found statistically significant at 1 percent level. A question may arise in mind "which training is more effective?" The absolute income differentials can give us a clue but it does not establish the statistical equivalence of the differentials. If we form the hypothesis that H_0: $\beta_{USD} = \beta_{USET}$, then the test statistics confirms the null hypothesis and it implies the income differentials of these two types of households are equivalent. Similarly, if we hypothesize that $\beta_{USD} = \beta_{UYVT}$, the test statistics again does not reject the null hypothesis. In this setting, although the income differentials are different in absolute level but statistically they are equivalent. Therefore, it can be concluded that training contributes higher income to the household.

Table 19: Income differentials by household types

	Model A	**Model B**	**Model C**	**Model D**
	Coefficient	**Coefficient**	**Coefficient**	**Coefficient**
UPP- Skill Dev. Training (USD)	3,655.006***	2,481.596***	2,281.526***	1,978.261***
UPP-Self Employment Training (USET)	4,741.796***	3,766.735***	3,616.153***	3,135.158***
UPP-Youth Vocational Training (UYVT)	5,828.678***	2,833.381**	2,546.938*	2,285.573
UPP-General Dev. Group (UGDG)	4,080.010***	2,963.428***	2,794.674***	2,141.195***
Day labor		2,010.731***	2,048.262***	2,118.625***
Cultivation/nursery		2,972.551***	1,727.569**	1,663.970**
Fishery and Livestock		2,826.660***	2,464.925***	2,661.329***
Vehicle Driving		3,056.071***	2,800.208***	2,801.564***
Services		9,204.489***	9,105.085***	8,785.553***
Business		4,353.499***	3,468.325***	3,429.237***
Household chores		3,592.941***	3,550.965***	3,107.278***
Tailoring		3,263.462***	3,148.441***	2,785.682***
Others		2,453.402***	2,309.294***	2,201.331***
Household owns enterprise			3,691.723***	3,478.831***
Cultivable land (decimal)			772.350***	935.987***
District Dummies	No	No	No	Yes
Constant	13,078.291***	5,534.677***	5,201.810***	6,960.701***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

4.2.2 Consumption Expenditure and Consumption Functions

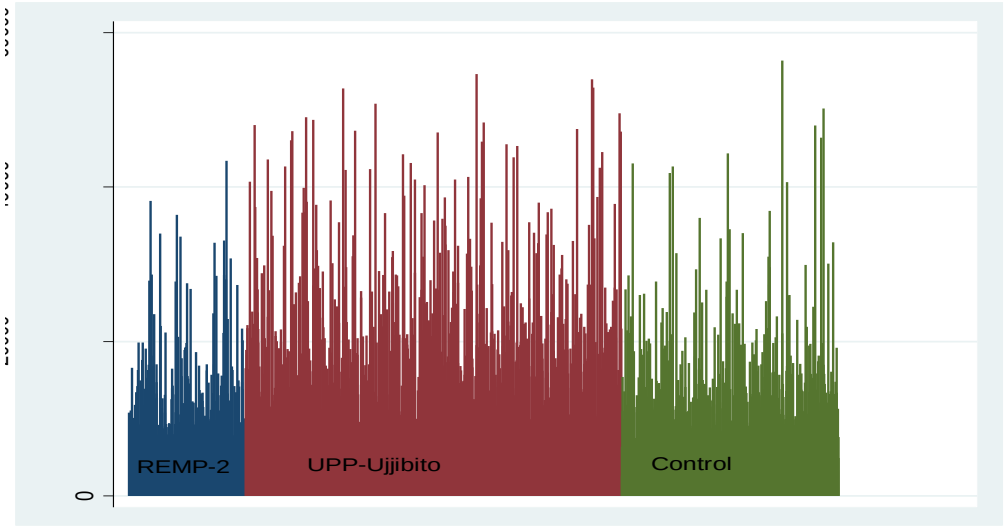
Although the positive impact of the program on income suggests a positive impact on expenditure from the perspective of economic theory. Studies are available (Table 20) in favor of the positive impact of credit program on expenditure, for example, Rahman (1996), and Khandker (1998, 2003).

Table 20: Impact of credit program on expenditure in major related studies

Source	Name of the Organization Studied	Indicator (monthly average)	Participants	Control/ Non-participants	% Difference
Rahman, 1996	PKSF	Expenditure per HH	26390	23802	10.9
Khandker, 1998	BRAC	Expenditure per capita	5180	4202	23.8
Khandker, 1998	GB	Expenditure per capita	5050	4335	16.5
Khandker, 1998	RD-12	Expenditure per capita	4931	4279	15.2
Khandker, 2003	GB, BRAC	Expenditure per capita	3923	3838	2.2

Therefore, a question in mind can arise that the current results do corroborate the findings of the available studies or not. A spike plot of monthly household expenditure is shown in Figure 18.

Figure 18: Spike plot of monthly household expenditure

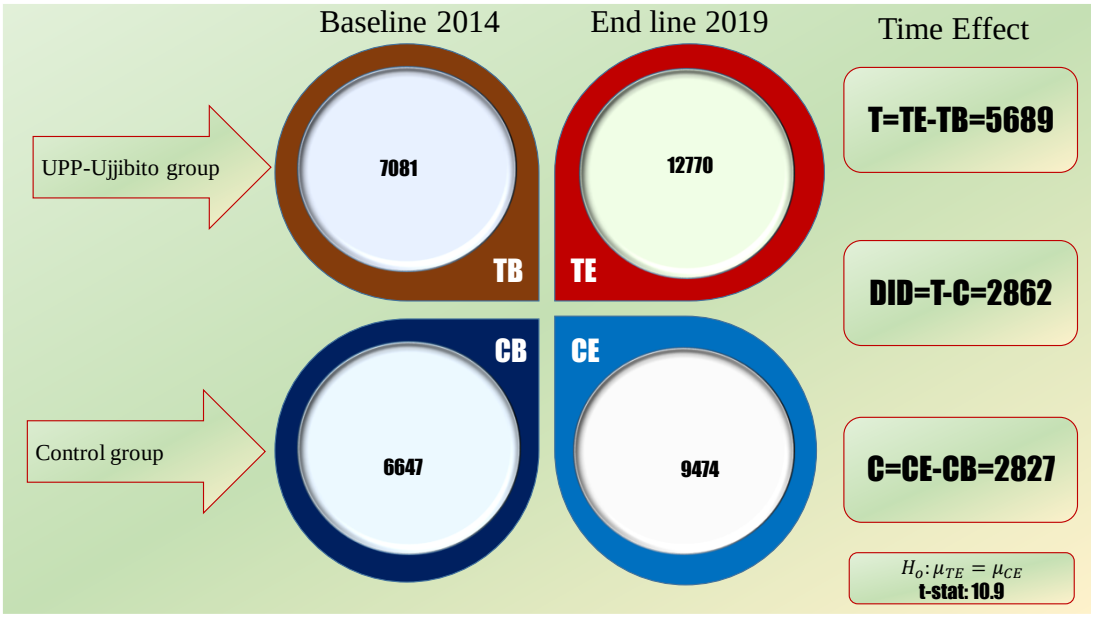


Source: Survey Data (2019)

The figure shows a similar pattern to the spike plot of income. Therefore, it corroborates the economic relationship between income and expenditure. The expenditure of the UPP-Ujjibito group is higher than the REMP-2 and control groups.

The Figure 19 shows that over the project period, the total monthly household expenditure as well as per capita monthly expenditure increased among the UPP-Ujjibito households. We find that in baseline the average monthly household expenditure was BDT 7081 which becomes BDT 15881 at the end of the program. The control household has an average monthly expenditure of about BDT 12207 in the end line and in the baseline that was estimated 6647. Therefore, the gap in terms of the average monthly expenditure between treatment group and the control group is found around BDT 3240 which is around 20.4 percent of the average monthly expenditure of the treatment group and 27.1 percent of the average monthly expenditure of the control group.

Figure 19: The average monthly expenditure of UPP-Ujjibito and control households



Source: Baseline evaluation (2014) and End line Survey Data (2019)

Note: The average monthly expenditure of RERMP-2 group is estimated at 8835 in end line and that was 4899 in the baseline. It is also to be noted that to control the influence of outlier observation, we have limited our sample at the 99 percentile value of monthly expenditure.

The average monthly expenditure of the UPP-Ujjibito group is almost 1.35 times higher than the control group. The t-statistics shows that the difference is highly statistically significant. Similar pattern is observed if we consider the per capita monthly expenditure. However, the treatment group has a per capita monthly expenditure of BDT 3021 which is more of BDT 507 compared to the control group and this difference is also found statistically significant. The households having vocational training has the highest monthly average consumption expenditure. Other training recipient households also have higher consumption expenditure compared to the control households.

Table 21: Monthly household and per capita expenditure

	Monthly (Household)				
	Average	SD	Q1	Q2	Q3
REMP-2 Skill Dev. Training (RSD)	8835	5867	5069	7469	10757
UPP- Skill Dev. Training (USD)	13080	8898	7318	10538	15970
UPP-Self Employment Training (USET)	13032	8245	7670	10727	15616
UPP-Youth Vocational Training (UYVT)	13844	8039	7935	11926	17121
UPP-General Dev. Group (UGDG)	11986	7637	6767	9508	15506
Control Group	9474	6615	5194	7804	11845
	Per capita monthly expenditure				
REMP-2 Skill Dev. Training (RSD)	2401	1476	1493	1993	2855
UPP- Skill Dev. Training (USD)	3119	2388	1826	2484	3570
UPP-Self Employment Training (USET)	2995	1766	1883	2487	3532
UPP-Youth Vocational Training (UYVT)	3131	1901	1954	2684	3559
UPP-General Dev. Group (UGDG)	2913	1941	1797	2382	3503
Control Group	2515	1550	1577	2202	2934

Source: Survey Data (2019)

The absolute differences in consumption expenditure among various household are shown in Table 21 but the significance of the differential is not clear from it. However, fluctuation can be inferred from the

ratio of standard deviation and mean expenditure both at the aggregate and per-capita basis. This will reveal stability in the level of both total and per-capita expenditure.

So far, the mean comparison test shows that the treatment group have higher monthly expenditure as well as higher per capita expenditure. However, drawing conclusion based on the mean comparison could be fallacious. Therefore, the regression technique can provide better picture which controls set of explanatory variables which as supposed to determine the consumption level beyond the mere treatment variable. The determinants of per capita consumption expenditure is reported in the following table (Table 22):

Table 22: Potential determinant of per capita consumption expenditure

	Coefficient /se
Dependency ratio [proportion of household members are dependent]	-516.150***
	(154.832)
Training received [yes =1]	389.661***
	(67.750)
Amount of cultivable agriculture land (Bigah)	184.299***
	(32.421)
Ownership of enterprise (yes =1)	344.565***
	(95.466)
Constant	2,836.729***
	(160.835)
Source: End line survey (2019)	
Note : .01 - ***; .05 - **; .1 - *;	

The result shows that higher dependency score reduces the per capita consumption expenditure by 390 for an extra proportion increase in dependency, holding other things remaining the same. The training recipient treatment households have higher per capita consumption expenditure by around 184 Ceteris Paribas, and the effect is found statistically significant at 5 percent level of significance. Landholding and the ownership of enterprise increase per capita consumption and they are found statistically significant at 1 percent level of significance.

The differential effects are being estimated without and with controlling some explanatory variables and the results are reported in Table 23.

Table 23: Expenditure differentials by household types

	Model A	**Model B**	**Model C**	**Model D**
	Coefficient	**Coefficient**	**Coefficient**	**Coefficient**
UPP- Skill Dev. Training (USD)	3,605.487***	2,647.378***	2,513.663***	2,296.388***
UPP-Self Employment Training (USET)	3,557.859***	3,162.243***	3,055.682***	2,783.104***
UPP-Youth Vocational Training (UYVT)	4,369.546***	2,146.412**	1,959.003**	1,645.546*
UPP-General Dev. Group (UGDG)	2,511.416***	1,861.525***	1,746.324***	1,396.242***
Day labor		2,007.644***	2,036.170***	1,991.481***
Cultivation/nursery		3,036.856***	2,085.723***	2,111.012***
Fishery and Livestock		2,439.920***	2,151.303***	2,510.696***
Vehicle Driving		2,575.972***	2,392.741***	2,504.358***
Services		2,686.700***	2,619.336***	2,294.510***
Business		3,520.137***	2,868.387***	2,947.073***
Household chores		2,868.260***	2,829.069***	2,442.495***

Tailoring		2,272.162***	2,180.562***	2,247.246***
Others		1,917.076***	1,795.626***	1,686.107***
Household owns enterprise			2,655.749***	2,000.570***
Cultivable land (decimal)			609.366***	787.157***
District Dummies	No	No	No	Yes
Constant	9,474.487***	3,596.236***	3,343.423***	7,050.860***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

The regression results show that the expenditure of the control household is statistically significantly different from zero and all the expenditure differential coefficients are found statistically significant at 1 percent level. Therefore, it confirms that the program has significantly enhanced the expenditure of the beneficiary households. The expenditure differentials of the training recipient households are much higher than the general Ujjibito member households. It, hence, reveals that training contributes to have higher expenditure.

Table 24: Expenditure function of various households

Variable	**Model A**	**Model B**	**Model C**	**Model D**
	Coefficient /se	**Coefficient /se**	**Coefficient /se**	**Coefficient /se**
UPP- Skill Dev. Training (USD)	0.163***	0.135***	0.134***	0.128***
UPP-Self Employment Training (USET)	0.126***	0.135***	0.135***	0.138***
UPP-Youth Vocational Training (UYVT)	0.078	0.020	0.017	0.002
UPP-General Dev. Group (UGDG)	0.097***	0.083***	0.082***	0.082***
Log of monthly household income	0.612***	0.580***	0.574***	0.562***
Day labor		0.080***	0.082***	0.078***
Cultivation/nursery		0.141***	0.120***	0.123***
Fishery and Livestock		0.080***	0.075***	0.106***
Vehicle Driving		0.087***	0.085***	0.104***
Services		-0.066***	-0.065***	-0.073***
Business		0.108***	0.097***	0.112***
Household chores		0.122***	0.123***	0.110***
Tailoring		0.082***	0.081***	0.103***
Others		0.051***	0.049***	0.049***
Household owns enterprise			0.055**	0.010
Cultivable land (decimal)			0.014*	0.026***
District Dummies	No	No	No	Yes
Constant	3.296***	3.377***	3.425***	3.744***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

The consumption shows that there is positive relationship between income and expenditure of each type of household. The result shows that for one percent incremental income, the consumption increases by around 0.61 percent ceteris paribus. With the extended model, we find that for one percent increment of monthly income, the monthly consumption increases by around 0.56 percent, other things remaining the same.

The monthly consumption expenditure comprises of food and non-food expenditure. The previous results confirm that monthly consumption is positively related with level of monthly income. So, it will be

interesting to find out which consumption is very much responsive to income changes. Effects on food and non-food expenditures are reported in Table 25 and Table 26, respectively.

Table 25: Food expenditure function by among various households (Log of food expenditure)

Variable	Model A	Model B	Model C	Model D
	Coefficient /se	Coefficient /se	Coefficient /se	Coefficient /se
UPP- Skill Dev. Training (USD)	0.174***	0.134***	0.133***	0.133***
UPP-Self Employment Training (USET)	0.136***	0.142***	0.142***	0.155***
UPP-Youth Vocational Training (UYVT)	0.123**	0.046	0.045	0.024
UPP-General Dev. Group (UGDG)	0.113***	0.091***	0.090***	0.115***
Log of monthly household income	0.389***	0.344***	0.343***	0.341***
Day labour		0.100***	0.100***	0.095***
Cultivation/nursery		0.167***	0.160***	0.157***
Fishery and Livestock		0.168***	0.167***	0.194***
Vehicle Driving		0.147***	0.147***	0.159***
Services		-0.050**	-0.050**	-0.055**
Business		0.118***	0.116***	0.129***
Household chores		0.165***	0.165***	0.164***
Tailoring		0.134***	0.134***	0.152***
Others		0.082***	0.082***	0.088***
Household owns enterprise			0.009	-0.031
Cultivable land (decimal)			0.005	0.016*
District Dummies	No	No	No	Yes
Constant	4.674***	4.804***	4.815***	4.956***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

Table 25 shows that for a one percent incremental monthly income, the food expenditure increases by around 0.39 percent in model A, 0.34 percent in model B, C, and D. Therefore, we can state that each percentage increment in income, the food expenditure increases by around 0.34 percent holding the effects of the other variables constant.

Table 26: Non-food expenditure function by among various households (Log of non-food expenditure)

	Model A	Model B	Model C	Model D
	Coefficient /se	Coefficient /se	Coefficient /se	Coefficient /se
UPP- Skill Dev. Training (USD)	0.104***	0.118***	0.117***	0.106***
UPP-Self Employment Training (USET)	0.152***	0.160***	0.158***	0.146***
UPP-Youth Vocational Training (UYVT)	0.078	0.025	0.019	0.027
UPP-General Dev. Group (UGDG)	0.084**	0.068**	0.067**	0.053
Log of annual household income	0.654***	0.642***	0.643***	0.623***
Day labor		0.043**	0.041**	0.043**
Cultivation/nursery		0.126***	0.106***	0.104***
Fishery and Livestock		0.001	-0.001	0.031
Vehicle Driving		0.009	0.012	0.040
Services		-0.011	-0.013	-0.037
Business		0.087***	0.100***	0.120***
Household chores		0.102***	0.102***	0.079***
Tailoring		0.029	0.031	0.050
Others		0.027	0.029	0.025
Household owns enterprise			-0.054	-0.113***

Cultivable land (decimal)			0.018	0.036***
District Dummies	No	No	No	Yes
Constant	1.945***	1.918***	1.902***	2.341***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

Table 26 shows that for a one percent incremental monthly income, the non-food expenditure increases by around 0.65 percent in model A, 0.64 percent in model B, C, and 0.62 percent in D. Therefore, we can state that each percentage increment in income, the non-food expenditure increases by around 0.64 percent holding the effects of the other variables constant.

4.2.3 Savings and Investment

How does training create employability? What is the economic mechanism of this? To understand these questions, we have estimated the impact of the training on investment. We have considered the total investment of the household in the last one year.

Table 27: Investment scenario among treatment and control

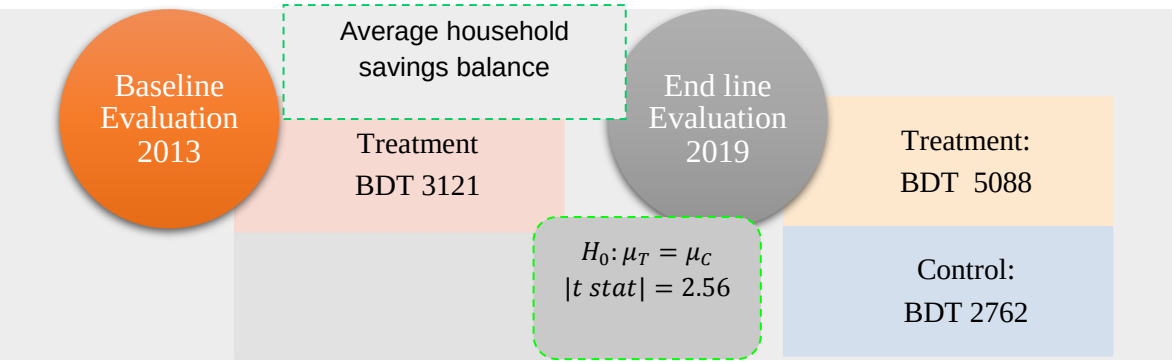
	Training recipient treatment household	Control households having no training facilities	Gap between A and B	Is the gap significant? [t-stat]
	A	B	C	D
Do invest? (yes=1) [%]	23.7	16.2	7.5	4.31
Average investment	10610	6831	3779	2.56

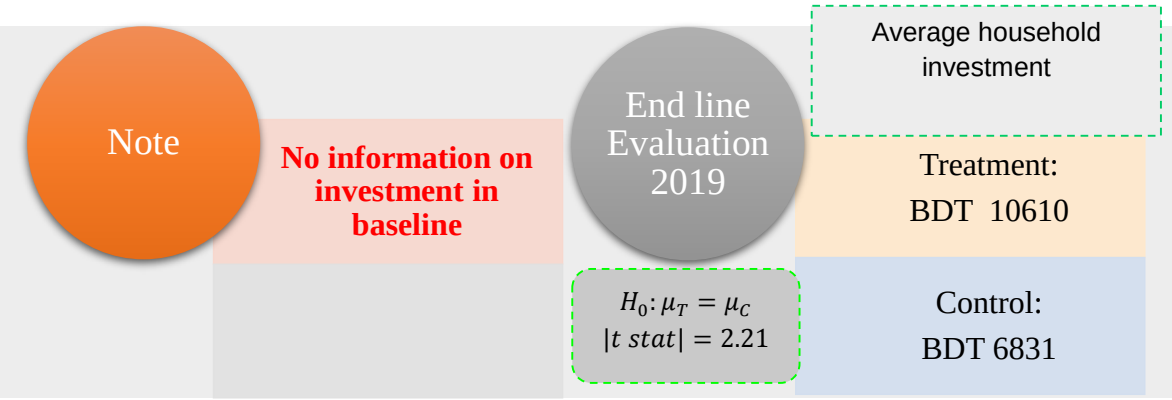
Source: End line survey (2019)

Table 27 shows that on average 23.7 percent of the training recipient treatment households had investment around BDT 10610 on various economic activities whereas around 16.2 percent control households who had an average investment of around BDT 6831 in various IGAs. The result shows that the difference in rate of investment among households and the amount of investment between these two groups are found statistically significant. But what determines the size of investment? Investment decision is by definition and economic decision. Fundamentally, investment depends on interest rate and level of income.

Besides the direct spending on food and non-food items, the households do invest in various IGAs. The investment is made from own source or from borrowing. The baseline data shows that the treatment group had an average savings balance of BDT 3121 in NGO/MFIs which has increased to BDT 4476 in 2019. The control households have an average savings balance of BDT 3200.

Table 28: The average savings balance and investment of participant and control households





Source: Baseline evaluation (2013) and End line Survey Data (2019)

The households do save and invest. The survey data shows that the treatment households on average invest BDT 10610 annually in various activities. The control households invest on average BDT 6831 annually, around BDT 3779 less compared to the treatment group.

Beyond those two fundamental variables, some household level variables can also determine the size of investment. We have considered ownership of enterprise, amount of cultivable land, external push factor like training, and human capital. To modelled the relationship between investment and set of explanatory variables, we have considered two model: (i) linear regression model (amount of investment in last 1 year as the dependent variable) and (ii) the log-lin model (log of amount of investment in last 1 one year as the dependent variable). Since household level investment variable contains the extreme values like the non-investment (0) or large investment by some of the entrepreneurs. Therefore, the simple OLS estimates can be biased as extreme values create heteroscedastic variances and make the regression coefficient insignificant. Therefore, we have censored our investment data at the lower tail as well as the upper tail and censored regression technique (Tobit) model has been used to find the determinant of the investment. The Tobit regression result is given in Table 29

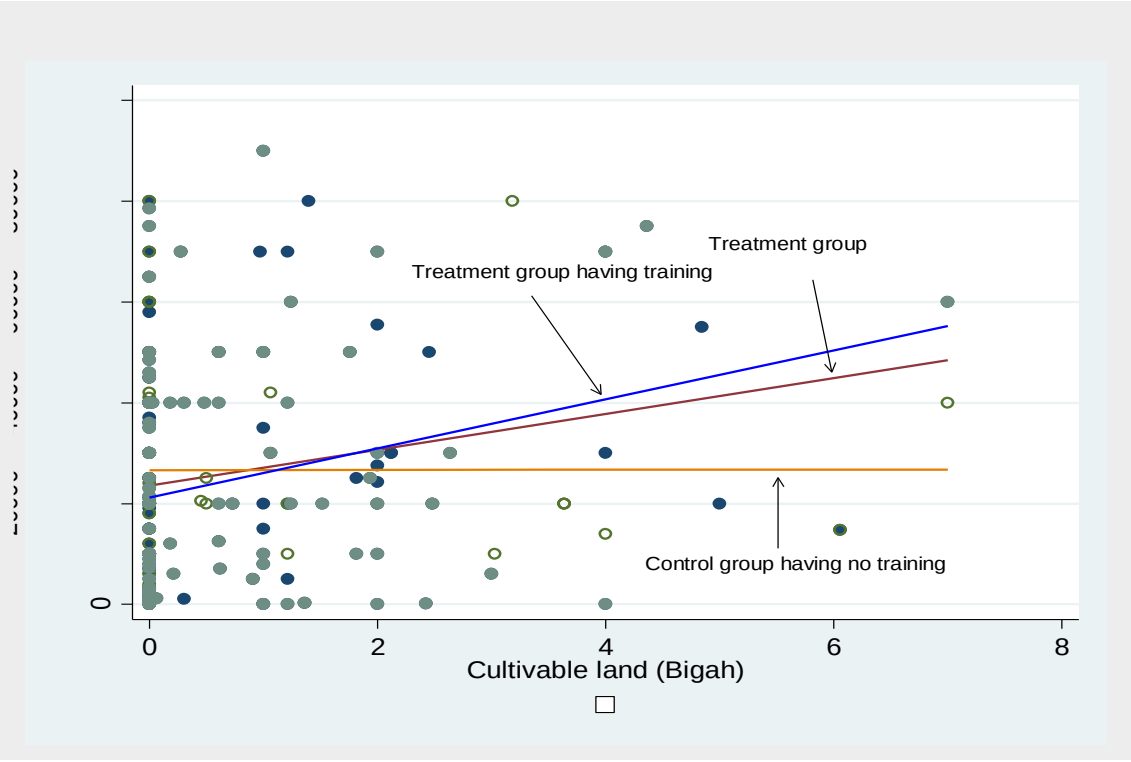
Table 29: : Impact of training on investment

Explanatory variable	**Amount of investment in last 1 year**	**Log of amount of investment in last 1 year**
	Coefficient /se	**Coefficient /se**
Have training (yes=1)	3,098.447***	2.504***
	(282.824)	(0.215)
Years of schooling of head	29.818	-0.001
	(24.918)	(0.019)
Years of schooling of spouse	-27.678	-0.026
	(26.157)	(0.020)
Amount of cultivable agriculture land (Bigah)	622.807***	0.493***
	(126.375)	(0.097)

Explanatory variable	Amount of investment in last 1 year	Log of amount of investment in last 1 year
	Coefficient /se	Coefficient /se
Ownership of enterprise (yes =1)	1,859.903***	1.381***
	(378.075)	(0.291)
Constant	156.700	-0.069
	(282.229)	(0.216)
/sigma	291.372	3.632***
	(467.921)	(0.357)
Source: End line survey data (2019)		
Note: .01 - ***; .05 - **; .1 - *;		

Table 29 shows that the training recipient households invest more compared to the control group who have no training. The simple mean difference of investment as shown in Table 29 shows that the investment gap between these two comparison groups is around 3779 whereas the regression model shows that the gap is around BDT 3098 and this gap is also found statistically significant. Years of schooling of household head increases investment volume. The ownership of enterprise determines the volume of investment. The result shows that households having an enterprise invest more compared to the other group. Similarly, the extra cultivable land induces household to make investment in various activities. But such causal relationship between investment and landholding does not guarantee that the training recipient agriculture households invest more compared to non-training recipient households. The Figure 20 shows the rate of investment among the treatment and control group.

Figure 20: Relationship between annual investment and landholding



Source: End line survey (2019)

Figure 20 shows that among the control households who have no training the extra landholding does not induce investment. On the other hand, the bivariate relationship between landholding and investment shows that extra landholding induces investment positively and the inducement is high among the training recipient household.

The regression analysis of the impact of training on investment clearly shows us that the average investment is higher among the training recipient treatment households compared to the comparison group. The investors finance their project through own capital and borrowed capital. Hence, a higher investment would suggest that the access to financial services induces the training recipient households to invest more. Therefore, it is logical that the training is supposed to positively influence the household savings for future investment. The result of the impact of the training on savings accumulation is reported in Table 30.

Table 30: Impact of training on savings

Explanatory variable	**Amount of savings in last 1 year**	**Log of amount of savings in last 1 year**
	Coefficient /se	**Coefficient /se**
Have training (yes=1)	3,304.090***	2.140***
	(353.911)	(0.191)
Years of schooling of head	5.091	-0.007
	(29.565)	(0.016)
Years of schooling of spouse	-19.685	-0.010
	(31.169)	(0.017)
Amount of cultivable agriculture land (Bigah)	741.289***	0.477***
	(145.256)	(0.080)
Ownership of enterprise (yes =1)	2,137.270***	1.313***
	(453.209)	(0.248)
Constant	-29.677	-0.170
	(335.985)	(0.182)
/sigma	-46.826	3.824***
	(562.067)	(0.304)
Source: End line survey data (2019)		
Note: .01 - ***; .05 - **; .1 - *;		

The regression result shows that the average savings is high among the training recipient treatment households compared to the control households who have no training facilities. We find that training recipient treatment households save more by around BDT 3304 which is found statistically significant. The log-lin regression model also shows similar result to the linear model. The effects of the variables like the size of cultivable land and ownership of enterprises are found statistically significant as well. Does the savings accumulation vary among the various treatment groups? The savings differential models are being estimated and the results are reported in Table 31.

Table 31: : Savings differentials by household types

	Model A	Model B	Model C	Model D
	Coefficient /se	Coefficient /se	Coefficient /se	Coefficient /se
UPP- Skill Dev. Training (USD)	3,608.902***	3,317.423***	3,260.936***	2,940.604***
UPP-Self Employment Training (USET)	4,088.656***	4,052.678***	4,011.444***	3,375.400***
UPP-Youth Vocational Training (UYVT)	5,233.706***	4,299.189***	4,188.502***	3,677.235***
UPP-General Dev. Group (UGDG)	3,344.221***	3,064.211***	3,016.013***	2,845.023***
Day labor		546.496**	552.782**	465.094**
Cultivation/nursery		1,098.529***	586.495	599.561
Fishery and Livestock		1,350.536***	1,211.079***	1,065.292***
Vehicle Driving		1,830.606***	1,754.652***	1,827.392***
Services		673.541**	635.606*	597.017*
Business		1,571.328***	1,319.693***	1,317.338***
Household chores		1,127.057***	1,110.380***	1,037.346***
Tailoring		487.199	460.950	460.518
Others		523.742*	478.165*	276.994

Household owns enterprise			1,038.151***	1,341.528***
Cultivable land (decimal)			341.722***	276.463**
District Dummies	No	No	No	Yes
Constant	889.399***	-1,362.434***	-1,486.987***	-422.227

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

The savings differential models show that the control households have very low level of accumulated and each of the treatment households have significantly higher amount of savings balance and the savings balance is the highest among the UYVT households compared to control households. After controlling occupation effects on savings, we find the average savings of various treatment households slightly declines. The decline is due to the explanation of the variation in savings volume by the included variables like number of employees in specific occupations and some household characteristics like ownership of enterprise and landholding.

Table 32: Savings accumulation (Lof of Savings) function of various households

	Model A	**Model B**	**Model C**	**Model D**
	Coefficient /se	**Coefficient /se**	**Coefficient /se**	**Coefficient /se**
UPP- Skill Dev. Training (USD)	2.500***	2.353***	2.322***	2.210***
UPP-Self Employment Training (USET)	2.611***	2.655***	2.636***	2.441***
UPP-Youth Vocational Training (UYVT)	3.204***	2.794***	2.726***	2.419***
UPP-General Dev. Group (UGDG)	2.337***	2.255***	2.231***	2.109***
Log of annual household income	0.508***	0.416***	0.388***	0.352***
Day labor		0.468***	0.478***	0.447***
Cultivation/nursery		0.658***	0.351	0.385
Fishery and Livestock		0.988***	0.924***	0.849***
Vehicle Driving		1.009***	0.988***	1.020***
Services		-0.182	-0.169	-0.071
Business		0.798***	0.707***	0.691***
Household chores		0.444***	0.444***	0.422***
Tailoring		0.326	0.328	0.367
Others		0.034	0.031	-0.064
Household owns enterprise			0.431*	0.662***
Cultivable land (decimal)			0.215***	0.138*
District Dummies	No	No	No	Yes
Constant	-8,604.753***	-8,727.534***	-8,439.804***	-7,212.178***

Source: Survey Data (2019)

Note: .01 - ***; .05 - **; .1 - *; the occupation variables represents number of household members involving with the stated activities.

The savings accumulation rate is higher among the treatment group compared to the control group. The result also shows that one percent extra income induces the savings balances around 0.51 percent, that is, a 10 percent increase in income will increase the savings balance by around 5.1 percent holding other things remaining the same (Model A). However, the results in model B, C, and D shows that for one percent increment in income, the savings balance increases by around 0.42, 0.39 and 0.35 percent respectively.

The coefficients of ownership of enterprise and landholding variables are found statistically significant. We can see that additional one decimal landholding increases the savings accumulation by around 21.5 percent ceteris paribus.

4.2.4 Poverty Incidence – A Measure of Standard of Living

To analyze the poverty situation among the treatment and control group over the project period, we have considered three poverty measures: (i) poverty incidence, the headcount rate, (ii) poverty gap, and (iii) squared poverty gap. The lower poverty line is used as the threshold level to identify whether the household remains as extreme poor or not. The per capita monthly expenditure is used as the welfare indicator of the household.

The baseline result shows that around 67.5 percent people of the treatment group were extreme poor with a poverty gap of 21.1 and squared poverty gap of 29.8 whereas the end line survey shows that the headcount rate is 40.03 percent with poverty gap of 9.9 percent and squared poverty gap of 3.5 percent. The result shows that although the incidence of poverty, poverty gap and squared poverty gap have declined significantly over time. The poverty incidence declined by around 5.5 percentage point in each year among the treatment group.

Box: Methodology of Measuring Poverty

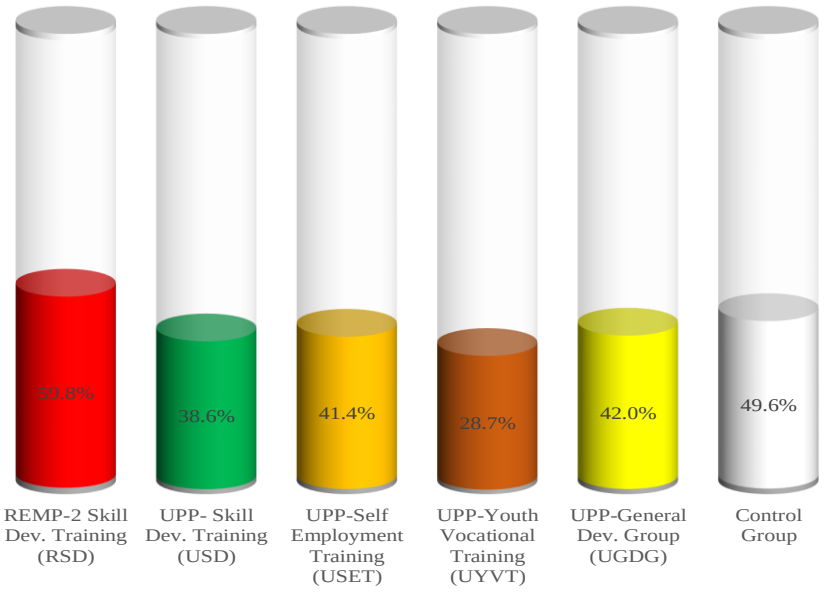
Poverty rates such as "Absolute Poverty" and "Hard Core Poverty" are calculated using the following formula: $P = \frac{N_p}{N}$, where N_P is the number of poor who are below the poverty line and N is the total sample population.

Computation of N_P involves as: $N_P = \sum I\,(y_i < z)$ where, I takes a value of "1" if the income (y_i) of the individual is below the poverty line (z). Otherwise, i.e. if the income is equal or greater than z it takes a value of "0". The total number of poor is obtained by adding over all the I values. For "Absolute Poverty" z stands for the upper poverty line and for "Hard Core" poverty z stands for the value of lower Poverty line.

Poverty Gap

Poverty gap is calculated using the following formula: $P_1 = \frac{1}{N}\sum xI(y_i < z)$, where P_1 stands for Poverty gap and $(z - y_i)$ shows the difference, i,e gap between the poverty line and the income of the individuals who are poor i,e below the poverty line. The gap is considered "zero" for the non-poor. Poverty gap is expressed in percentage which shows the extent to which the poor, on average, are below the poverty line. As in the case of poverty rates, poverty gaps are also calculated using both upper and lower Poverty lines. In calculating the poverty rates and poverty gap, expenditure per person per month is obtained from the household survey data. All the members of any individual household are considered poor if their average monthly per capita expenditure is found below the poverty line.

Figure 21: Poverty incidence among various households



On the other hand, the incidence of poverty of the control group is estimated at around 50 percent with a poverty gap of around 14.9 percent and a squared poverty gap of around 6 percent. Compared to the treatment households, the control group has higher incidence of poverty, poverty gap, and squared poverty gap.

Figure 22: Other poverty measures and summary statistics among treatment and control group

Group	HCR	PG	SPG	Average per capita monthly expense		Average Poverty Gap
				Group average	Among poor	
REMP-2	59.8	17.8	7.4	2396	1513	640
UPP-Ujjibito	40.0	9.9	3.5	3198	1623	530
USD	38.6	10.0	3.7	2396	1513	640
USET	41.4	9.3	3.1	3101	1593	560
UYVT	28.7	6.3	2.1	3284	1669	484
UGDG	42.0	10.7	3.9	3989	1678	475
Control	49.6	14.9	6.0	3123	1606	547

Source: End line survey

Note: The rural poverty line is used to estimate the incidence of poverty, poverty gap and squared poverty gap. The threshold value has been used from the HIES 2016 report and updated by the consumer price index.

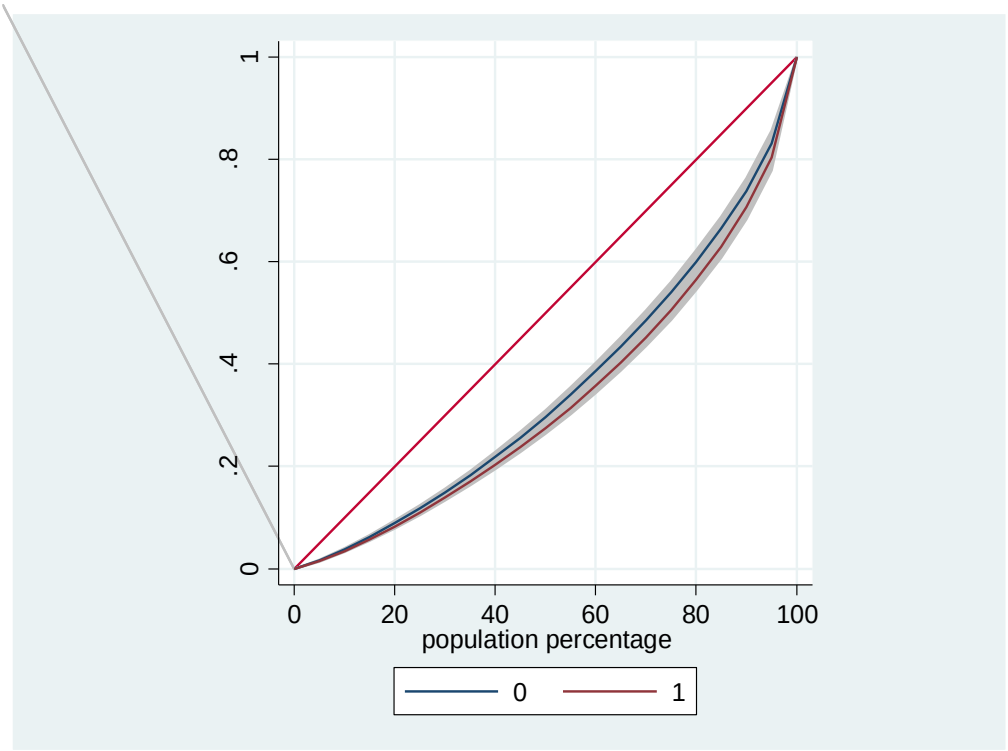
Note: HCR refers headcount rate, PG means poverty gap and SPG means squared poverty gap. USD refers Ujjibito skill development; USET means Ujjibito self-employment training; UYVT refers to Ujjibito youth vocational training; and UGDG is Ujjibito General Development Group.

The result shows that disparity among the poor in both of the treatment group and the control group but the relative severity of poverty is lower among the treatment group compared to the control household. However, incidence of poverty is highest among the groups of households. This is due to low level of expenditure. On the other hand, the lowest incidence of poverty was estimated for the households with vocational training. This is due to higher income, as discussed earlier.

It is very much evident that the training facilities have provided a better consumption opportunity through better employability and investment. Now, the question is “is there any inequality between these two groups? The Lorenz curves have been drawn for these two groups.

The Lorenz curves shows that there is little bit inequality among the treatment households compared to the inequality in consumption among the control group. This is also another evidence of higher income effects of participation in UPP-ujjibito.

Figure 23: Inequality among treatment and control group

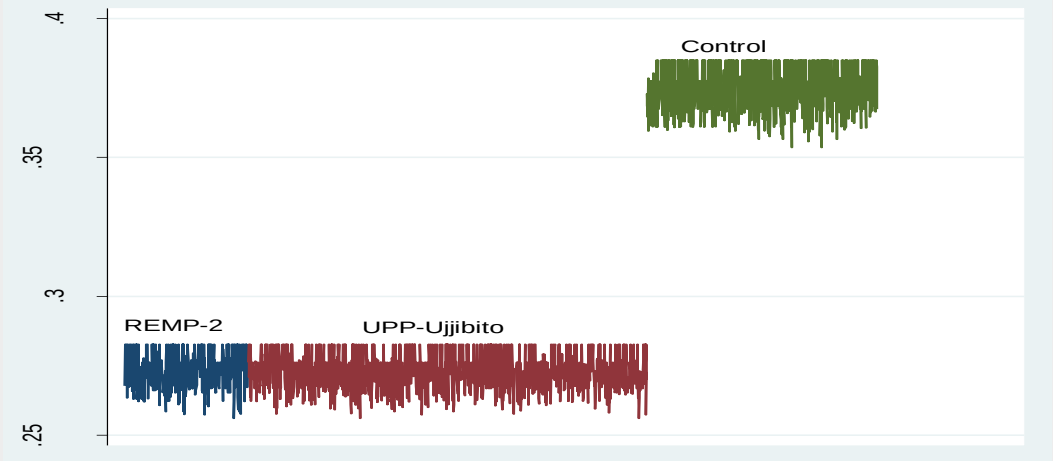


Source: End line survey (2019)

Impact on Poverty, the Standard of Living

Up to now, we have found the auspicious impact of the training as well as the treatment effect on various economic indicators at household level. Still now, the aggregate impact is not explored. To examine the overall impact of the program on the household’s standard of living, we have considered the poverty status of the household as the proxy variable of living standard. We have predicted the probability of being poor or remaining as poor controlling various household level characteristics. The density plot of the predicted probability of being poor is given below:

Figure 24: Spike plot of being poor

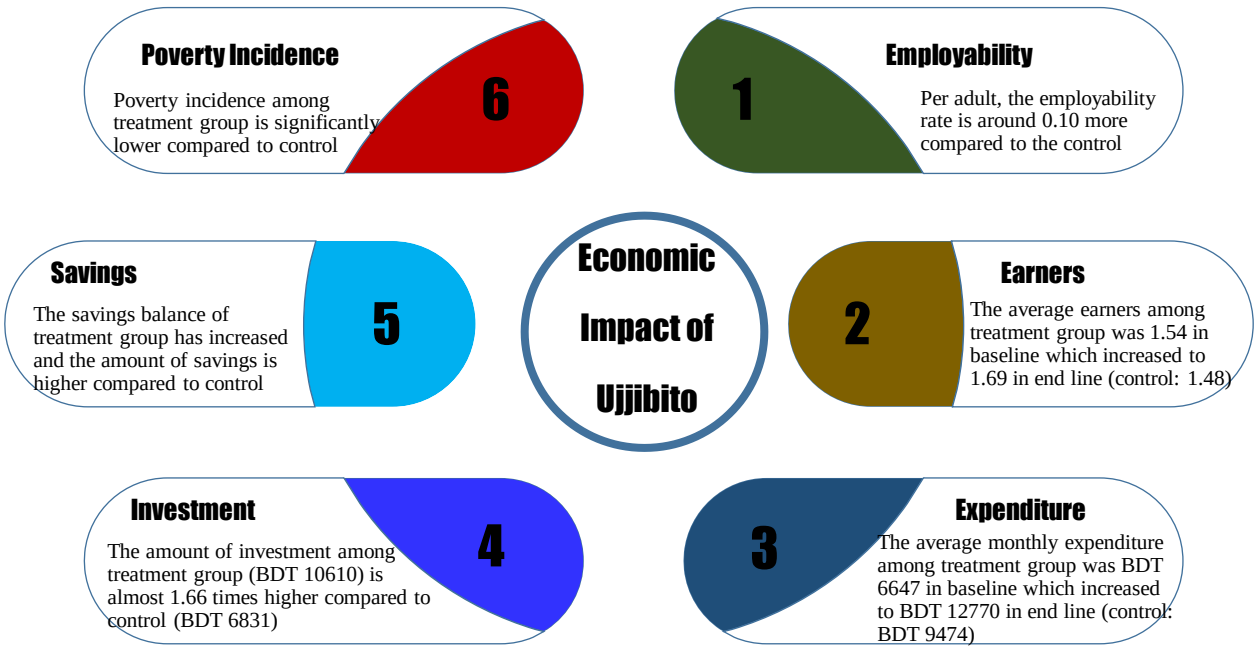


Source: End line survey (2019)

The spike plot shows us that most of the treatment households have lower chance of being poor or remaining poor who have received training facilities compared to the control households. The difference in the spike plot suggests that the treatment group have relatively better chance of having better standard of living compared to the control group.

4.3 Summary and Conclusion

The previous discussion lucidly reveals that the participant groups have progressed well compared to the control group in terms of various economic indicators. The summary results are reported in the following figure.



Source: Authors (2019)

The improvement in various indicators presented by the average statistics gives us an aggregate impact on the households. It is very difficult to decompose the effect due to the multi-nature of intervention and the complex nature of the economic and social behaviour of the households and household members. However, it is quite relevant to conclude that on aggregate basis, the treatment group has progressed at faster rate compared to the control group.

Chapter FIVE: Health and Nutritional Wellbeing

5.1 Introduction

5. 1.1 Nexus between Nutrition and Development

Nutrition is a fundamental input of health and development. As an ultimate prerequisite for human and national development, alleviation of hunger and malnutrition is a demand of the age. Better nutrition leads to less illness and better health through developing stronger immune systems and, hence, contributes to earn more income through enhancing the capacity of the body to perform tasks (Ray, 1998). Nutrition also affects the educational outcome of the children. Healthy people are more productive as well as capable of creating opportunities to gradually break the cycles of both poverty and hunger in a sustainable way. Thus, investment for better nutrition is reflected as a prime entry point to ending poverty and a milestone to achieving better quality of life. Ban Ki-moon, United Nations 8th Secretary General, put forward the following message for the SUN Movement Strategy and Roadmap (2016-2020):

"Nutrition is both a maker and a marker of development. Improved nutrition is the platform for progress in health, education, employment, empowerment of women and the reduction of poverty and inequality, and can lay the foundation for peaceful, secure and stable societies".[28]

Today the world faces a double burden of malnutrition that includes both under-nutrition and overweight, especially in developing countries. All forms of malnutrition's broad spectrum are associated with significant morbidity, mortality, and economic costs, particularly in countries where both under- and over-nutrition co-exist as is the case in developing countries undergoing rapid transition in nutrition and life-style. Undernourishment has multiple effects on health including muscle wastage, retardation of growth, increased illness, vulnerability to infection and the diminution of work capacity. Poor nutrition can impair our daily health and wellbeing and reduce our ability to lead an enjoyable and active life. Poor nutrition, in the short term, can contribute to stress, tiredness and our capacity to work, and over time, it can contribute to the risk of developing some illnesses and other health problems including obese, tooth decay, high blood pressure, high cholesterol, heart disease and stroke, type-2 diabetes, osteoporosis, cancers, depression and eating disorders (SA Health,). Life expectancy is low among the undernourished persons (World Health Organization, n.d.). They also are easily fatigued and exhibit marked psychological changes, manifested in mental apathy, depression, introversion, lower intellectual capacity and lack of motivation (Ray, 1998). Thus, Sen in his 'Freedom as Development' mentions that nutrition deficiency limits human development and is a major source of 'unfreedom' (Sen, 1999).

5.1.2 Nutrition in Sustainable Development Goals (SDGs)

Worldwide about 104 million children are underweight (UNICEF, 2013). Under-nutrition accounts for about one third of all child deaths.[29] Stunting restricts the development of 171 million children under age 5. About 13 million children are born with low birth weight or prematurely due to maternal under-nutrition and other factors. A lack of essential vitamins and minerals in the diet affects immunity and healthy development. More than one third of preschool-age children globally are Vitamin A deficient. Maternal under-nutrition, common in many developing countries, leads to poor fetal development and higher risk of pregnancy complications together, maternal and child under-nutrition account for more than 10 percent of the global burden of disease (UNICEF, 2013).

[28] https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-development-goals/
[29] https://www.who.int/nutrition/challenges/en/

On the other hand, about 1.5 billion people are overweight worldwide, of whom 500 million were obese in 2008; about 43 million children under age 5 were overweight in 2010. Growing rates of maternal overweight leads to higher risks of pregnancy complications, and heavier birth weight and obesity in children. Worldwide, at least 2.6 million people die each year as a result of being overweight or obese (UNICEF, 2013).

Nutrition, thus, was included as an integral part of Sustainable Development Goals (SDGs). Without adequate and sustained investments in good nutrition, the SDGs will not be realized. The ambition to 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture' is captured in SDG 2 (see Box1). However, at least 12 of the 17 Goals contain indicators that are highly relevant to nutrition (Scaling up nutrition, n.d.).

Box 1
SDG Goal 2: No hunger

2.1. By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
2.2. By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons. (United Nations Statistics Division, n.d.)

Malnutrition will represent an often invisible impediment to the successful achievement of the SDGs. It results not just from a lack of sufficient and adequately nutritious and safe food, but from a host of intertwined factors linking health, care, education, water, sanitation and hygiene, access to food and resources, women's empowerment and more.

5.1.3 Nutritional Status in Bangladesh and Associated Policy

Bangladesh has achieved critical successes in ensuring food security and nutrition over the last decades. Rice production has tripled, rendering the country self-sufficiency in terms of the production of this staple. Income poverty has declined by almost 10 percent over the last five years. Rare among countries, Bangladesh met the MDG target of reducing the prevalence of undernourishment to 17% in the mid-2000s with further improvements in 2014/15 to reach 16.4 percent. Child under nutrition also successfully declined from 66 percent in 2000 by one-half to 33 percent in 2014, a staggering decline but still an untenable burden. Child stunting also has showed a similar decline. However, progress in Bangladesh has lagged behind in terms of the number of undernourished people. An estimated 26.3 million people in Bangladesh still go to sleep hungry. According to the 2014 Bangladesh Demographic and Healthy Survey, the proportion of underweight children is 33 percent and the proportion of stunted children is as high as 36 percent. This has important implications for not only the current but also future generations. About 54 percent of women in Bangladesh have inadequate diets, routinely consuming fewer than four food groups out of the requisite nine, indicating inadequate dietary diversity. Some 19 percent of adult women have chronic energy deficiency, while 39 percent of women are overweight, showing a clear signal of the double burden of malnutrition in the adult population. Combined, this represents one half of all women in Bangladesh.

Bangladesh has an increasing malnutrition double burden: a high proportion of underweight children under 5 years and a growing proportion of overweight women. Although levels of anemia dropped, one

third of children aged 6-59 months are anemic, representing an intergenerational threat to public health (UN REACH, 2014).

Rates of malnutrition in Bangladesh are among the uppermost in the world. More than 54% of preschool-age children, equivalent to more than 9.5 million children, are stunted, 56% are underweight and more than 17% are wasted. Although all administrative divisions were affected by child malnutrition there were important differences in the prevalence of the three anthropometric indicators. The prevalence of underweight ranged from 49.8% in Khulna to 64.0% in Sylhet which also showed the highest prevalence of stunting (61.4%) and wasting (20.9%). Despite the high levels, rates of stunting have dropped steadily over the past 10 years (FAO, 2019).

Bangladeshi children also suffer from high rates of micronutrient deficiencies, particularly *Vitamin A,* iron, iodine and zinc deficiency. Bangladesh should be commended for making significant progress in reducing *Vitamin A* deficiency (VAD) among preschool children over the past 15 years; however, consumption of *Vitamin A* rich foods is still low, suggesting that the underlying causes of VAD require further attention and support. Anemia is also highly prevalent among children in Bangladesh and few programs have been initiated to improve their iron status (FAO, 2019).

Malnutrition among women is also extremely predominant especially among the poor in Bangladesh. More than 50 percent of women suffer from chronic energy deficiency and studies suggest that there has been little progress in women's nutritional status over the past 20 years. As witnessed for children there were important differences in the prevalence of women malnutrition among administrative divisions. The prevalence of women with a BMI<18.5 kg/m2 ranged from 47.6% in Khulna to 59.6% in Sylhet. Clinical VAD is common among women of reproductive age and during pregnancy. Sub-clinical VAD and anemia are also highly prevalent among pregnant and lactating women. Programs in Bangladesh also need to begin to incorporate components for adolescents and school-age children who will also benefit from improvements in nutrition (FAO, 2019).

Improving nutrition can have a significant impact on existence as well as physical and cognitive development and productivity. Good nutrition, encompassing adequate quality and quantity of food intake and reduction of illness is also a basic human right and is an indispensable input for economic development. National Nutritional Services (NNS), thus, has given enormous focus on improving the nutritional condition in Bangladesh (See Table 33).

Table 33: National Nutrition Services (NNS)

Domain	**Direct Nutrition Interventions (DNIs)**
Infant and Young Child Feeding (IYCF)	1. Early initiation of breastfeeding within first hour after birth 2. Excluding breastfeeding from birth up to 6 months 3. Age appropriate complementary feeding of children from 6-23 months
Hygiene	4. Hand washing with soap at critical times – before eating/preparing food, before feeding a child and after defecation
Micronutrient supplementation	5. *Vitamin A* supplementation for children 6-59 months once every six months 6. Iron Folic Acid (IFA) supplementation for pregnant and lactating women (PLWs) and adolescent girls 7. Multiple micronutrient powder (MNP) for children 6-23 months 8. ORS with zinc in the management of acute diarrhea
Deworming	9. Deworming for children 24-59 months once every six months
Consumption of nutrient-rich fortified foods	10. Consumption of foods rich in Iron and *Vitamin A* by PLWs, adolescent girls 11. Household consumption of iodized salt, fortified oil with *Vitamin A*

Domain	Direct Nutrition Interventions (DNIs)
Management of acute malnutrition	12. Screening and referral of acute malnutrition in children 0-59 months
	13. In-patient and outpatient management of children 0-59 months with acute malnutrition according national protocol
Maternal Nutrition	14. Adequate food intake and rest during pregnancy and lactation
	15. Micronutrient supplementation (including iron, folic acid and calcium)
	16. Consumption of nutrient- rich foods

5.1.4 Factors Affecting Nutrition

A number of factors, as evidenced from the literature, affect the nutrition level of the children. These factors are socioeconomic status, family characteristics, mothers educational level, limited access to safe drinking water, and poor hygiene, low household wealth index, exposure to open wastewater near the home environment, inadequate purchasing power and access issues, low health literacy and misconceptions regarding proper nutrition and malnutrition, and insufficient variety of crops produced (Demissie 2013; Jesmin et al, 2011; Shibulala, 2013; De Souza et al, 2012; Asgary et al, 2015).

In a study on some tribal communities in Bangladesh, Kabir et al (2018) shows that age, sex, religion, ethnicity, family income, family size, age and education of mother are the important factors for the nutrition of children under 5 years. Khan et al (2014) shows that birth order of the child, child age, breastfeeding, incidence of diarrhea, household size, mother's education, duration of breastfeeding affects the probability of malnutrition of children in Bangladesh. Nahar et al (2010) shows that parental education, economic and nutritional characteristics, child feeding practices, and birth order are important risk factors for severe underweight of the children in Bangladesh. Adnan and Wasiqur (2015) finds that child age, child sex, per capita income, maternal education, birth order, health seeking practices, medical cost knowledge index, child health precaution index affects the malnutrition among the children of urban sumps in Bangladesh. Sunanda and Gulshan (2017) finds that age group, gender, place of residence, parental education and occupation, mother's BMI, birth order, number of living children are the determining factors affecting malnutrition in Bangladesh. Using Bangladesh Demographic and Health Survey (BDHS) 2014 data set, Talukder (2017) shows that parent's education, wealth index, place of residence, and mother's BMI affects malnutrition among under five years children. Rahman and Chowdhury (2007) shows that parent's education, household economic status, media exposure, number of under five years children, place of delivery, child age, birth order, duration of breastfeeding, birth size, mother's BMI and height, age of household head, supplementation of diet with liquids and regional differentials are significantly associated with severe as well as moderate stunting among preschool children in Bangladesh.

In a systematic review focusing on Iran, Mohseni et al (2017) shows that that parents', especially mother' education level plays a highly important role in their own and children's health. The review also found the role of mothers' education level and/or their information about children's nutrition as an effective factor in reducing malnutrition. The role of mothers' awareness and knowledge regarding issues related to their health and nutrition before, during, and after pregnancy was also found as an important factor for affecting nutrition. Yarparvar et al (2006) shows that mothers' awareness and knowledge regarding the fetal health and proper nutrition for child, especially in the first 6 months after birth, can have a vital role in reducing the risk of malnutrition in children in Iran.

The factors affects nutritional status, as mentioned above, can be presented through a causal conceptual framework developed by UNICEF, which includes both the societal causes (quantity and quality of actual resources, such human, economic and organizational resources and the way they are

socially and culturally controlled) and household level causes (insufficient access to food, inadequate maternal and child care practices, and poor water, sanitation and inadequate health services) along with immediate causes (inadequate dietary intake and diseases) and outcome (under-nutrition, death and disability) (see Figure 25: Causal conceptual framework of under-nutrition).

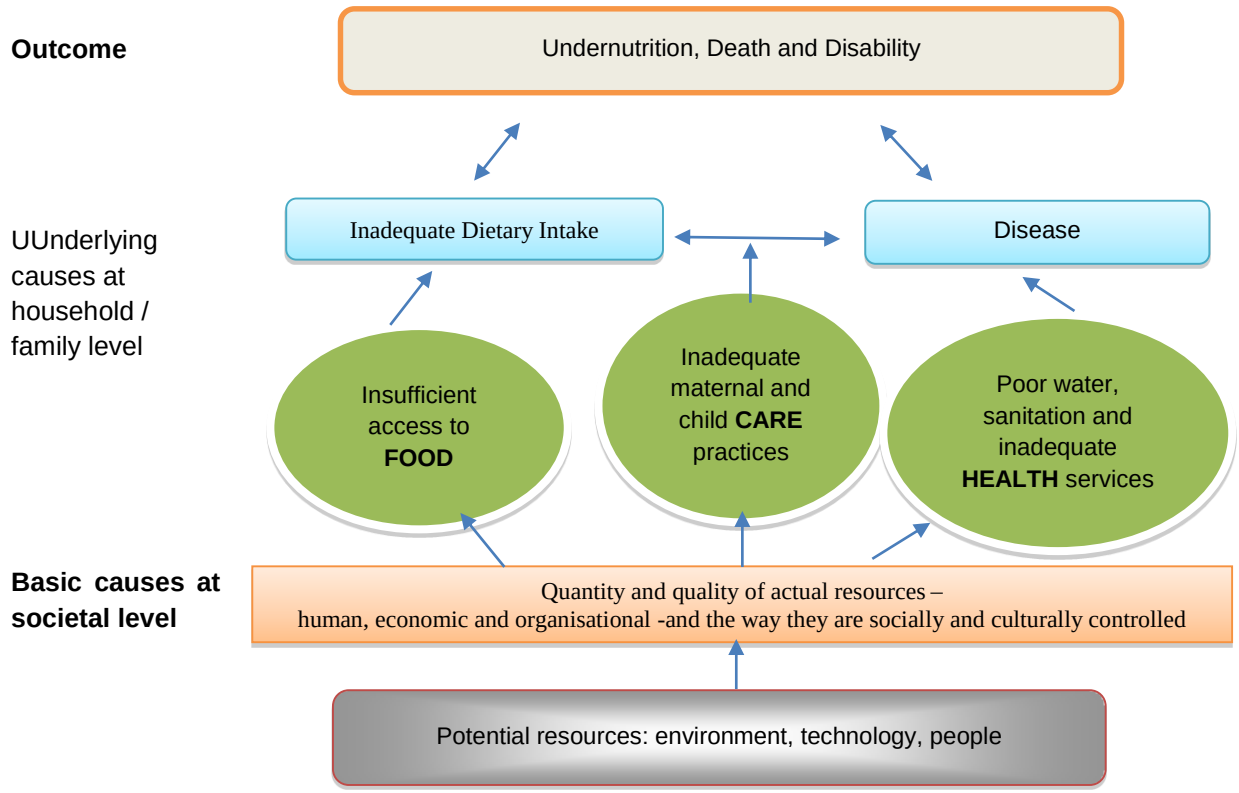


Figure 25: Causal conceptual framework of under-nutrition
Source: Adopted from UNICEF 1990 model

5.1.5 An overview of the Impact of Different Nutrition Interventions in the Low and Middle-income Countries

The nutritional interventions adopted in different low and middle-income countries for addressing the aforementioned factors can be categorized as ***nutrition-specific*** and ***nutrition-sensitive*** interventions.

Nutrition-specific interventions and/or programmes can be defined as the interventions and/or programmes that address the immediate determinants of nutrition (e.g., food and nutrient intake, diet-related practices and behaviors, disease, etc.), whereas *nutrition-sensitive interventions and/or programmes* can be defined as the interventions and/or programmes that address the underlying determinants of nutrition (e.g., food security, access to resources, safe and hygienic environments, adequate health services, etc.) (Fox et al, 2018; SUN Movement, 2018; The World Bank, 2013; Ruel et al, 2013; Shekar et al, 2013). Nutrition-specific interventions as described in the literature (Bhutta et al. 2013, 2008) are: nutrition counseling and education, micronutrient supplementation and fortification, protein and energy supplementation, and lipid-based supplementation. Nutrition-sensitive approaches as described in the literature (Ruel and Alderman, 2013; Bhutta et al., 2008) are: health care; family planning; water, sanitation, and hygiene (WASH); empowerment; income-generation; education; and social protection. Fox et al (2018), in a systematic review, shows that both nutrition-specific and nutrition

sensitive approaches have impact on improving nutritional status of adolescent girls, women of reproductive age (pregnant, non-pregnant, and lactating) and children under 5 years. A review of the impact (on namely dietary diversity and nutrition status of the beneficiaries) of some of the interventions relevant to context of this study is depicted below.

As described above the components of the nutrition-specific are nutrition counseling and education, micronutrient supplementation and fortification, protein and energy supplementation, and lipid-based supplementation. However, Ujjibito project included two components: nutrition counseling and education, and protein and energy supplementation. Thus, we concentrated on only these two components for reviewing the literature.

Nutrition counselling and education: Nutrition education through communication and counselling, as evidenced, serves as a nutrition-specific measure and contributes towards women's increased knowledge level and improved dietary diversity and protein intake through raising awareness and promoting nutrition-related knowledge and behaviours aligned with public health goals (Hien et al., 2009; Liu et al., 2009; Moore et al., 2009). Moreover, this measure positively impacts adolescent girls by reducing odds of overweight, improved nutrition knowledge, dietary intake, physical activity and sedentary behaviour (Sbruzzi et al., 2013). Intensive nutrition education has also been found to be a major catalyst in improving the nutritional status of the moderately malnourished children in Bangladesh (Roy et al., 2005). A study in Bangladesh that assessed the effect of short-term nutrition education on weight gain in the third trimester of pregnancy, birth outcomes, and breastfeeding in Bangladesh found that nutrition education significantly reduced the rate of low birthweight and increased maternal weight gain (Jahan et al., 2014).

Energy and Protein Supplementation: Energy and protein supplementation as a nutrition-specific intervention is most often associated with increased maternal weight of pregnant women with sub-optimal weight (Imdad & Bhutta, 2012). Empirical evidence also suggest that protein supplementation is also associated with reductions in low birth weight and preterm births (Ota et al, 2015). Nevertheless, some studies also report some undesirable outcomes. For instance, overweight women participating in food transfer programs suffered from disproportionately increased weight gain compared with underweight women in Mexico (Leroy et al., 2013). On top of this according to the reports of a Bangladeshi study protein supplementation through food transfers impacted men's intake greatly than that of women, except with less preferred foods (Ahmed et al., 2009).

Nutrition sensitive interventions, as mentioned above, are health care; family planning; water, sanitation, and hygiene (WASH); empowerment; income-generation; education; and social protection. Ujjibito project included majority of these components. Thus, we concentrated on the literature matched with the components included in the Ujjibito project.

Homestead Food Production: Agriculture, more specifically nutrition-sensitive agriculture has a strong potential in helping to meet the global targets for improving nutrition because of its multifaceted features that can influence the underlying determinants of nutrition outcomes (Black et al., 2013), through improving global food availability and access and through enhancing household food security, dietary quality, income, and women's empowerment. Accordingly nutrition-sensitive agricultural interventions such as homestead food production can and has helped to alleviate problems related to micronutrient malnutrition and anaemia in conjunction with improving the dietary diversity and household income among the rural households in countries such as Bangladesh, Philippines and Nepal (Talukder et al., 2010). Moreover, Such homestead food production programmes complimented by a transformative gender approach can also help to empower women by increasing women's income, control over resources, or influence in decision making on a range of issues (Bushamuka et al., 2005; Haselow et al, 2016; Talukder, 2004). A noteworthy observation from related studies is that livestock and dairy projects in Kenya and Bangladesh report increases in women's income or influence in decision making,

whereas in India, men's but not women's income improved as a result of a dairy project (Mullins et al., 1996; Nielsen, 1996; Begum, 1994).

Integrated Health Care: Integrated health care, as a nutrition-sensitive intervention, often combines curative and preventive interventions, and with enhanced admittance to counselling, vaccinations, and screening and treatment of illnesses can improve nutrition outcomes for women across the life course (Dudley & Garner, 2011). In middle-income and low-income countries, medical and health care services often react to critical health needs, very often targeting maternal and child health outcomes (Beaglehole et al., 2008). Unsurprisingly in such settings, deterrents such as distance, time, quality of care, stocking of supplies, and the capacity and nutrition knowledge of healthcare professionals have limited the access of many women to health facility–based care for nutrition (Leonard, 2014). These factors require careful attention when designing integrated health care systems.

WASH: WASH interventions and perceived availability of water can be associated not only with improved menstrual hygiene and reduced maternal mortality for women and adolescent girls but with improved nutrition and health status of the entire community (Campbell et al., 2015; Benova et al., 2014). Empirical evidence suggests that the primary focus of a number of WASH interventions were mothers and their caregiving behaviours for children. Despite this, the intervened population for such programmes were entire households, not the individual household members. Furthermore, in case of the WASH interventions, that incorporated bigger community-based hygiene and sanitation initiatives, had wider reach encompassing a larger number of the community members (Fewtrell et al., 2005).

Family Planning and Birth Spacing: Family planning and birth spacing can affect positively adolescent girls, pregnant women and women with young children by diminishing the incidence of adverse outcomes associated with pregnancy, abortion, birth related complications, anaemia, and differential gendered outcomes linked to educational attainment by delaying child marriages (Christian & Smith, 2018; Alkema et al., 2015). Family planning and birth spacing interventions are usually delivered through community health clinics, home visits by health workers and school-based programmes (Wallace et al., 2012; Oringanj et al., 2016).

Women's Empowerment: Studies show that women's empowerment leading to their greater agency was lined with increased monetary resource distribution to food consumption expenditures and enhanced household food security in case of nutrition outcomes (Talukder et al., 2010; Weinhardt et al., 2017). Moreover, increased dietary diversity was also found to be one of the favourable outcomes of women empowerment but not women's BMI (Malapit & Quisumbing, 2015). The Enhanced Household Food Production (EHFP) program of Hellen Keller International in Bangladesh and Nepal corresponded to falling incidence in maternal anaemia unlike the case in Cambodia (Talukder et al., 2010).

Income-generation Interventions: Income-generation interventions usually lead to increased food-related expenditures, improved household food security, and greater household dietary diversity although the increased rate of such factors was modest (Talukder et al., 2010; Weinhardt et al., 2017). Evidence suggests that income generation activities integrated with other more nutrition-sensitive or nutrition-specific interventions have a greater and more direct income on women's nutritional and health outcomes. For example, in Bangladesh and Cambodia, the aforementioned EHFP program was connected to increased income, food expenditure and intake (Talukder et al., 2010).

The evidence depicted above shows that both nutrition-specific and nutrition sensitive interventions influence the nutritional outcomes of the beneficiaries. We can also expect similar results on nutritional outcomes from the Ujjibito project.

5.1.6 Nutrition Interventions in Ujjibito Project

The UPP-Ujjibito project incorporated both nutrition-specific and nutrition sensitive activities for improving the nutritional status of the extreme poor households. There are four activities under nutritional component: courtyard session and school forums, specialized services for women, children and person with disabilities (PWDs), establishment of homestead gardening, and referral services and linkages. The former two are nutrition-specific and the latter two are nutrition sensitive interventions (See Table 34). These activities may influence the process, output, outcome and impact indicators. A theory of change of these activities is illustrated in the Methodology Chapter.

Table 34: Major activities for improving the nutrition of the beneficiaries

Program activities	Program inputs	Delivery Platform	Target Group	Nature of Intervention
Courtyard session and school forums	• Interactive courtyard sessions with the participants and their family members • Establishing growth monitoring corner • Hanging Growth monitoring chart • Hanging wall poster on balanced diet	• Community • School	• Women • Adolescent Girls • School students	Nutrition-specific
Specialized services for women, children and person with disabilities (PWDs)	• 1000 days intensive health care services for mothers and children	• Community	• Children aged 24 months to 59 months	• Nutrition-specific
	• Growth monitoring 24-59 months children	• Community	• Lactating Mother(s) • Pregnant Mother(s) • Children who are less than 2 years old	• Nutrition-specific
	• Providing special services to PWDs	• Community	• Person with disabilities	• Nutrition-specific
Establishment of homestead gardening	• Distributing vegetable seeds • Disseminating basic information on nutrition and health through Kishori Club	• Household	• Project Beneficiaries	• Nutrition-sensitive
Referral services and linkages	• Organizing health camps • Identifying and sending severe acute malnourished (SAM) children to hospital	• Community	• Project beneficiaries	• Nutrition-sensitive
Conduct courtyard session on agricultural technique(s)	• Circulating information on various agricultural techniques such as seasonal harvesting, profitable product selection, pest control methods, seed banking etc.	• Courtyard	• Coomunities	• Nutrition-sensitive
Door-to-door technical knowledge (Technical service)	Providing of technical and need based information service on: • Appropriate business and profitable IGA selection process	• Household	• Project Beneficiary	• Nutrition-sensitive

Program activities	Program inputs	Delivery Platform	Target Group	Nature of Intervention
	• Modern agricultural technology • Loan management • Methods related to identifying problems related to the IGAs			
Voccational training	Providing vocational training based on the need of the areas	• Community	• Eligible youth of the beneficiraies household	• Nutrition-sensitive

The remaining sections of the chapter are organized as follows. Section 2 explains the Analytical Methods. Section 3 presents the findings (both bivariate and multivariate). Section 4 provides the discussions and conclusions.

5.2. Analytical Methods

As per the theory of change it can be expected that the nutritional component can influence the process, output, outcome and impact indicators (Table 35**). As impact is a long-term phenomenon we restricted this analysis to the process, output, and outcome indictors. More especially, we focused on dietary diversity and nutritional status of the children and women.**

Table 35: Major indicators/variables as per theory of change

Process	• Awareness on health, family planning, hygiene, nutrition, social stigma and other issues related to health and nutrition • Awareness on exclusive breast feeding, full dose of Iron Folic Acid and Calcium supplementation • Awareness for managing acute diarrhea with ORS and Zinc • Awareness on consumption of nutrient-rich food, balanced diet, proper cooking practice • Awareness on water, sanitation and hygiene practice • Vaccination, diarrhea and treatment, deworming and primary health • Identifying and sending severe acute malnourished (SAM) children to hospital • Awareness on complementary feeding
Output	• Dietary diversity • Access to public services • Health seeking practice • Nutritional practice • Healthy practice • Access to treatment of the SAM children
Outcome	• Nutritional status (stunting, wasting, MUAC) • Health status
Impact	• Productivity (i.e., labor market outcome) • Educational outcomes

Experimental design is expected to assess the impact of any program more scientifically. In the absence of pure experimental design, quasi-experimental design (i.e., program-control design for finding 'difference-in-difference') is often used in evaluating the impact. However, such design is absent in the

UPP-Ujjibito project. Although a baseline survey was conducted in the intervention areas the data is not available for most of the variables of our interest. The mid-term survey had a program-control design. However, the survey was conducted just a year ago. Thus, it is not wise to expect much difference in the results between mid-term and end-line survey as change in nutritional outcomes takes long time. Moreover, we restructured the mid-term survey tools and added new variables. We also added more control households compared to mid-term survey. Thus, we concentrated to the cross-section analysis and compared the intervention households with control households. This is to note that interventions households are of two types: UPP and RERMP2. A comparative analysis was also conducted between them. The focus was on bivariate analysis. However, multivariate analyses were conducted to support the bivariate results, especially for dietary diversification and nutritional outcomes, such as stunting, wasting and underweight.

5.3. Findings: Bivariate Analysis

This section sequentially presents the bivariate findings of the process indicators, output indicators and outcome indicators.

5.3.1 Awareness and Utilization of Health and Nutrition Services

Birth spacing is an important indicator for maternal health. Ujiibito projects provided information regarding the importance of birth spacing through the courtyard sessions and 1000 days services. Awareness on family planning and birth spacing can greatly influence the overall nutritional status of women from reproductive age, and women with young children through reducing the number of adverse outcomes associated with pregnancy and abortion. For women, in particular, early marriage and pregnancy is associated with increased risk of birth complications, anemia, hindered linear growth, and loss of educational attainment (Christian and Smith, 2018). Delaying early child marriages and providing access to family planning, particularly for young wives, allow girls to achieve their maximum growth potential (Alkema et al, 2013). However, for women with young children, evidence from studies suggests that greater birth spacing had impact on anthropometric status (BMI, weight), micronutrient status (anemia, as well as serum zinc, copper, magnesium, and folate), and maternal mortality outcomes (Yeakey et al, 2009; Conde-Agudelo et al, 2013).

The respondents were asked the following questions: whether any health problem arise due to short birth spacing (2 years or less), type of health problems arise, knowledge about period needed for birth spacing, and whether there is any health problem for pregnancy at 2 years or less. It is seen from Table 36 that there is considerable difference in the responses of these questions between the program and control households. Difference is also seen between the UPP-Ujjibito and RERMP2 households. This difference is quite expected as RERMP2 is economically more vulnerable. Moreover, Ujjibito services could not reach properly to these households due their scattered characteristics.

Table 36: Awareness about birth spacing

Indicator		Intervention (% of respondents)			Control (% of respondents)
Birth spacing		UPP	RERMP 2	Combined	
Any health problems arise due to shorter birth spacing? (Yes)		71.85	67.37	70.78	60.36
	Abortion	42.75	43.49	42.92	37.07
	Birth of less weight children	61.28	57.03	60.32	61.99
		33.49	35.94	34.04	32.33

Type of health problems arise for 2 years or shorter birth spacing	Birth of children before Schedule time				
	Mother's anemia	69.4	75.26	70.72	69.56
	Health of mother not fit for pregnancy	25.44	26.56	25.69	25.08
	Mother become weak	6.07	4.69	5.76	4.89
	Other	2.2	1.04	1.94	1.89
Knowledge about period needed for birth spacing	< 2 years	3.74	4.91	4.02	4.2
	2 years	0.38	0.35	0.38	0.38
	> 2 years	13.58	11.05	12.98	11.08
	1 year or less	67.23	60.7	65.68	58.83
	Don't know	15.06	22.98	16.95	25.5

The respondents were asked whether they know about different methods of family planning (FP) and the type methods was used during the period of survey. The results show that the knowledge about FP method is considerably higher among the program households compared to the control households (Table 37). The use of male contraceptive method is usually low. However, its use is higher among the program households compared to the control households. The magnitude of these indicators is lower among the RERMP2 households compared to the Ujjibito households. This is also expectedly for the same reasons as explained above.

Table 37: Knowledge about Family Planning method

Indicator		Intervention (% of respondents)			Control ((% of respondents)
Birth spacing		UPP	RERMP 2	Combined	
FP Knowledge	Yes	89.39	84.39	88.2	80.61
	Female sterilization	5.06	6.84	5.48	5.44
	Male sterilization	0.88	2.63	1.3	1.15
Name of the currently using method	IUD	1	0.35	1	1
	Implant	3.79	4.04	3.85	4.49
	Injectable	28.53	19.65	26.41	22.64
	Pill	42.88	29.12	39.6	38.78
	Condom	6.32	2.28	5.36	3.63
	Safe period	5.06	4.74	4.98	4.78
	Withdrawal	1.26	0.7	1.13	0.96
	Not applicable	23.93	40.19	28.01	32.52

The respondents were asked about how many ANC to be received by a woman during pregnancy; whether the respondent had checkup during the last pregnancy; number of times the pregnant women had checkup during your last pregnancy; and whether the respondent took iron folic acid (IFA) during the pregnancy and used PNC. It is seen from Table 38 that the percentage of respondents who reported the requirement of 4+ ANC during pregnancy is substantially higher among the program households compared to the control households. This knowledge is substantially low among RERMP2 households compared to the control households. The use of 4 ANC is also more prevailed among the program households compared to the controlled households. However, the use of IFA and ANC was prevailed more among the controlled households compared to the program households.

Table 38: Knowledge about and utilization of ANC and PNC services

		% of respondents			
		UPP	RERMP 2	Combined	Control
Knowledge on number of ANC to be received by a women during the pregnancy	1	1.58	1.59	1.58	1.02
	2	5.06	12.7	6.33	3.06
	3	34.18	38.1	34.83	34.69
	4+	48.43	33.34	45.91	44.89
	Don't know	10.76	14.29	11.35	16.33
Whether the respondent had check-up during the last pregnancy?	Yes	74.37	66.67	73.09	73.47
	No	25.63	33.33	26.91	26.53
Number of times the pregnant women had check-up during your last pregnancy	0	0.85	0	0.72	0
	1	16.6	30.95	18.77	11.11
	2	20.85	16.67	20.22	19.44
	3	28.09	30.95	28.52	41.67
	4	18.3	16.67	18.05	11.11
	5	15.32	4.76	13.72	16.67
	Don't know	-	-	-	-
Whether the respondent took IFA during the pregnancy?	Yes	66.67	79.43	77.31	75.51
	No	33.33	20.57	22.69	24.49

The respondents were asked who attended during last birth. It is seen from Table 39 that the qualified attendants (MBBS doctor, nurse, midwife and paramedic) were presence for about 38 percent of the cases among the program households, which is significantly higher compared to the controlled households. The presence of qualified attendant is significantly lower among the RERMP2 households compared to Ujjibito households.

Table 39: Presence of qualified birth attendants

Assistance during delivery (Multiple response)	% of respondents			
	UPP	RERMP 2	Combined	Control
Healthcare provider	1.21	0	1	0
Registered doctor	1.21	2.86	1.5	0
Nurse/Midwife/Paramedic	24.24	31.43	25.5	22.22
Trained midwife	36.97	37.14	37	42.22
FWA	0.61	0	0.5	0
FWV	2.42	0	2	2.22
Village Doctor	23.64	11.43	21.5	20
Relatives	1.82	11.43	3.5	2.22
Neighbours	1.21	0	1	0
Others	7.88	5.71	7.5	11.11

The respondents were asked about the breastfeeding and immunization practices, and use of deworming tablet for baby above 2 years. Table 40: Breastfeeding and immunization practices shows that the complete vaccination and use of deworming tablet is substantially higher among the program households compared to the control households. However, there is not much difference in colostrums feeding and exclusive breastfeeding.

Table 40: Breastfeeding and immunization practices

Child care Items		% of respondents			
		UPP	RERMP 2	Combined	Control
Whether the mother had colostrums feeding of her last child?	Yes	96.83	100	97.33	94.25
	No	3.18	0	2.66	5.75
Whether the mother had exclusive breast feeding (6 months) her child?	Yes	74.37	66.67	73.09	73.47
	No	25.63	33.33	26.91	26.53
Whether the mother ensured all vaccination of her baby (above 1 year) immunization programme?	Yes	84.44	76.92	82.76	73.33
	No	15.56	23.08	17.24	26.67
Whether the mother ensured deworming tablet last six month of her baby (above 2 year)	Yes	33.45	24.14	31.86	26.74
	No	66.55	75.86	68.14	73.26

There is no variation in sanitation and hygiene practices among the program and controlled households (Tables not shown).

5.3.2 Household and Individual Dietary Diversity

As mentioned above good nutrition, based on health eating is one essential factor that helps one to stay healthy and be active. Poor eating habits include under- or over-eating, not having enough of the healthy foods, or consuming too many types of food and drink, which are low in fibre or high in fat, salt and/or sugar. These unhealthy eating habits can affect nutrient intake, including energy, protein, carbohydrates, essential fatty acids, vitamins and minerals as well as fibre and fluid. Healthy eating means getting enough of every important nutrient; choosing a variety of foods from every food group; and avoiding excessive fat, sugar, salt and alcohol. A healthy diet can benefit physical, mental and social well-being in powerful ways. While the specifics vary, such a diet tends to emphasize nutritious whole foods, such as fruits, vegetables, whole grains, nuts and fish. It also provides sufficient amounts of calories, without going overboard, and ideally brings enjoyment as well. There may have variations in dietary diversity between household and individual level. Thus, we explored dietary diversity both at household level and individual level.

Household Dietary Diversity Score (HDDS): Household Dietary Diversity Score (HDDS) focuses on the desired outcome of improved food access and improved household food consumption. Household dietary diversity is the number of different food groups consumed at home over a given reference period which is an attractive proxy indicator as it reflects more diversified diet associated with a number of improved outcomes in areas such as birth weight, child anthropometric status, and improved hemoglobin concentrations (Kennedy et al, 2010).[30] A more diversified diet is highly correlated with factors such as caloric and protein adequacy, percentage of protein from animal sources (high quality protein), and household income (160). Even in very poor households, increased food expenditure resulting from additional income is associated with increased quantity and quality of the diet. The HDDS is used as a proxy measure of the socio-economic status of the households.

[30] To calculate the HDDS, we considered whether the households consumed food out of ten food groups namely cereals, root and tubers, vegetables, fruits, meat and poultry, eggs, fish and seafood, pulses/legumes/nuts, milk and milk products, oil/fats, sugar/honey and miscellaneous. Information on household food consumption was collected using the 24-hour recall as a reference period.

Table 41 shows the average household dietary diversity score of the households. Overall, more than 46% households living in the program area consumed more than six food groups. The proportion of UPP Ujjibito households are around 48% which is significantly higher compare to the control households (37.8%). Average household dietary diversity score was 6.44 in the program area. The household dietary diversity among the UPP Ujjibito households (6.5) was higher compare to the household in the control area (6.05).

Comparing the household dietary diversity score in both UPP Ujjibito and RERMP2, households belong to the RERMP2 are consumed less diverse diet compare to the UPP households. Similarly, the proportion of households consuming more than 6 food groups is higher in the program area (45.5%) compare to the control households (37.8%). Similar scenario also found in Bangladesh and other developing countries in both Asia and Africa region that income-generation interventions have been associated with increased food-related expenditures, improved household food security, and greater household dietary diversity (Talukder et al, 2010; Weinhardt et al., 2017; Bauchet et al, 2011; Vir, 2016; Karlan et al, 2017).

Table 41: Households attaining diversified diet by program participation status (Percent)

Category-HDDS	UPP	RERMP-2	Overall	Control
Low: less or equal 3 food groups	7.0%	11.1%	8.0%	9.0%
Medium:4-6 food groups	45.0%	51.1%	46.5%	53.2%
High: More than 6 food groups	47.9%	37.9%	45.5%	37.8%
Average household dietary diversity score	6.50	5.94	6.37	6.05

Table 42 illustrates the proportion of households consuming different individual food groups across the program and control cohort. Starchy staple (93%) and vegetables (87%) are the most popular food item among the members of the household in their daily food menu. Compare to the other food group meat consumption is lowest for both program (16%) and control households (12%). Conversely, more than half of the households in both programme and control areas are consuming fish, which considered as a good source of protein. In addition, consumption of dairy products and eggs are also found low in both program and control areas.

Table 42: Proportion of household consuming different food groups in last 24 hours (Percent)

	UPP	RERMP-2	Overall	Control
Starchy staple	95	95	95	91
Roots and tubers	63	61	62	63
Legume and nuts	46	43	46	43
Dairy products	23	14	21	16
Meat	17	11	16	12
Eggs	33	25	31	27
Fish	58	47	55	52
Vegetables	84	82	83	79
Fruits	45	37	43	38
Oil	72	76	73	76
Sugar	32	26	31	26
Miscellaneous	84	78	82	84

Minimum Dietary Diversity of Women (MDD-W): Using the WHO methodology, dietary quality is measured through the use of a ten–item scale, which is constructed through the 19 food type categories included in FAO's standardized dietary diversity questionnaire. These items are starchy staples (combination of cereals and white roots and tubers); dark green leafy vegetables; other vitamin A rich fruits and vegetables (combination of vitamin A rich vegetables and tubers and vitamin A rich fruits);

other fruits and vegetables (combination of other fruits and other vegetables); organ meat; meat and fish; eggs; legumes; nuts and seeds; and milk and milk products. Women who are consuming fewer than five groups from ten food groups in their diet considered as woman having inadequate diet (FAO and FHI 360, 2016).

Table 42 describes the status of the dietary diversity for the women of reproductive age group in both program and control households where UPP Ujjibito program is operated their intervention among the poor and very poor households. Like household dietary diversity, similar scenario also found among the different program component. Results show that 36% women of reproductive age group are consuming minimum diverse diet in the program area which is significantly higher than proportion for women consuming minimum diverse diet in the control area (28%). Proportion of women consuming minimum diverse diet is significantly higher ($p<0.00$) among the UPP Ujjibito households (38%) compared to the households involved in RERMP2 activities (27%). Average dietary diversity score is also higher among women involved in the UPP Ujjibito (4.17) compared to the control households (3.72).

Table 43: Proportion of women with attaining minimum dietary diversity by program participation status

	UPP	RERMP-2	Overall	Control
Minimum dietary diversity	38%	27%	36%	28%
Average Dietary Diversity Score	4.17	3.67	4.05	3.72

Table 43 describes the proportion of women consuming different food items by the program participation status over the last 24 hours. Similar to the household diet, majority of the women consumed starchy staple in both program and control area. A higher proportion of women consumed organ meat (59) and vitamin A rich fruit (52) in their last 24 hours diet. Overall, consumption of eggs and meat is low among the women of the reproductive age group, however, the proportion is higher among the women involved in UPP-Ujjibito compared to the women in control cohort. Since the food consumption behavior is dependent on the food availability and accessibility, the homestead garden acts as an important factor for the women's dietary diversity in the UPP-Ujjibito households. The finding is alike with the study conducted by Creed-Kanashiro et.al.(2000*)* in the peri-urban areas of Lima where homestead food production increased dietary diversity and reduced the prevalence of Anemia among the adolescents.

Table 44: Proportion of Consuming Different Food Groups by Participation Status

	UPP	RERMP-2	Overall	Control
Starchy staple	95%	92%	94%	93%
Legume	42%	38%	41%	39%
Nuts	7%	5%	7%	4%
Dairy	21%	13%	19%	16%
Organ meat	3%	3%	3%	2%
Eggs	30%	23%	29%	24%
Fleshy food (Meat)	63%	50%	60%	55%
Dark green leafy vegetables	49%	49%	49%	44%
Vitamin A rich fruits	61%	50%	58%	53%
Other fruits and vegetables	44%	44%	44%	42%

Minimum Dietary Diversity of Women (MDD-W): We followed the WHO recommended infant feeding guidelines for measuring dietary diversity. The dietary diversity was assessed using 24-h recall method based on the mother's/caregiver's recall of foods given to her/his child in the past 24 h prior to the interview date. Total dietary diversity score was calculated by summing consumption of seven types of food groups: grains, roots and tubers; vitamin-A-rich fruits and vegetables; other fruits and vegetables; legumes and nuts; dairy products (milk, yogurt); flesh foods (meat, fish, poultry and liver/organ meats) and eggs. From the dietary diversity score, the minimum dietary diversity indicator was constructed using the WHO recommended cut-off point with a value of "1" if the child had consumed four or more

groups of foods and “0” if less. Accordingly, minimum dietary diversity was defined as the proportion of children who received at least 4 or more varieties of foods from the seven food groups in a 24-h time period [171].

Table 45 illustrates that the proportion of children from 6 to 24 months of age in program areas (56%) are consuming minimum diverse diet compared to the control area (44%). However, the proportion is higher among the children living in the RERMP2 households compare to the UPP Ujjibito households. Interestingly, egg consumption is highest among the children from each group apart from the consumption of starchy staple (Table 46).

Table 45: Proportion of Children with attaining minimum dietary diversity by Program Participation Status

	UPP	RERMP-2	Overall	Control
Minimum dietary diversity	54.68%	65.79%	56.43%	44.44%
Average Dietary Diversity Score	3.81	4.26	3.88	3.48

Table 46: Proportion of Children consuming different food groups by participation status

	UPP	RERMP-2	Overall	Control
Starchy staple	85%	87%	85%	84%
Legume and nuts	38%	42%	39%	33%
Dairy	40%	37%	40%	30%
Organ meat	24%	26%	24%	17%
Eggs	52%	63%	54%	44%
Fleshy food (Meat)	6%	4%	6%	3%
Dark green leafy vegetables	6%	4%	5%	3%
Vitamin A rich fruits	6%	4%	6%	3%
Other fruits and vegetables	42%	55%	44%	46%

5.3.3: Nutritional status of children (0-59 months)

Nutrition deficiency during infancy greatly increases the risk of mortality and morbidity. Moreover, under-nutrition leads to reduced growth, low learning capacity, poor motor and cognitive development, poor work performance with poor economic outcomes in later life. The nutritional status of a children mostly depends on the result of feeding and food consumption behaviour and practices in the household, pattern of illness, and overall child care practices, as outlined in the UNICEF framework.

Child under-nutrition is measured by comparing the child growth outcomes of a group of children to a reference group of children growing up under ideal conditions. Measures of height/length and weight can reflect the cumulative effects of growth retardation and, thereby, provide estimates of levels of chronic under nutrition. The first measure is commonly called “stunting” or low height/length-for-age. Another comparison is between a child’s weight-for-height/length, irrespective of the child’s age. This measure of thinness estimates the levels of acute under nutrition in the population and is referred to as “wasting” or low weight-for-height/length. A final measure of under nutrition assesses how underweight children are by comparing the weight of children relative to their age. Measures of low weight-for-age is a composite measure of under nutrition that does not distinguish between children who are stunted or wasted, and may include children who are only mildly under nourished on both of these indicators.

The nutritional status of children 0-5 years by using World Health Organization (WHOs) child growth standards through 3 standards indices of physical growth (Z cores) such as height for age (stunting growth), weight for height (wasting) and weight for age (underweight) has been estimated.

The result shows that the nutritional status of children has improved through implementation of the programmes under the Ujjibito project. Overall, it is observed that nutritional status of girl children (0-59 months) in terms of physical growth has improved after intervention of the Ujjibito project (Table 47).

Overall, around 36% of the girl children from six to fifty-nine months of age were stunted in the program area. The prevalence of stunting is slightly lower among the children in the control households (34%). There is a large parity among the male and female children in both program and control areas. However, the proportion of children wasted and underweight is lower in program areas compared to the children belongs to the households in the control group. Though the proportion of boy children who are underweight are almost same in both program and control households, the proportion is significantly lower among the girls' child in treatment areas compare to the control cohort.

Table 47: Nutritional status of children 0-59 months

Prevalence of child under-nutrition	% of participants			
	UPP (n=257)	RERMP-2 (n=40)	Overall (n=297)	Control (n=71)
% of children stunted	32.18	35.09	32.66	33.65
% of children wasted	22.49	14.04	21.1	25.96
% of children underweighted	30.1	29.82	34.62	34.62
% of children severely stunted	11.76	8.77	11.27	15.38
% of children severely wasted	11.76	7.02	10.98	12.5
% of children severely underweighted	7.96	7.02	7.8	14.42

3.3.4 MUAC of Children (6-59 months)

The nutritional status of children with age from 6-59 month has been measured by using standard methods of MUAC which is defined as mid-point circumferences of the trisects muscles of the upper arms and the calculated MUAC value have been classified into three categories to measure the nutritional status of individual as normal, moderately under nourished and severely under nourished as shown in table below.

MUAC analysis shows that percentage children with MUAC greater than 12.5 cm is higher among the program households 90.46 compared to the control households (87.96). Comparing the undernourishment across the sex of the children it has been observed that boys in the program areas are more susceptible to under-nutrition than girls compared to the children in control households (Table 48).

Table 48: MUAC of children 6-59 months

MUAC		% of participants					
		Program			Control		
		Boy	Girl	Total	Boy	Girl	Total
MUAC	Percent below – <12.5 cm (Malnourished)	9.54	12.37	10.89	9.34	15.47	12.04
	<11.5 cm-(Severe Malnourished)	4.61	3.64	4.15	6.54	10.71	8.38
	11.5cm-12.5cm (Moderate Malnourished)	4.93	8.73	6.74	2.8	4.76	3.66
	≥12.5 cm (normal)	90.46	87.64	89.12	90.65	84.52	87.96
	Mean (cm)	-	-	-	-	-	-

5.4. Findings: Multivariate analysis

The achievement of sustainable graduation of ultra-poor people is built on three key interlinked results. The first result is to ensure that ultra-poor women and their families have appropriate means of livelihood so that they can maintain a decent standard of living. The second one is to achieve significant improvement of health and physical well-being of ultra-poor members and their family members. The third result focuses on improvement of level of empowerment through increasing active participation of ultra-poor members and their families. The UPP-Ujjibito programme implemented a broad set of development interventions for each of the three main results. The main objective of this section is to evaluate the impact of the nutritional related intervention on a set of outcome variables.

In the first stage, we look at the impact of program participation on production of homestead vegetables and output from livestock and poultry rearing practices. As the program participants have received information and input from the partner organizations for production of vegetables and livestock rearing to meet the basic nutritional need of the households it can be expected that the participating households are more likely to get involved in such production practices compared to non-participating or control households. In the second stage, we explore the impact of the program on dietary diversity of children and women of the households. As an increase in homestead production of vegetables and dairy and poultry products is likely to increase the dietary diversity of the households, the program is more likely to have an impact on the dietary diversity through this process. In the third stage, we investigate the impact of the program on nutritional status of the children. As improved dietary diversity is likely to reduce under-nutrition and stunting in children the participating households are likely to have better nutritional measures compared to control households.

To evaluate the impact of the program, we classify the sample households into three major groups: RERMP, UPP-Ujjibito and control group. One of the key components for achieving the goal of decent standard of living is to ensure financial inclusion of ultra-poor households through MFIs, where the financial services are specially tailored to cover the need of the most marginalized groups of the society. MFI services for the targeted ultra-poor households include flexible saving scheme, flexible loan scheme and risk fund for crisis management. One of the important features of the sample households is that most of them are members of microfinance organizations. Therefore, in terms of access to finances the program and control households are similar. What distinguishes the program households from the control households is the participation in training programs on agriculture and availability of seeds and other inputs for homestead production. However, as the RERMP households are also different from UPP-Ujjibito households in terms of their socio-economic status and selection process the impact of interventions are likely to have differential effects on these two program groups. One of the key issues for measuring the impact of the different interventions on standard of living is that although each of these components is independent from one another, in terms of program perspective they are complementary to each other. For example, if an ultra-poor individual become a member of a MFI as a targeted beneficiary of the project she will also participates in one of the training programs mentioned above, as a result she will be more capable of utilizing the benefits of access to financial services offered by MFIs. Therefore, the empirical strategy should take into consideration of the both individual and joint effect of the interventions.

5.4.1 Estimation Strategy

We start with a simple econometric framework where we compare between treatment and control group in the endline survey:

$$Y_{ij} = \delta_0 + \delta_1 T + \delta_2 \boldsymbol{H_{ij}} + \delta_3 \boldsymbol{X_j} + v_{ij}, \quad (1)$$

where Y_{ij} is the outcome of interest for a household *i, T* is an indicator for program participation–whether a household participated in a specific program or not. Thus, we construct a treatment dummy variable that took the value of '1' if the household fall in the treatment group and '0' if the household is in the control group.H_{ij} is a vector of the household characteristics namely socio-economic status, characteristics of household head and other control variables. The vector X_j contains location-fixed effects and v denotes a stochastic error term.

To estimate the impact of the program on homestead food production, we start with measuring the impact of the program participation (RERMP or UPP-Ujjibito) on the value of output of livestock and poultry products: milk and egg and the value of output of homestead vegetable production.

$$YD_i = \alpha_0 + \beta_1 RERMP_i + \beta_2 UPP\_Ujjibito_i + \boldsymbol{\beta_3 H_i} + \boldsymbol{\beta_3 X_j} + v_i, \qquad (2)$$

where YD_i represents a dummy variable that takes the value 1 if the household *i* was involved in homestead food production, 0 otherwise. We categorized homestead food production into two major groups: value of output from milk and egg or value of output from homestead vegetable production). In the second stage, we use log of output from one of these production activities as a dependent variable, .

$$Y_i = \alpha_0 + \beta_1 RERMP_i + \beta_2 UPP\_Ujjibito_i + \boldsymbol{\beta_3 H_i} + \boldsymbol{\beta_3 X_j} + v_i, \qquad (3)$$

where Y_i represents log value of output of milk and egg or homestead vegetables. Both the parametersare expected to be positively signed indicating that participating households have a higher value of output compared to control households.

5.4.2 Results

Impact on Homestead Food Production:

Table 49 shows OLS regression results of the impact of program participation on production of dairy products (milk and egg). Columns (1) and (3) show the regression results without upazila dummies and columns (2) and (4) show the results with upazila dummies. Columns (1) and (2) show that UPP-Ujjibito households are more likely to be involved in production of milk and egg compared to control households. Columns (3) and (4) indicate that UPP-Ujjibito households produced more milk and egg compared to control households. However, there is no statistically significant difference between the RERMP and control households in terms of diary production practices. Another important finding is that households whose heads are involved in agriculture sector as self-employed are more likely to be involved in this production practices and produce a higher level of output.

Table 49: Impact of UPP-Ujjibito on Livestock Income (Market Value of Milk Egg)

	Dummy (if Milk & Egg>=0)		Log of value of output (Milk Egg)	
	(1)	(2)	(3)	(4)
RERMP2	0.017	0.029	0.156	0.225
UPP_Ujjibito	0.094***	0.077***	0.844***	0.727***
Female Headed Hous~d	-0.035	-0.002	-0.225	0.015
Age of HHH	0.014***	0.010***	0.116***	0.090***
Age of HHH # Age o~H	-0.000***	-0.000**	-0.001***	-0.001**
HH Size	-0.003	0.003	0.001	0.032
HH Size # HH Size	0.001	0	0.008	0.002
2.I-IV	0.03	0.031	0.244	0.268

3.V-IX	0.014	0.018	0.085	0.121
4.SSC+	-0.016	-0.012	-0.094	-0.072
S.E. Agriculture	0.144***	0.119***	1.325***	1.133***
S.E. Industry	0.01	0.001	0.034	-0.039
S.E. Transport	-0.028	-0.032	-0.196	-0.248
S.E. Business	-0.02	-0.012	-0.132	-0.066
S.E. Service	0.028	-0.015	0.229	-0.133
Salar. Employee/Pr~.	0.011	0	0.065	-0.002
Other Workers	-0.007	-0.011	-0.071	-0.122
Not employed	0.007	-0.002	0.01	-0.053
Social Security	0.116	0.085	0.853	0.588
Constant	-0.205**	-0.260***	-1.918***	-2.350***
R-squared	0.04	0.12	0.05	0.11
N	3376	3376	3376	3376

Table 50 presents OLS regression results of the impact of program on production of vegetables. As in the case of milk an egg production, the probability of producing vegetables in homestead garden is higher for UPP-Ujjibito households compared to control households. In contrast to earlier results, RERMP households are also more likely to produced vegetables in the homestead garden compared to control households.

Table 50: Impact of UPP-Ujjibito on HFP Vegetable Inc. (Value of Prod.)

	Dummy if HFP_Veg>0		Log of value of output HFP. Veg	
	(1)	(2)	(3)	(4)
RERMP2	0.112***	0.093***	0.652***	0.538***
UPP_Ujjibito	0.115***	0.106***	0.794***	0.719***
Female Headed Hous~d	-0.018	-0.01	-0.141	-0.087
Age of HHH	0.010**	0.008**	0.066**	0.061**
Age of HHH # Age o~H	-0.000**	-0.000**	-0.001**	-0.001**
HH Size	0.037*	0.029	0.266*	0.211
HH Size # HH Size	-0.002	-0.001	-0.016	-0.011
2.I-IV	-0.034	-0.013	-0.244*	-0.112
3.V-IX	0.038*	0.026	0.241*	0.157
4.SSC+	-0.079*	-0.079**	-0.465*	-0.451*
S.E. Agriculture	0.088***	0.04	0.673***	0.360**
S.E. Industry	-0.04	-0.048	-0.243	-0.27
S.E. Transport	-0.017	-0.034	-0.148	-0.268*
S.E. Business	-0.027	-0.043	-0.169	-0.281
S.E. Service	-0.046	-0.054	-0.343	-0.37
Salar. Employee/Pr~.	0.028	0.013	0.247	0.14
Other Workers	0.001	-0.009	-0.024	-0.085
Not employed	0.001	-0.015	0.018	-0.118
Social Security	0.044	-0.035	0.316	-0.233
Constant	-0.122	-0.324***	-1.028	-2.336***
R-squared	0.03	0.12	0.03	0.13
N	3376	3376	3376	3376

Impact on Dietary Diversity:

In Table 49 and Table 50 we observed that the program,in particular UPP-Ujjibito component, has a positive impact on homestead food production. Therefore, the program has direct impact on availability of nutritious food at the household level. One immediate consequence of increase in availability of

diversified food is that participating households are more likely to consume diversified food groups. Table 51 shows that the impact of the program on dietary diversity of children. It is observed that coefficients of both RERMP and UPP_Ujjibito variables both appear with a positive sign indicating that dietary diversity of Children among program participating households are higher than control households. However, only the coefficient related to UPP_Ujjibito households are statistically significant.

Table 51: Impact of UPP-Ujjibito on HFP Dietary Diversity of Children

	Dep Var: Children Dietary Diversity Score		
	(1)	(2)	(3)
RERMP2	0.084		0.069
UPP_Ujjibito	0.179***		0.186***
Female Headed Hous~d	0.002	-0.004	0.005
Age of HHH	-0.078***	-0.077***	-0.080***
Age of HHH # Age o~H	0.001***	0.001***	0.001***
HH Size	-0.036	-0.03	-0.053
HH Size # HH Size	0.025**	0.025**	0.026**
1.No Schooling	0	0	0
2.I-IV	-0.049	-0.033	-0.053
3.V-IX	0.099	0.112*	0.07
4.SSC+	-0.005	0.025	-0.007
S.E. Agriculture	-0.132	-0.121	-0.189**
S.E. Industry	-0.139	-0.128	-0.149
S.E. Transport	-0.006	0.003	-0.023
S.E. Business	-0.182**	-0.179**	-0.226**
S.E. Service	-0.307**	-0.288**	-0.263**
Salar. Employee/Pr~.	-0.246*	-0.251*	-0.294**
Other Workers	-0.11	-0.102	-0.121
Not employed	-0.037	-0.044	-0.058
Social Security	-0.074	-0.081	-0.191
Income from Milk and Egg		0.001	-0.002
Income from Veg. Prod		0.012	0
Upazila Dummies			
Constant	1.968***	1.998***	2.106***
R-squared	0.06	0.06	0.07

Table 51 shows the impact the program on dietary diversity of Women. The results are similar to that observed for dietary diversity of children. The coefficient relating to UPP-Ujjibito variable appear with positive sign and statistically significant at 1 level in column (1) without Upazila dummies and 10 level with Upazila dummies. On the other hand, the coefficient of RERMP variable is positive but statistically insignificant.

Table 52: Impact of UPP-Ujjibito on HFP Dietary Diversity of Women

	Dep Var: Women Dietary Diversity Score		
	(1)	(2)	(3)
RERMP2	0.026		0.05
UPP_Ujjibito	0.302***		0.236***
Female Headed Hous~d	-0.384***	-0.405***	-0.249**
Age of HHH	0.030*	0.025	0.022
Age of HHH # Age o~H	-0.000**	-0.000*	0
HH Size	0.077	0.082	0.129
HH Size # HH Size	0.001	0.001	0
1.No Schooling	0	0	0

2.I-IV	0.041	0.058	0.170**
3.V-IX	0.196***	0.215***	0.303***
4.SSC+	0.266	0.323*	0.354**
S.E. Agriculture	0.122	0.055	0.032
S.E. Industry	0.228	0.266*	0.164
S.E. Transport	-0.053	-0.022	-0.078
S.E. Business	0.058	0.075	0.035
S.E. Service	0.165	0.185	0.032
Salar. Employee/Pr~.	0.064	0.06	0.104
Other Workers	0.162	0.181*	0.084
Not employed	-0.381***	-0.375***	-0.348***
Social Security	-0.221	-0.294	-0.417
Income from Milk and Egg		0.061***	0.054***
Income from Veg. Prod		0.030***	0.015
Upazila Dummies			
Constant	2.799***	2.927***	2.521***
R-squared	0.05	0.06	0.13

In this section we observed that UPP-Ujjibito program has a positive impact on production of homestead food such as milk and egg and homestead vegetables. The immediate effect of increase in availability of nutritious food is reflected in dietary diversity of children and women of the UPP-Ujjibito households.

Impact on Nutritional status of Children:

In this section we explore the impact of UPP-Ujjibito program on nutritional status of the children below two years of age. In the previous section we observed that the UPP-Ujjibito program has an impact on production of homestead food and dietary diversity of women and children. Here we investigated whether the intervention also has a positive impact on nutritional status of the children who were below two years of age at the time of the survey. In particular, we investigated whether the proportion of severely stunted or severely underweight children is lower among the program households compared to control households. Table 53 and Table 54 show the regression results of the impact of the program on nutritional status of the children where the dependent variable in the former (later) takes value 1 if the children is severely stunted (severely underweight) or zero otherwise. In column (1), in addition to the program dummies RERMP2 and UPP_Ujjibito we also include a dummy for households receiving more than one PNC services under the program. In Table 53, our key variable of interest UPP_Ujjibito appears with a negative sign and statistically significant at 10% level implying that the probability of being severely stunted is lower for the children who belong to UPP_Ujjibito households compared to control households. The regression coefficient for RERMP2 households is not statistically significant though appears with a negative sign in each column.

Table 53: OLS Regression Results on Severely Stunted Status

	(1)	(2)	(3)
RERMP2	-0.062	-0.065	-0.063
UPP_Ujjibito	-0.073*	-0.075*	-0.075*
Received UPP PNC service	-0.014		
Female Headed Hous~d	-0.094	-0.103	-0.094
MHHHAge	-0.002	-0.002	-0.002
MHHHAge # MHHHAge	0	0	0
Total No. of HH Me~r	-0.007	-0.009	-0.007
Total No. of HH Me~	0	0	0
2.I-IV	0.027	0.027	0.027
3.V-IX	-0.055	-0.054	-0.055
4.SSC+	0.037	0.044	0.037

Day Labour	0	0	0
S.E. Agriculture	0.071	0.07	0.07
S.E. Industry	-0.02	-0.019	-0.018
S.E. Transport	-0.017	-0.017	-0.017
S.E. Business	-0.047	-0.05	-0.049
S.E. Service	-0.145**	-0.135**	-0.143**
Salar. Employee/Pr~.	-0.064	-0.075	-0.064
Other Workers	0.210**	0.207**	0.209**
Not employed	0.157	0.156	0.158
Social Security	-0.044	-0.05	-0.045
Born at Home		0.037	
Constant	0.331	0.323	0.334
Upazila Dummies	Yes	Yes	Yes
R-squared	0.02	0.02	0.02
N	450	450	450

In case of severely stunted status, in Table 54 we observed that the main program dummies appear with a negative sign in each column but remain statistically insignificant.

Table 54: OLS Regression Results on Severely Stunted Status

	(1)	(2)	(3)
RERMP2	-0.045	-0.049	-0.048
UPP_Ujjibito	-0.049	-0.056	-0.056
Received UPP PNC service	-0.042		
Female Headed Hous~d	0	-0.008	-0.001
MHHHAge	-0.013	-0.013	-0.014
MHHHAge # MHHHAge	0	0	0
Total No. of HH Me~r	0.035	0.032	0.033
Total No. of HH Me~	-0.003	-0.003	-0.003
2.I-IV	-0.003	-0.002	-0.002
3.V-IX	0.008	0.01	0.009
4.SSC+	0.128	0.133	0.128
Day Labour	0	0	0
S.E. Agriculture	-0.012	-0.014	-0.014
S.E. Industry	-0.054	-0.05	-0.048
S.E. Transport	0.039	0.038	0.038
S.E. Business	-0.046	-0.051	-0.05
S.E. Service	0.17	0.182	0.175
Salar. Employee/Pr~.	-0.088	-0.098	-0.089
Other Workers	0.034	0.032	0.034
Not employed	-0.013	-0.012	-0.011
Social Security	0.052	0.046	0.05
Home_Delivery		0.028	
Constant	0.342	0.344	0.352
Upazila Dummies			
R-squared	0.01	0.01	0.01
N	450	450	450

5.5. Discussions and Conclusions

The causality between nutrition and development is well documented. Under-nutrition is a cause as well as a consequence of poverty in the low-income countries including Bangladesh. Nutrition was thus included as a fundamental component of SDGs. Goal 2 (No Hunger) is dedicated to nutrition; and other

12 goals (out of 17) also contain some components of nutrition. Thus, it is not plausible to achieve SGDs otherwise achieving Goal 2. Both nutrition specific intervention and nutrition sensitive intervention have been adopted in the low and middle income countries for addressing the immediate causes of under-nutrition and underlying causes of nutrition respectively. As evidenced from the literature these interventions have positive impact on various nutritional outcomes including stunting, wasting and BMI. National Nutritional Services in Bangladesh also include the components of both nutrition specific intervention and nutrition sensitive intervention. Ujjibito project of PKSF included a combination of both nutrition specific and nutrition sensitive interventions. Using both bivariate and multivariate tools this chapter basically explores the impact of Ujjibito project on some output and nutritional outcome indicators of the beneficiaries as derived from the theory of change. Absence of program-control design and even lack of suitable baseline data in the program areas restricted us to conduct cross sectional analysis. This actually pushed us to make the comparison between the program and control households selected in the mid-term survey. Appropriate selection of control households is a major factor for finding the true impact from a cross sectional analysis. As majority of the control households interviewed were included from mid-term survey, we did not have any control over for checking the quality of the controlled households.

Despite these shortcomings both bivariate and multivariate results show some sign of improvement of health and nutritional wellbeing of the participating households through improving dietary diversity, and reducing stunting, wasting, under-weight and BMI. However, the degree of improvement is not high, especially for outcome indicators. This is quite expected as five-year period, which is duration of the Ujjibito project, is not enough time to materialize impact of a nutrition intervention, especially on nutritional outcomes, such as reducing stunting, wasting, under-weight and BMI. However, this is adequate time for changing the process and output indicators. Thus, the improvement in some process indicators (e.g., birth-spacing) and some output (e.g., dietary diversity) indicators are quite robust.

The impact of a nutrition-specific intervention, which includes nutrition counseling and education, and limited protein and energy supplementation, depends not only the change in knowledge, but also in attitude and practice. This calls for strong monitoring and supervision throughout the project implementation period. This also calls for revisiting the components included under the nutrition-specific intervention. It was observed during the field visits that households had consumed many costly food items, which had low nutritional value. This seems that households do not have information about the low-cost nutritious food bundle. Ujjibito projects also included the nutrition sensitive intervention (e.g., vegetable, IGA, vocational training, skill-development training) for addressing the underlying determinants of under-nutrition (e.g., food security, access to resources, safe and hygienic environments, adequate health services, etc). This needs to revisit these components whether they are actually capable of overcoming the underlying causes of under-nutrition. For example, health shocks (or out-of-pocket payments for health care) are evidenced as the single most import factor for pushing down many households under poverty and/or deepening the poverty. However, Ujjibito project was only restricted to motivate the households for using public health facilities, especially for severe acute malnourished (SAM) children without taking care the supply side constraints of the public health facilities in Bangladesh.

The findings motivate us to put forward following suggestions for designing any future nutritional project by PKSF or anyone else in Bangladesh.

- **Giving more attention to designing the nutrition intervention appropriately:** Inclusion of the appropriate components for nutrition-specific and nutrition sensitive interventions for meeting the actual need of the target households; and providing information for consumption of low-cost nutritious food basket.
- **Not adopting a nutrition intervention for short period and without any suitable exit plan:** The minimum duration of a nutrition intervention should be 10 years or so with a suitable exit plan. For

the successful exit and its sustainability, the emphasis should be given to attract the attention of government from the designing phase of the intervention.

- **Giving utmost emphasis on a strong monitoring and supervision mechanism:** Developing a strong monitoring and supervision mechanism through a well-designed surveillance system administered through a web-based MIS; and proper analysis as well use of data stored in MIS for resolving the obstacles resulting the low performance.
- **No compromise with the research design for evaluating the impact:** At least a good quasi-experimental (i.e., program and control) design should be incorporated and administered from the beginning of the project.

Chapter SIX: Sustainability of Women Empowerment with Agency-Centric Approach

6.1 Introduction

Rural women in Bangladesh are the major victim of poverty and resource scarcity including inequality, exclusion, and deprivation. This context of poverty can be described as structural in nature originates from exclusion and deprivation in accessing socio-economic, financial and political institutions (Kabeer 2002). This structural cause of women's vulnerabilities has local, national, and international dimension, and their sufferings transmit from one to another generation. Dian and Vonda (2016) describe the contribution of local and national government in Indonesia in addressing these concerns by executing Sustainable Development Goals (SDGs). As background, the authors describe poverty in connection with natural disasters like earthquake, exclusion, and deprivation. Unfortunately, lack of proper policy interventions cause major challenges in addressing these vulnerabilities. Again, uniform policies may not be helpful in overcoming them in the different geographic regions as they have differential social, cultural, economic, and environmental characteristics and they need to incorporate in the policymaking and implementation process so that poor women are not excluded from participation and upward social mobility.

Two dominant development perspectives on women empowerment are (i) modernization and (ii) poverty reduction and community empowerment under the development debate between structure and agency. The first framework was established after the WW2 and continued till 1970s based on state's welfare approach termed as structural approach. In response to the effects of this framework, the second framework was established after 1970s for improving wellbeing of poor people called as agency approach: e.g., microcredit and self-employment. Rural Employment and Road Maintenance Program–2 (RERMP-2) can be described as an example of structural approach while Ultra-Poor Program (UPP)-Ujjibito can be termed as an example of agency centric development interventions executed in November 2013 to April 2019 for the ultra-poor funded by the government and the European Union for sustainable poverty reduction and food security. Total RERMP2 and UPP beneficiaries are 27,400 and 297,600 respectively in 1,724 Unions of the four districts: Barisal, Khulna, Rajshahi and Chattogram division. The two programs seek to promote women empowerment but in the different framework. Here the term, women empowerment, is described as such types of employment and income activities important for promoting their descent life, social dignity, and social bonding, and upward social mobility, social awareness, and participation in local government. RERMP2 provides employment opportunity outside of home After economic gaining from the RERMP2, it was expected to join into the Ujjibito program and this process will be helpful in securing the sustainability of women empowerment. The Ujjibito is very recent program in this effort and it had started with the UPP for about one decade ago. The Ujjibito is unique in the sense of providing microfinance, training, and awareness which has the cumulative effects of UPP and thus it can also be termed as UPP-Ujjibito for securing the sustainability of women empowerment in Bangladesh.

Sustainable development is increasingly being presented as a pathway to all that is good and desirable in society (Holden et al. 2014). The notion was conceptualized in the United Nations Conference on Sustainable Development in Rio de Janeiro in June 2012. One of the conference's main outcomes was the agreement by member states to set up sustainable development goals, which could be useful tools in achieving sustainable development. Some scholars argue that there is a difference between ''sustainable development'' and ''sustainability'', for example: that sustainability refers to the environmental dimension of sustainable development, or that sustainability refers to a process whereas sustainable development refers to the product (end state).

Women empowerment is currently a dominant aspect of SGDs toward socioeconomic wellbeing and access to institutions (Chant 2016; Combaz 2016; Cookson 2016; Cornwall and Rivas 2015; Dhar 2018; Dian and Vonda 2016; Friedman et al. 2016; Holden et al. 2014; Nhamo et al. 2018; Wilson 2015; Valeria 2016). Amartya Sen (2000) is the source of individual aspect of role and responsibility argument in women empowerment. Nhamo et al. (2018) describe this empowerment approach as the policy efforts on SGDS in addressing women's issues and concerns with 21 indicators. Among them, involvement in leadership and decision making, access to finance, land and other property ownership, gender equality, access to job opportunities and equal pay are the most prominent in understand empowerment. UPP-Ujjibito and RERMP2 are such empowerment programs in Bangladesh and their empowerment approach is presented in Figure 26.

Figure 26: Empowerment Framework in Theoretical Perspective

The Figure 26 describes that own income and savings are the foundational prerequisite for agency of the ultra-poor people and this agency will be expedited by inclusion in the social services specifically provided by government in Bangladesh. The success in creating the agency causes the process of knowledge and practice and this is helpful for the output like awareness and participation in social issues and concerns. This output is important in the process of outcome like women empowerment and promotes the impacts like positive social change and sustainable development.

Amartya Sen (2000) emphasizes on women's active role in taking responsibility rather than passive recipients of welfare services. Individual responsibility of men and women in the context of agency is the foundation for doing something and taking risk in this context. He goes further with this argument for promoting women's wellbeing and securing social justice. In this context, state is supposed to be helpful in creating the environment important for women's freedom of having independent income, employment outside of home, health and nutrition security, and education. According to Sen, this empowerment approach depends on entitlements and agency. Empowerment contributes to women's agency that expedites their role in family, community, and society. Income outside of home is helpful in recognizing their voices. Thus, Sen emphasizes on women's independent income, employment outside of family as the foundation for empowerment. Entitlement is described as having the freedom of income, movement, work outside of home, education, and own property. Sen further argues, when women work outside of home and earn money, they gain status as this is helpful for increasing access to food and nutrition, children's education, and upward social mobility. On the other hand, when women work long hours in family, they are not recognized in terms of remuneration and recognition. This aspect of recognition can be described with the Giddens' (1984) structuration perspective; structure as the rules and resources apply in social reproduction. This aspect of structure describes institutionalized features in the context of social system.

Quoting a research result conducted by Murthi et al. in 1981 and compared the findings in 1991, Sen justifies his argument on the linkage between women's agency and social change. The research conducted in 296 districts in India and found that women's employment and income are helpful in enhancing their agency in terms of children's welfare and family decision. Sen argues based on the research findings that women's agency (female literacy) promotes social wellbeing (child survival). Women's agency influenced by education and employment causes the broader scope for multiple issues including fertility rates, family planning. This agency is also helpful in reducing fertility rate and increasing women's activities in social and economic life.

Wilson (2015) argues that the current understanding of women empowerment describes the neoliberal development framework, women and development (WAD); gendered inequalities are happened with the development discourse of microfinance, reproductive rights, and adolescent rights which are essential to secure the process of the global capital accumulation. The author based on the evidence from India challenges this approach of empowerment and applies the Marxist and postcolonial perspectives in development for empowerment.

Nhamo et al. (2018) find out that the policy address women and girls' concerns but the foundation of the SGDs, 2030 Agenda for Sustainable Development, the Paris Agreement, and the Sendai Framework, have limitations in understanding locally contextualized empowerment issues like inheritance and land rights. It is vital to focus on this local issue in the empowerment process; Dhar (2018) sheds lights on some major limitations like lack of data and lack of indicators in describing gender equality in women's economic empowerment of India. Chant (2016) describes the feminization of poverty since two decades ago and this is currently established with three programs: conditional cash transfer programs, microfinance, and investing in girls. The programs have mix results in poverty reduction, female empowerment and gender equality. Again, the programs create new concerns over dismantling gender disparities as they are exposed as the only source of women's empowerment.

Cookson (2016) describes conditional cash transfer (CCT) programs aim at building children's human capital for promoting inclusive development but this creates another concern, inequality. Rosenstrom (2006) describe the major obstacles like population growth and dependent population, unemployment, premature death, violent crime, traffic accidents, and drop-out causing the level of relative deprivation and reduce the opportunity of empowerment and emancipation. Related to these concerns, Kabeer (2002) informs that social problems like unemployment, landlessness, malnutrition, and dropout are some of the challenges in Bangladesh. The lower class and lower caste identity stigmatize in social relations, which forced them to occupy at the lower level jobs with lower payments. The aged and disable people face acute crises as the extended family forced to turn into nuclear family because of their economic vulnerability (Kabeer 2002). The immediate necessities get the ultimate priority without letting anything for the future survivals, which destroy the minimum agency capabilities. Child labor and dropout from the school are the other alternatives to compensate the scarcity (Kabeer 2002).

Overcoming these vulnerabilities are not possible in a single program like Ujjibito. In this context, Dhar (2018) describes women's empowerment is a process and this has begun in the 1990s with women's rights. For this purpose, Friedman et al. (2016) describe the human rights perspective in understanding SDGs as transformative approach to gender equality with specific focus on equal access to education. The authors apply Friedman's model to formulate the target and provide the space in developing methodological framework in the process of policy making and monitoring. Valeria (2016) focuses on the importance of power in dismantling gender disparity and establishing women's rights under the framework of SDGs. In terms of power, Combaz (2016) focuses on women's political economy (WPE) in terms of promoting their upward mobility in executive and legislative government with feminist understanding of transformative action. The author criticizes the multilateral and bilateral donors due to their narrow understanding of model of empowerment in the process of WPE; women get more attention in economic empowerment compare with accessing to the political empowerment.

6.2 Methodology

Based on Sustainable Development Goals (SDGs) NO 5 and 10, women empowerment are described as the pathways in positive change of social, economic, cultural, and political life of girls and women in 1,724 unions[31] of four divisions – Barisal, Khulna, Rajshahi and Chattogram division in Bangladesh. My argument on this SDG empowerment perspective is that when people are successful in using their agency in social system, they can uphold their upward mobility. Two major groups of ultra-poor households – day-labor headed households and window or female-headed are the target of this program. The Ujjibito program follows the same principles of SDGs and focuses on social programs with agency-centric approach as it is executed by NGOs in creating individual agency for taking their own responsibility. This approach is to fight against social problems and for establishing equality and social justice. Amartya Sen's argument on agency and individual wellbeing describes this social program like Rural Employment and Road Maintenance Program – 2 (RERMP-2), and Ultra-Poor Program (UPP) – Ujjibito. The RERMP-2 is two-year long employment generation program for the ultra-poor people like widow, divorced, or female headed households who do not qualify for the Ujjibito program due to their vulnerable economic condition. This program includes BDT 100 for daily wage in addition to BDT 50 mandatory daily saving implemented by Local Government and Engineering Department (LGED). Based on the saving, their economic condition is expected to be better and will be eligible for the Ujjibito program that is described as the access to the microfinance with proper training important for investment and household wellbeing. The UPP-Ujjibito was designed to promote women empowerment with the interventions like courtyard sessions, coordination with local government for access to social safety net programs, back-to-school program for the dropout, communication actions for raising social awareness, and adolescent club.

This study focuses on the three groups of households: RERMP-2 (Group-A), Ujjibito (Group-B), and control (Group-C) households. The control households are such a group of households who did not get any supports from RERMP2, UPP-Ujjibito or any other agencies. This control group included here to get the comparative evaluation between the program beneficiary and non-beneficiary respondents. The major reason for this comparison is to understand the effectiveness of the Ujjibito program in enhancing women empowerment in the context of non-Ujjibito households. Three major strategies were used in the data collection mechanisms: (i) impact evaluation, (ii) case study, and (iii) photo story book. In the context of case studies, I used pseudo name of the respondents and did not specify their location for privacy concerns. The UPP-Ujjibito evaluation study explores two major research questions: (i) what are the overall performance of the RERMP2 and Ujjibito project in promoting women empowerment in the selected area of Bangladesh? and (ii) which project between RERMP2 and Ujjibito is more effective in the social, economic, and political aspect of empowerment?

In terms of economic empowerment, the Ujjibito program designed some training components like self-trade, electricity, and livestock improvement for the poor, less educated, and unemployed youth who are supposed to get the microcredit, micro-insurance or risk fund in the process of economic empowerment. Economic aspect is described as the maximization of income and assets designed to improve health and physical wellbeing like maximization of nutrition intake.

The study sought to find out the economic empowerment indicators for example own income, own saving, and capacity to borrow. The argument used in this study is that vocational training causes the improvement of employment opportunities and self-dignity which are described as part of economic empowerment. For this purpose, some specific economic variables like mobile ownership, sanitary

[31] This includes 1370 focal unions, 109 unions of Bogra district and 245 unions in coastal upazilas. The coastal upazilas are Laxmipur, Noakhali, , Chittagong and Cox's Bazar in Chittagong division. These coastal districts are vulnerable to high intensity of covariate shocks.

facility, electricity, housing condition, distance between house and brick road, marketplace, educational institution, drinking water source, and micro-credit institution will be helpful in understanding their level of accessibility in economic empowerment.

As it is expected economic interventions will promote upward mobility, economic indicators related data like agricultural land ownership, residential land, pond, domestic cow, DPS, and total investment to be collected in understanding their level of livelihood improvement. In this context, concerns over this economic mobility like the outstanding loan, risk management, and malnutrition are broader part of data collection and analyses. When the sustainable graduation from economic poverty gets positive light, it will have the cumulative effects on social empowerment of the ultra-poor people in Bangladesh.

Social aspect is specified as awareness raising at the individual, community, and societal level with the variables like gender, disability, education, drop-out cause, marriage, birth certificate, and dowry. The consciousness raises on these issues based on the interventions like courtyard sessions, coordination with local government for access to social safety net programs, back-to-school program for the dropout, communication actions for raising social awareness and adolescent club. Courtyard sessions describe the interventions like illiteracy, child marriage, malnutrition, dowry system, acid violence, and women empowerment. This awareness program seeks to raise awareness to the program beneficiaries so that they can reduce the missing women as Sen (2000) argued.

The program also encompasses additional aspect of Sen's understanding, structural aspect. The program executed NGOs coordinates with local Union Parishad or Council in the process of selecting eligible families for safety net and other designated government benefits. The Ujjibito program emphasizes on the counselling of school children and parents for the goals of higher achievement of educational qualifications with the program of back the drop-out to school. To overcome the social problems like drop out, the Ujjibito program organized the community events on social issues: e.g., illiteracy, child marriage, malnutrition, dowry system, acid violence, and women empowerment to raise awareness. In this context, program focuses on adolescent girls' issues with establishing the adolescent club in raising their awareness related to adolescent nutrition, general and reproductive health, demerits of early marriage, eve teasing and sexual harassment. Like the adolescent club, some other components of the Ujjibito program were School Pusti Forum, Pusti Gram, Kishoree Club, blood group identification program, and health camp for the goals of increasing their nutrition, general and reproduction health as well as reducing child and maternal mortality, early marriage, eve teasing.

Based on the RERMP2 and Ujjibito program activities, it is expected to reach some points of social empowerment like women's health awareness, health care security for all, secure food availability, improvement girl children status in family, desire to get educated bride/groom for children, school enrollment, and early marriage reduction. It is also assumed to reduce social problems like drug addiction, violence against women, total number of displaced people, dropout, and early marriage. This study sought to find out the level of awareness achieved and the level of social problems reduced by this program intervention. It is expected to be happened the improvement of social empowerment related to gender equality, disability services, level of education, and age of marriage. Given the current level of empowerment, it will happen social awareness that will be collected with the variables like marriage and registration, space between two children, and school pusti forum, posti gram, and kishoree club. The consecutive effects of this awareness will be described as social change and will be collected with the variables like women's health awareness, health care security for all, food security, girl children status in family, school enrollment, and early marriage reduction which are important precondition for political empowerment.

Freedom of movement in the different places like market, health care center, microfinance institution or bank, outside of village and parent's house is one of the basic indicators of political empowerment. Another major indicator is the freedom of decision making in terms of savings and investment, children

marriage and education, family planning, and microcredit loan described as political empowerment at household level. The Ujjibito program also addressed the social problems like restrictions to participate in group meeting, took away money/ornament by force, restrictions on accessing job outside of home, force to take loan, and physical and mental torture.

6.3 Analyses and Findings: Women Empowerment Condition in Bangladesh

6.3.1. Economic Empowerment Status of Women

Our argument on economic empowerment is that when people are successful in using their agency in economic activities, they are successful in gaining economic empowerment. This aspect of empowerment is described here with some major indicators: e.g., own income, own saving, capacity to borrow, and attend any training program. Mentioned in Table 55, we would like to understand the effectiveness of the UPP-Ujjibito program in the level of economic empowerment.

Table 55: Socio-economic Conditions in Gaining Upward Mobility (In Percentage)

	Ujjibito		**UPP-Ujjibito**		**Combined UPP**		REMP-2		**Combined**		**Control**		**Total**	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Own Income														
Regular	12.0	13.2	13.5	16.7	12.8	15.2	33.7	32.8	17.8	19.4	11.3	12.8	15.8	17.4
Irregular	38.2	39.4	42.8	39.9	40.8	39.7	37.9	33.5	40.1	38.2	31.0	30.9	37.3	36.0
No	49.9	47.4	43.7	43.4	46.4	45.1	28.4	33.7	42.1	42.4	57.7	56.3	46.9	46.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Own Savings														
Yes	64.0	68.3	70.2	70.6	67.5	69.6	49.5	50.9	63.2	65.1	42.3	46.6	56.8	59.5
No	36.0	31.7	29.8	29.4	32.5	30.4	50.5	49.1	36.8	34.9	57.7	53.4	43.2	40.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Capacity to Borrow														
All time	39.4	41.2	38.6	46.1	39.0	44.0	40.4	43.9	39.3	44.0	31.1	33.4	36.8	40.7
Often	33.2	34.0	32.3	30.8	32.7	32.2	31.8	31.1	32.5	31.9	29.8	31.7	31.7	31.9
Very few	15.6	12.8	19.8	14.3	18.0	13.7	17.5	15.4	17.9	14.1	22.8	19.6	19.4	15.8
Never	11.7	12.0	9.3	8.7	10.3	10.1	10.4	9.6	10.3	10.0	16.2	15.3	12.1	11.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Attend any Training Program?														
Yes	74.4	53.3	82.3	59.9	78.9	57.0	65.3	43.7	75.6	53.8	24.4	19.8	60.0	43.5
No	25.6	46.7	17.7	40.1	21.1	43.0	34.7	56.3	24.4	46.2	75.6	80.2	40.0	56.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

B: Before 2 years; P: At present

Related to Table 55, when we asked about women respondent's own income, 16.7 of the UPP-Ujjibito program beneficiaries informed that they have regular income originated from the outside of household at the endline. On the same time, 12.8 percent of the control respondent worked outside of home. The similar evidences are portrayed in the context of capacity to borrow. However, participation in training program has negative connotation both in the program beneficiaries and control household. Regarding to the question, did you attend any training program of microcredit or others, 82.3 percent of the UUP-Ujjibito respondents inform us that they attended in the training before two years of the project deadline but this decreases to 59.9 percent at the endline. This evidence of downward participation is visible in control household although their percentage is lower than that of the program beneficiaries; 24.4 and 19.8 percent in the same timeframe. This lower level of participation in the training may cause the barriers in the process of expanding agency-centric empowerment approach. Again, males get greater

accessibility in the training programs like self-trade, electricity, and livestock improvement than females and this aspect of biasness is visible in disability, age, and social capital.

Although these aspects of empowerment concerns are visible in Bangladesh, the overall improvement is visible in the economic indicators like mobile ownership, sanitary facility, electricity, housing condition, distance between house and brick road, marketplace, drinking water source, tube-well stored water, sanitary latrine, hand wash, and oral saline; some of them described in the Table 56.

Table 56: Household Achievements of Health Related Facilities and Status (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Sources of safe drinking water							
All time	76.1	74.1	75.0	71.6	74.2	74.2	74.2
Often or only drinking and cooking purpose to collect water	20.7	23.6	22.3	25.6	23.1	24.0	23.4
Never	3.3	2.2	2.7	2.8	2.7	1.8	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pucca/brick-built Platform of Tube-well							
Yes	68.8	69.3	69.0	51.9	65.0	62.8	64.3
No	11.3	15.1	13.5	17.9	14.5	15.9	14.9
No tubewell	19.9	15.6	17.5	30.2	20.5	21.3	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Quality of Stored Water Maintained							
All time	78.6	77.8	78.1	77.5	78.0	77.5	77.8
Often	19.3	21.6	20.6	20.2	20.5	21.1	20.7
Never	2.1	0.7	1.3	2.3	1.5	1.4	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sanitary Latrine							
Yes	70.0	67.2	68.4	55.3	65.3	59.4	63.5
No	30.0	32.8	31.6	44.7	34.7	40.6	36.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use of Latrine	**7**						
All time	87.8	90.3	89.2	84.4	88.1	86.6	87.6
Often	6.7	4.5	5.4	5.8	5.5	5.7	5.6
Never	5.5	5.2	5.3	9.8	6.4	7.6	6.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use Hand wash after Defecation							
All time	84.6	84.5	84.6	78.9	83.2	82.1	82.9
Often	10.5	12.0	11.3	13.2	11.8	11.7	11.8
Never	4.9	3.5	4.1	7.9	5.0	6.1	5.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use Soap or Ash for Washing Hand before Eating							
All time	77.6	76.1	76.7	72.6	75.8	75.2	75.6
Often	16.2	17.9	17.2	17.9	17.3	16.6	17.1
Never	6.2	6.0	6.1	9.5	6.9	8.2	7.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Dispose Child Stool into Latrine							
All time	61.1	57.9	59.3	53.7	57.9	58.7	58.2
Often	8.9	9.1	9.0	10.0	9.3	9.5	9.3
Never	30.0	33.1	31.7	36.3	32.8	31.8	32.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use Sandal							

All time	81.9	78.0	79.7	77.4	79.2	75.5	78.1
Often	14.9	17.9	16.5	18.9	17.1	20.1	18.0
Never	3.3	4.1	3.7	3.7	3.7	4.4	3.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use Iodized Salt in Food							
All time	69.1	66.0	67.3	58.9	65.3	58.0	63.1
Often	10.8	17.6	14.6	17.7	15.4	16.1	15.6
Never	8.8	8.0	8.4	10.0	8.7	10.7	9.3
4	11.2	8.5	9.7	13.3	10.5	15.2	12.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use Packet Oral Saline During Diarrhea							
All time	97.9	98.3	98.1	96.1	97.7	96.8	97.4
Often	2.1	1.7	1.9	3.9	2.3	3.2	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Use of Home-Made Saline if don't get Packet Oral Saline							
All time	31.2	27.4	29.1	20.9	27.1	28.1	27.4
Often	55.8	61.6	59.0	60.4	59.4	52.5	57.3
Never	13.0	11.0	11.9	18.8	13.5	19.4	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 56 data evince us that 74.1 percent of the UPP-Ujjibito program beneficiaries are satisfied with their sources of drinking water as safe for all time and this is slightly better in the control households, 74.2 percent. In the context of quality maintenance of stored water, the conditions of control household are better than that of project beneficiaries as mentioned in the same table. The control household is also ahead of the project beneficiaries in the context of use of latrine, use of hand-wash after defecation, use of soap or ash for washing hand before your regular meal, dispose child stool into latrine, and use packet oral saline during diarrhea. In this comparison, the UPP-Ujjibito program beneficiaries are ahead of the control household in the context of brick-built platform of tube-well; 69.3 percent has this tube-well structure while this is 62.8 percent in the control household. This better condition is also evident in terms of sanitary latrine, use sandal, used iodized salt in food, and se home-made saline if don't get packet oral saline. This aspect of economic empowerment is closely connected with social empowerment.

6.3.2 Social Empowerment Reached by the Program Interventions

The UPP-Ujjibito programs are agency-centric as it is executed by NGOs in creating individual agency for taking their own responsibility. This approach is to fight against social problems and for establishing equality and social justice. Amartya Sen's argument on agency and individual wellbeing are evident in this social program. State role in empowering poor people decreases significantly while NGO role increases in the process. Based on the UPP-Ujjibito program components, this paper finds out the effects of the variables described in the Table 57: e.g., knowledge about UPP-Ujjibito programs, School Pusti Forum, Pusti Gram, Kishoree Club, blood group identification program, and health camp in understanding their level of involvements important preconditions for social empowerment.

Table 57: Knowledge about the Ujjibitio Program Components (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Knowledge about UPP-Ujjibito Programs: e.g., Schhol Pusti Forum, Pusti Gram, Kishoree Klub, Blood Group, Health Camp							
Yes	29.8	41.3	36.3	20.0	32.4	10.0	25.6
No	70.2	58.7	63.7	80.0	67.6	90.0	74.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Received 1000 Days Pusti Poster?							
Yes	12.8	15.7	14.5	5.4	12.3	0.9	8.8
No	87.2	84.3	85.5	94.6	87.7	99.1	91.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about School Nutrition Forum (primary/Secondary)							
Yes	10.1	14.2	12.4	4.4	10.5	1.1	7.6
No	89.9	85.8	87.6	95.6	89.5	98.9	92.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Pusti Gram or Nutrition Village							
Yes	19.5	27.1	23.8	8.4	20.1	4.2	15.3
No	80.5	72.9	76.2	91.6	79.9	95.8	84.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Kishoree Club							
Yes	27.1	27.7	27.4	7.0	22.5	3.2	16.6
No	72.9	72.3	72.6	93.0	77.5	96.8	83.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Blood Group Identification Program							
Yes	23.4	31.2	27.8	11.9	24.0	6.3	18.6
No	76.6	68.8	72.2	88.1	76.0	93.7	81.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Health Camp							
Yes	29.7	43.3	37.4	19.8	33.2	9.5	26.0
No	70.3	56.7	62.6	80.2	66.8	90.5	74.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about UPP Programs: e.g., Vocational Training for Cattle Rearing and Seed Distribution)							
Yes	55.3	68.0	62.5	54.0	60.5	14.2	46.4
No	44.7	32.0	37.5	46.0	39.5	85.8	53.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The UPP-Ujjibito program at first focuses on the different knowledge generating programs like School Pusti Forum, Pusti Gram, Kishoree club, blood group identification program, and health camp. Thus it is expected to have the basic understanding about these programs. Unfortunately according to Table 57 only 41.3 percent of the UPP-Ujjibito program's respondents and 10.0 percent of control household know all or fewer of them. Although most of them did not hear about the program, many of them got the benefits from the programs. My understanding on this level of knowledge about the program is that they can remember the benefits they get but not the program due to language barrier and other social causes. Only 15.7 percent of the respondents received the 1000 days Pusti Poster and this number is 0.9 percent in the control group household. Regarding to the vocational training, 68 percent of the UPP-Ujjibito respondents are aware of the vocational training and many of them got them. Currently local species of domestic animals are replacing with foreign species and this requires training for maintaining them.

However, the question here is why this foreign animal is necessary despite availability of local animals attached to local economy, environment, and livelihood. Local people know their nurturing knowledge for generations. Again, new disease pattern causes the foreign animals more vulnerable and economically unsustainable. This foreign animal also causes the concerns over social inequality as it requires greater investment and many of them cannot afford and depend on other people or NGOs. Again, the question of seed and kecho fertilizer making training provided by Ujjibito enlisted NGOs raises new point. Historically local poor people make this seed and fertilizer with their local knowledge and women perform stronger role in the process. This women's role is transforming and it is important to explore its effects. Furthermore, some of the vocational trainings like electric activities are gender biased; males get these trainings while females are lagging behind.

Despite these questions, the Ujjibito program has major significance in women empowerment and this has happened in the context of School Pusti Forum, Pusti Gram, Kishoree Club, blood group identification program, and health camp.

Table 58: Girls' Access to Ujjibito Program Benefits (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Your Daughter is a Member of Kishoree Club?							
Yes	8.3	9.9	9.2	1.9	7.5	0.8	5.4
No	91.7	90.1	90.8	98.1	92.5	99.2	94.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Attend to a Meeting of Kishoree Club in the last three Months of Ujjibito?							
Yes	5.7	6.9	6.4	1.2	5.2	1.0	3.9
No	94.3	93.1	93.6	98.8	94.8	99.0	96.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Malnutrition Circle?							
Yes	9.1	14.6	12.2	4.9	10.4	2.9	8.1
No	90.9	85.4	87.8	95.1	89.6	97.1	91.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Got Ludu on Nutrition and Reproductive Health Issues?							
Yes	4.8	4.3	4.5	0.4	3.5	0.3	2.5
No	95.2	95.7	95.5	99.6	96.5	99.7	97.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The UPP-Ujjibito program on social awareness is to form the adolescent club in raising children's knowledge related to adolescent nutrition, general and reproductive health, demerits of early marriage, eve teasing and sexual harassment for the goals of increasing their nutrition, general and reproduction health as well as reducing child and maternal mortality, early marriage, eve teasing mentioned in the Table 59.

Table 59: Girls' Level of Achievement with Ujjibito Activities (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Types of Materials used During menstruation							
Sanitary napkin	12.7	9.3	10.8	7.0	9.9	7.4	9.1
Old cloth	81.9	79.7	80.6	86.3	82.0	77.8	80.7
Tissue paper	1.5	0.7	1.0	0.5	0.9	1.0	0.9
Others	9.3	13.4	11.6	8.2	10.8	16.4	12.5
Provided Advice about Menstrual Health							
Yes	30.4	36.6	33.8	24.7	31.7	19.6	28.0

No	69.6	63.4	66.2	75.3	68.3	80.4	72.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health Camp Organized at your Locality under Ujjibito?							
Yes	31.4	43.6	38.2	21.2	34.2	9.5	26.7
No	68.6	56.4	61.8	78.8	65.8	90.5	73.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Received Health Services from the Health Camp?							
Yes	72.3	83.0	79.1	78.5	79.0	75.8	78.7
No	27.7	17.0	20.9	21.5	21.0	24.2	21.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The level of achievements are described in the Table 59 with some indicators like type of materials used during the menstruation, received the advice on the menstrual health, and received health care services from local health camp. Currently 9.3 percent of the UPP-Ujjibito respondents used the sanitary napkins during the menstrual cycle and this percentage is lower in the control group, 7.4 percent. This increased usage of sanitary napkin is one indication that the ultra-poor people are getting better in health care facilities and this will have cumulative effects on social empowerment.

Based on my observation, Kishoree club is one of most successful interventions of Ujjibito program and works as the source of social bonding irrespective of girl's class position and religious identity. Adolescent girls learn the leadership role as a group leader elected by direct vote who keep their club member organized and communicate with the seniors, juniors in promoting good things and eliminating bad things. They learn how to generate income, reinvest, and make new generation of women agency; they bought books, health care instruments, and use them for social services in addition to minor income. The club is currently the major source of social movements with drama, poetry, and recitation against the social problems. It was termed as *alor karkhana*, factory of enlightening, which produces enlighten female, mother, mother-in-law, and grandmother. The club works as library in every village; elders and others borrow books from library, helpful for identifying blood group, checking blood pressure and diabetes, challenging social problems like early marriage, raising awareness about violence against women.

Awareness is precondition in any household planning related to health consciousness and health care. This has agency-centric dimension as it is mostly individual initiatives can be promoted by health education. Awareness is originated from this education that is again structural and agency centric which are transmitted into health consciousness and health care. This structuration dimension was to find out with some major variables like sources of safe drinking water, brick-built platform of tube-well, quality of stored water, sanitary latrine, use of latrine, use of hand-wash after defecation, use of soap or ash for washing hand before your regular meal, dispose child stool into latrine, and use sandal.

Social awareness programs are the precondition in strengthening individual agency in the empowerment pathways. When adolescent girls and young women have basic information related to their rights and responsibilities, they can address the issues and overcome the concerns effectively. To provide as the agency of this knowledge, UPP-Ujjibito program provided some basic opportunities to participate in the awareness raising programs like legal age of marriage, marriage registration, dowry, and birth registration to their beneficiaries. Grounded on this objective, this paper finds out the update of this knowledge in comparison with control group; 44.9 percent of the UPP-Ujjibito respondents participated in the PKSF organized activities and 11.7 percent attended in the activities organized by other organizations.

Table 60: Level of Achievement of the Ujjibito Program on Social Phenomena (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Participation in the awareness program about Legal Age of Marriage from PKSF Activities							
Yes	31.1	44.9	38.9	37.5	38.6	11.7	30.4
No	68.9	55.1	61.1	62.5	61.4	88.3	69.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Participation on the Legal Age of Marriage from Other Awareness Activities							
Yes	28.6	40.9	35.5	36.0	35.6	11.2	28.2
No	71.4	59.1	64.5	64.0	64.4	88.8	71.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Marriage was Registered?							
Yes	62.6	67.9	65.6	60.5	64.4	57.7	62.3
No	37.4	32.1	34.4	39.5	35.6	42.3	37.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gave Dowry to Daughter's Wedding?							
Yes	11.3	17.9	15.0	18.1	15.7	19.0	16.7
No	88.7	82.1	85.0	81.9	84.3	81.0	83.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Took Dowry from Son's Wedding?							
Yes	5.9	7.5	6.8	5.6	6.5	8.4	7.1
No	94.1	92.5	93.2	94.4	93.5	91.6	92.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Participated in Awareness Programs Organized by UPP?							
Yes	20.3	33.6	27.8	24.0	26.9	11.3	22.1
No	79.7	66.4	72.2	76.0	73.1	88.7	77.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Participated in Awareness Programs on Birth Registration?							
Yes	20.9	32.9	27.7	24.7	27.0	13.3	22.8
No	79.1	67.1	72.3	75.3	73.0	86.7	77.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Desire to Get The Educated bride/ groom for Children?							
Yes	96.5	95.3	95.8	93.3	95.2	91.3	94.0
No	3.5	4.7	4.2	6.7	4.8	8.7	6.0
Total	100	100	100	100	100	100	100

Related to the Table 60, when we asked about their participation on the activities organized by PKSF about the legal age of marriage, 38.6 percent of the UPP-Ujjibito and RERMP2 combined respondents replied positively while this response only 11.7 percent in the control household. The participation in the birth registration awareness raising programs is 32.9 and 13.3 of the respondents in the UPP-Ujjibito and control household respectively. These activities organized by other organizations have also the similar level of participation in local area. This participation in awareness raising programs is supposed to have visible impacts in local area. When we asked about the status of marriage registration, 67.9 of the UPP-Ujjibito respondents have positive response and this number is lower in the control household, 57.7 percent. The awareness on dowry has greater impact; 82.1 percent of the UPP-Ujjibito respondent did not give dowry in the program household and this is lower in the control group, 81.0 percent. This

decrease of dowry has Sen's agency centric relevance; bride/groom selection for marriage has changed in local area significantly. Adult boy and girl choose each other and decide to marry upon family or own decision.

Participation in the awareness raising program is supposed to create the foundation for generating knowledge and practice them in social issues and concerns. Although this impact is supposed to have multidimensional effects, this paper sheds light on some specific components like gender biased desire for children, knowledge about birth spacing, and family planning in understanding the level of practice mentioned in the Table 61.

Table 61: Transformation of Beliefs on Gender and Family Planning (In Percentage)

	Ujjibito	**UPP-Ujjibito**	**Combined UPP**	REMP-2	**Combined**	**Control**	**Total**
Desire for Gender-Centric Children							
Son	8.2	8.5	8.4	7.7	8.2	9.4	8.6
Daughter	5.9	4.8	5.3	7.9	5.9	5.3	5.7
Both	85.9	86.7	86.4	84.4	85.9	85.3	85.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Knowledge about Birth Spacing							
Yes	62.1	71.8	67.6	60.0	65.8	52.4	61.7
No	37.9	28.2	32.4	40.0	34.2	47.6	38.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source of Knowledge about Birth Spacing							
UPP-Ujjibito project	60.9	54.8	57.2	40.4	42.3	13.6	34.9
Government family planning activities	50.9	50.5	50.6	51.2	50.8	61.9	53.6
Mass media	34.9	43.1	39.8	43.0	40.5	42.8	41.1
NGO/ Private organization	20.7	22.9	22.0	21.6	21.9	19.8	21.4
Others	5.1	3.6	4.2	5.6	4.5	6.0	4.9
Health problem due to 2 years less birth spacing							
Abortion	38.8	45.3	42.7	43.5	42.9	37.1	41.3
Low birth weight	60.1	62.0	61.3	57.0	60.3	62.0	60.8
Immature birth	32.6	34.1	33.5	35.9	34.0	32.3	33.6
Anemia of mother	67.8	70.4	69.4	75.3	70.7	69.6	70.4
Mothers health not permit again abortion	23.3	26.8	25.4	26.6	25.7	25.1	25.5
Others	5.0	6.7	6.1	4.7	5.8	4.9	5.5
Knowledge of Family Planning Method							
Yes	99.0	99.4	99.1	99.6	99.5	99.2	99.3
No	1.0	0.6	0.9	0.4	0.5	0.8	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source of information							
Government family planning activity	27.9	28.8	28.4	27.1	28.1	26.4	27.6
Family planning worker	70.6	67.3	68.7	72.3	69.5	71.1	70.0
Mass media	28.9	37.7	34.0	37.3	34.7	36.2	35.1
Awareness program of UJJIBITO project	21.6	31.2	27.1	22.6	26.1	5.4	20.2
NGO/ Private organization	11.0	15.8	13.7	14.1	13.8	12.9	13.6
Others	5.0	3.5	4.1	3.3	3.9	5.5	4.4

When we asked about their gender preference for children, 86.7 percent of the UPP-Ujjibito respondents describe their equal treatment for both of daughter and son; that son preference reduces significantly from their previous standpoint. Based on the Table 61, they also have knowledge about birth spacing between the children for 71.8 and 52.4 percent of the respondents in the program and control household respectively. In the beneficiaries, 28.8 percent knew this birth spacing information, 37.7 percent from government family planning activities 37.7 percent from mass media, and 4.6 percent from NGOs. Another important improvement is that 99.1 percent of the UPP-Ujjibito beneficiaries have knowledge about family planning and they knew it from the different sources like UPP-Ujjibito awareness raining activities, government family planning efforts, mass media, and NGOs.

Sustainability of women empowerment is supposed to be the ultimate achievement of the development intervention like UPP-Ujjibito. Women as individual agency will provide sustainability of this change for better future in Bangladesh where nobody will lag behind and everyone will have equal chance for being part of rights and responsibilities according to the understanding of SDGs. To understand this aspect of sustainability, this paper focuses on some major variables like community livelihoods, gender, social services, and social problems. To understand the level of sustainability, I used some variables like increasing level of communication among the neighbors, respect to seniors, women's tendency to work outside of home, increase the practice of cultural activities, and increase the level of community bonding to find out their update.

Table 62: Improvements of Community Livelihoods (In Percentage)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Communication Increases among Villagers							
Yes	89.7	90.0	89.8	90.5	90.0	86.4	88.9
No	6.2	5.2	5.6	5.8	5.7	7.4	6.2
No change	3.8	4.9	4.4	3.7	4.2	6.1	4.8
NA	0.4	0	0.2	0	0.1	0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Increase the Tendency to Respect to Seniors							
Yes	78.8	78.0	78.3	75.1	77.6	77.7	77.6
No	15.6	16.6	16.2	18.4	16.7	17.0	16.8
No change	5.3	5.4	5.3	6.5	5.6	5.3	5.5
NA	0.3	0.1	0.2	0	0.1	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Increase Women's Participation in Job Sectors outside of Home							
Yes	92.6	91.2	91.8	86.7	90.6	88.5	90.0
No	5.8	7.0	6.5	10.9	7.5	8.9	7.9
No change	1.1	1.7	1.4	2.3	1.6	2.6	1.9
NA	0.5	0.1	0.3	0.2	0.3		0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Increase the Practice of Cultural activities							
Yes	79.7	78.6	79.1	71.1	77.2	74.2	76.3
No	13.6	13.5	13.5	18.6	14.7	18.4	15.9
No change	3.9	5.7	4.9	6.3	5.2	5.5	5.3
NA	2.8	2.2	2.5	4.0	2.8	1.8	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Increase the level of Social Bonding in Society							
Yes	83.9	81.0	82.2	76.8	81.0	78.6	80.2

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
No	10.1	11.2	10.7	14.0	11.5	14.2	12.3
No change	4.7	7.0	6.0	8.1	6.5	6.5	6.5
NA	1.4	0.8	1.0	1.1	1.0	0.7	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

When we asked a question in the context of Table 62: did your communication with villagers increase recently, 90.0 percent of the UPP-Ujjibito respondents of the project beneficiaries responded positively and this positive respond is 86.4 percent in the control group. The response of the respect to seniors is also positive but slightly lower; 78.0 and 77.7 percent in the program beneficiaries and control group respectively. This respect to seniors can be described in the context of community level but leaving seniors at household level are increasing concerns due to poverty and scarcity which was observed in Meherpur during my fieldwork visit. Sometimes, son's family is having daily meals with improved diets but his parents at the next door are starving. Moreover, sons are displacing his widow mother to take control over her housing property which was evinced during my fieldwork in Jessore. In this context, daughters are more helpful in supporting their parents when they have better employment opportunity. Amrtya Sen's empowerment parameter women's job participation outside of home has also evident in this paper; 91.2 and 88.5 percent of the respondents in the UPP-Ujjibito beneficiaries and control group respectively respond positively. Cultural activities as one core point of social change are also in positive direction; 78.6 and 74.2 percent of respondents in the program and control households respectively respond positively. The respondents also describe positive social change in terms of increasing the level of social bonding.

Gender is another important aspect of social change in terms of equal access to rights and opportunities at household and community. It is also important in reducing discrimination and increasing equality in the context of variables like health consciousness, their roles against early marriage, and social cohesion between girls and boys at village level mentioned in the Table 63.

Table 63: Girls' Conditions on the Selected Social Issues (Percent)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Increase the Level of Girl's Health Consciousness							
Yes	97.5	97.1	97.3	95.4	96.8	96.0	96.6
No	1.5	2.3	2.0	2.6	2.1	2.4	2.2
No change	0.8	0.6	0.7	1.8	0.9	1.3	1.0
NA	0.3		0.1	0.2	0.1	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Adolescent Girl's Role Increases against Early Marriage							
Yes	84.1	82.1	83.0	71.8	80.3	75.5	78.9
No	10.5	11.3	10.9	19.6	13.0	15.2	13.7
No change	4.7	5.5	5.1	8.2	5.9	7.7	6.4
NA	0.8	1.1	0.9	0.4	0.8	1.5	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Social bonding between Adolescent Girls and Boys Increases							
Yes	87.8	86.0	86.8	81.2	85.4	81.1	84.1
No	6.9	8.2	7.6	12.8	8.9	11.0	9.5
No change	4.3	5.2	4.8	5.8	5.0	6.4	5.4
NA	1.0	0.7	0.8	0.2	0.7	1.5	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Girls are supposed to have equal opportunities to boys in a family and this can be possible with individual agency. The Table 63 data inform that 97.0 and 96.0 percent of the UPP-Ujjibito and control

households respectively have this consciousness. In locality, adolescent girls' role increase against early marriage for 82.1 percent in the UPP-Ujjibito beneficiaries while this is 75.5 percent in the control households. This role can be described as the foundation of agency role against their life related to maternal death, miscarriage, and infant death. Furthermore, 86.0 and 81.1 percent of the respondents agree that social bonding between girls and boys increase in the UPP-Ujjibito and control households. This cohesion can be helpful in strengthening agency role against rape, eve teasing, and acid violence.

Social services are currently provided by government and non-government organization. The government services are part of structural approach to poverty reduction and community empowerment and while NGOs support more on individual agency. This two lens for community empowerment can be described as structuration described by Anthony Giddens. Some important variables are increasing tendency to get health care services, access to quality food, and increase children enrolment in school specified in the Table 64.

Table 64: Access to Social Services for Securing Descent Livelihoods at Household Level (Percent)

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
Increases the Tendency to take Formal Health Care services							
Yes	96.6	96.7	96.6	93.9	96.0	92.8	95.0
No	2.5	3.0	2.8	3.9	3.1	5.6	3.8
No change	0.5	0.2	0.3	1.9	0.7	1.3	0.9
NA	0.4	0.1	0.2	0.4	0.3	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Access to Quality Food Increases							
Yes	85.6	87.6	86.8	84.6	86.2	83.2	85.3
No	9.8	9.6	9.7	11.9	10.2	12.0	10.8
No change	4.2	2.7	3.4	3.2	3.3	4.6	3.7
NA	0.4	0.1	0.2	0.4	0.3	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Increase the total number of Children's Enrolment in School							
Yes	97.0	96.9	96.9	95.6	96.6	95.6	96.3
No	2.3	2.6	2.5	3.2	2.6	3.3	2.9
No change	0.6	0.4	0.5	1.2	0.7	1.1	0.8
NA	0.1	0.1	0.1	0	0.1	0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Based on the table no 10, this paper describes that tendency to get health care services increases according to 96.7 and 92.8 percent of the UPP-Ujjibito and control households respectively at local level. Additionally, access to quality food is currently part of agency and structure and this happens according to 87.6 and 83.2 of the respondents in the UPP-Ujjibito and control households respectively. The respondents also describe their positive news about the increase of enrolment in children. Although the ultra-poor's access to social services increase in local level, it is still a long way to reach the standard level. When I visited Gangni for fieldwork activities, I observed one respondent has been sufferings from tumor at his right leg and is incapable of taking treatment because of poverty. Nobody hires him as he is not physically fit in doing manual work. When I asked about hygienic awareness and practice, he responded that *jar pete vat nei tar abar paikhanar por saban usage* (those who is starved cannot think about using soap after using latrine). These points need to be addressed properly in securing the sustainability of social empowerment.

Related to women empowerment, the UPP-Ujjibito program aims to intervene in some indicators of barriers: e.g., restrictions to participate in group meeting, took money/ornaments by force, restrictions on visiting parent's house, going outside of home, forced to take loan, physical torture, and mental torture specified in the Table 65. As both of the RERMP2 and UPP-Ujjibito intervene these concerns, it is important to find out the current status. My argument in this paper, the sooner the barriers will be eliminated, the better the women will be empowered in social system.

Table 65: Achievement of the Programs in Overcoming Women's Social Problems at Individual Level (Percent)

	Ujjibito		**UPP-Ujjibito**		**Combined UPP**		REMP-2		**Combined**		**Control**		**Total**	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Restrictions to Participate in Group Meeting														
All time	9.2	7.3	11.2	9.7	10.3	8.6	4.9	4.4	9.0	7.6	4.9	5.0	7.8	6.8
Often	15.9	11.8	13.0	10.2	14.2	10.9	10.7	7.7	13.4	10.2	6.5	6.0	11.3	8.9
Very few	12.0	9.9	11.6	10.0	11.8	10.0	13.3	10.5	12.1	10.1	8.7	7.6	11.1	9.3
Never	63.0	70.9	64.2	70.1	63.7	70.5	71.1	77.4	65.4	72.1	79.9	81.4	69.8	74.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Took away money/ ornaments by Fore														
All time	1.8	1.9	1.8	1.3	1.8	1.5	3.7	2.6	2.2	1.8	1.2	1.4	1.9	1.7
Often	3.0	2.1	3.8	1.7	3.5	1.9	5.8	2.6	4.0	2.1	4.7	2.6	4.2	2.2
Very few	2.9	2.3	6.6	3.7	5.0	3.1	4.2	3.2	4.8	3.1	4.0	3.1	4.6	3.1
Never	92.3	93.7	87.8	93.4	89.8	93.5	86.3	91.6	88.9	93.1	90.1	92.9	89.3	93.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Control over Visiting Parent's House														
All time	2.4	1.8	1.5	1.3	1.9	1.5	2.6	1.1	2.1	1.4	1.8	1.4	2.0	1.4
Often	5.4	4.5	5.8	3.0	5.6	3.7	6.0	3.0	5.7	3.5	7.4	4.2	6.2	3.7
Very few	6.2	3.1	9.7	6.1	8.1	4.8	5.8	4.6	7.6	4.8	6.4	6.3	7.2	5.2
Never	86.0	90.6	83.1	89.6	84.4	90.0	85.6	91.4	84.7	90.3	84.4	88.1	84.6	89.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Restrictions on Accessing Job outside of Home														
All time	6.7	7.2	6.7	7.0	6.7	7.1	3.9	3.5	6.0	6.2	6.6	6.9	6.2	6.4
Often	3.5	2.6	3.6	3.3	3.6	3.0	3.2	2.1	3.5	2.8	4.6	3.6	3.8	3.1
Very few	4.7	4.5	7.4	4.3	6.2	4.4	4.7	1.4	5.9	3.7	4.7	4.4	5.5	3.9
Never	85.1	85.6	82.2	85.4	83.5	85.5	88.2	93.0	84.6	87.3	84.1	85.1	84.5	86.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Force to Take Loan														
All time	0.5	0.8	0.7	0.9	0.6	0.8	1.6	0.5	0.8	0.8	1.1	0.7	0.9	0.7
Often	3.3	2.3	4.6	2.3	4.0	2.3	6.1	2.8	4.5	2.4	4.4	3.7	4.5	2.8
Very few	5.4	3.3	7.9	4.9	6.8	4.2	6.7	6.0	6.8	4.6	5.5	4.8	6.4	4.7
Never	90.8	93.7	86.8	91.9	88.6	92.7	85.6	90.7	87.9	92.2	88.9	90.8	88.2	91.8
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Encounter Husband's Physical Torture?														
Yes	9.8	5.7	13.8	6.6	12.0	6.2	19.8	7.9	13.9	6.6	14.4	5.4	14.1	6.3
No	90.2	94.3	86.2	93.4	88.0	93.8	80.2	92.1	86.1	93.4	85.6	94.6	85.9	93.7
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Mental Torture?														
Yes	10.2	6.9	12.5	6.8	11.5	6.9	20.5	10.5	13.6	7.7	13.4	6.6	13.6	7.4
No	89.8	93.1	87.5	93.2	88.5	93.1	79.5	89.5	86.4	92.3	86.6	93.4	86.4	92.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

B**:** Before 2 years; P**:** At present

On the question in Table 65, did you face any restriction from your husband/family to attend a group meeting, 70.1 and 81.4 percent of the respondents from the UPP-Ujjibito beneficiary and control households respectively inform us that they never face any restrictions. This line of empowerment

pathways is also evident in the context of taking away money/ornament by force, control over vising parent's house, force to take loan, support dowry system, restrictions on job outside of home, encounter husband's physical/mental torture, and knowledge about divorce rule. Despite the improvement on these indicators, some other social problems are increasing in locality. For example, when I visited in Meherpur as part of the research team, I am informed the ultra-poor males migrate abroad to eradicate their poverty and this is one reason for new types of extra-marital relationships and related social problems. They enjoy the intimate relationship like the Western countries never expected in Bangladesh. Pregnancy before the marriage is increasing phenomena and social problems. Due to this type of problem, the girl appears in her boyfriend's house to expedite their marriage. They also leave their parent's house when they foresee major obstacles in getting married with family consent. Adulterate relationship after marriage locally called *porokeya* is also increasing in local area due to migration of husband in abroad. When husband emigrated, Rahima mentioned, wife left their children and moved to a new place with her boyfriend. Sometimes, wife takes husband's remitted money away for the new dream. According to Rahima, this incidence is increasing in this village and increasing the ground for multiple social problems. Due to this adulterate relationship, lack of trust is the major cause of increasing social problems including divorce, separation, and violence.

Furthermore, some of these empowerment issues like outside job still has structural challenge. For example, daily wage in RERMP2 program is lower than the current daily wage in local area. When I visited in Meherpur in July 2019, I was informed by respondents that local daily wage is about BDT 250 although they received BDT 150 from the RERMP2 program; it is also mandatory to deposit BDT 50 or 33 percent of the total amount as the saving requirement. Price of daily necessities are connected with the daily wage BDT 250 although they received BDT 150 and this gap causes livelihood concerns. Sen's agency dynamics encounter challenges for this structural reason. Sen (2000) cautions another important point in the empowerment process: some women cannot assess their relative deprivation and thus they can have positive notion about their social standpoint despite their major deprivation. For example, during our field visit in Patuakhali we interviewed a woman, pseudonym Mousumi, who restricted herself from going outside as her husband and Madrassa going son do not like it. But they encouraged her to visit PKSF-enlisted NGO to get a loan for their investment. This social dimension of agency consciousness is complicated and stand in the borderline between good and bad, and can be overcome by political empowerment.

As mentioned earlier, RERMP2 and UPP-Ujjibito program challenged social problem efficiently with the different intervention programs like employment opportunity, adolescent club, and vocational training. They have multiple effects on the variables like drug addiction, violence against women, total number of displaced people, school dropout, early marriage, child labor, and gender discrimination mentioned in the Table 66. The paper seeks to find out the recent update on these issues and concerns.

Table 66: Reduction of Social Problems at Community Level (In Percentage)

	Ujjibito	**UPP-Ujjibito**	**Combined UPP**	**REMP-2**	**Combined**	**Control**	**Total**
Decrease the total number of Drug Addicted People in Village							
Yes	64.2	63.3	63.7	59.6	62.7	59.2	61.7
No	28.1	28.5	28.3	33.2	29.5	32.4	30.4
No change	6.0	7.3	6.8	6.5	6.7	7.2	6.8
NA	1.6	0.9	1.2	0.7	1.1	1.2	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Decrease the number of Displacement							
Yes	85.1	83.8	84.4	81.8	83.8	83.3	83.6
No	10.3	12.0	11.3	13.9	11.9	11.3	11.7

	Ujjibito	UPP-Ujjibito	Combined UPP	REMP-2	Combined	Control	Total
No change	4.3	3.6	3.9	3.5	3.8	5.3	4.2
NA	0.3	0.6	0.4	0.9	0.5	0.2	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Decrease the number of Dropout Pupil							
Yes	92.8	91.5	92.1	90.9	91.8	89.6	91.1
No	6.2	7.8	7.1	7.2	7.1	9.6	7.9
No change	0.9	0.5	0.7	1.9	1.0	0.9	0.9
NA	0.1	0.2	0.2	0	0.1	0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Decrease the Number of Early Marriage							
Yes	85.1	84.0	84.5	77.5	82.8	80.7	82.2
No	12.5	14.3	13.5	18.9	14.8	15.6	15.0
No change	2.4	1.7	2.0	3.5	2.3	3.7	2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Decrease the level of Child (less than 15) labor in Locality							
Yes	66.5	58.7	62.1	59.8	61.6	62.7	61.9
No	28.8	33.7	31.6	31.9	31.6	30.8	31.4
No change	4.3	7.3	6.0	7.4	6.3	6.2	6.3
NA	0.4	0.3	0.3	0.9	0.5	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Decrease the Tendency in Neglecting Girl Child in Family							
Yes	92.6	93.1	92.9	90.0	92.2	92.2	92.2
No	6.4	6.0	6.2	8.9	6.8	6.7	6.8
No change	0.9	0.9	0.9	1.1	0.9	1.1	1.0
NA	0.1	0.1	0.1	0	0.1	0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

One established truth is that when young people have access to education or employment opportunity they are lesser involved in drug addiction. Because of this UPP-Ujjibito program intervention, 63.3 and 59.2 percent of the respondents in the program and control household respectively believe that drug addiction reduces in locality evident in the Table 66. The similar argument fits in the context of decreasing the violence against women, 81.2:79.8; decrease the number of displacement, 83.8:83.3; decrease the number of dropout pupil, 91.5:89.6; decrease the number of early, 84.0:80.7; decrease the level of child labor (less than 15 years old) labor in locality, 58.7:62.7; and decrease the tendency of neglecting girl child in family, 93.1:92.2 in the program and control household respectively.

6.3.2 Political Empowerment Status of Women in the Program Beneficiaries

Political empowerment of women was one of the major objectives of UPP-Ujjibito program. Based on the combined contribution of economic and social factors, it is expected that the program beneficiaries will be successful in promoting their empowerment. In this context, some major empowerment indicators like freedom of movement: e.g., visit at market, health care centre; decision making: e.g., expenditure, saving's investment, children's marriage, family planning, dowry; desire to upward social mobility: e.g., wish to get educated bride/groom for children; and political participation: e.g., exercise of voting right and political demonstration, and raise voice against social problems are evaluated here. In this context, it is expected that the program interventions will reduce the factors responsible for challenging the

political empowerment process: e.g., restrictions to participate in group meeting, took money/ornaments by force, restrictions on visiting parent's house, forced to take loan, and physical and mental torture.

Women's Freedom of Movement Helpful for Political Empowerment

Related to the freedom of movement as one of the major indicators of political empowerment, some major characteristics like visiting market, health care centre, Micro Finance Institution (MFI)/bank, moving outside of village, and attending meeting are described in the Table 67 to understand the level of empowerment.

Table 67: Freedom of Movement Performing Women's Everyday Roles and Responsibilities (In Percentage)

	Ujjibito		**UPP-Ujjibito**		**Combined UPP**		REMP-2		**Combined**		**Control**		**Total**	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Market														
Yes, generally alone	35.6	37.8	29.7	37.9	32.3	37.8	64.7	68.8	40.0	45.2	35.5	41.5	38.6	44.1
Yes, With other family members	19.0	19.3	19.4	18.4	19.2	18.8	10.5	9.5	17.2	16.6	16.5	15.6	17.0	16.3
Yes, with others	3.7	3.7	2.4	2.3	3.0	2.9	1.6	1.6	2.6	2.6	1.7	1.4	2.4	2.2
No	41.7	39.3	48.5	41.4	45.5	40.5	23.2	20.2	40.2	35.6	46.2	41.5	42.0	37.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Health Center														
Yes, generally alone	36.0	38.7	32.0	43.7	33.8	41.5	60.4	67.5	40.1	47.7	36.5	42.1	39.0	46.0
Yes, With other family members	53.1	53.1	55.4	49.4	54.4	51.0	33.3	28.9	49.4	45.8	50.7	48.5	49.8	46.6
Yes, with others	4.5	4.4	3.8	3.7	4.1	4.0	2.6	2.1	3.8	3.6	4.0	5.0	3.8	4.0
No	6.3	3.8	8.8	3.2	7.7	3.5	3.7	1.4	6.7	3.0	8.8	4.4	7.4	3.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
MFI/Bank														
Yes, generally alone	37.2	40.1	31.1	40.4	33.8	40.2	45.6	50.0	36.6	42.6	26.4	30.6	33.5	38.9
Yes, With other family members	53.3	49.6	55.3	48.6	54.4	49.0	29.1	23.3	48.4	42.9	40.5	39.0	46.0	41.7
Yes, with others	3.7	3.3	3.2	2.2	3.4	2.7	1.9	2.1	3.1	2.6	3.2	2.8	3.1	2.6
No	5.9	7.1	10.3	8.8	8.4	8.0	23.3	24.6	12.0	12.0	30.0	27.7	17.5	16.8
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Outside of Village														
Yes, generally alone	42.9	47.6	41.9	53.3	42.3	50.8	61.4	68.8	46.9	55.1	43.7	50.3	45.9	53.6
Yes, With other family members	41.3	38.4	44.6	38.0	43.2	38.2	25.4	20.7	38.9	34.0	39.0	35.4	38.9	34.4
Yes, with others	4.7	4.0	3.4	2.4	4.0	3.1	2.1	1.9	3.5	2.8	3.3	3.2	3.5	2.9
No	11.1	9.9	10.1	6.3	10.6	7.9	11.1	8.6	10.7	8.1	13.9	11.1	11.7	9.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Within Village														
Yes	90.6	92.7	93.1	96.1	92.0	94.6	92.5	94.4	92.1	94.6	90.9	92.6	91.7	93.9
No	9.4	7.3	6.9	3.9	8.0	5.4	7.5	5.6	7.9	5.4	9.1	7.4	8.3	6.1
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Attend Meeting?														
Yes, generally alone	49.6	45.7	51.3	55.9	50.6	51.5	52.6	53.5	51.1	51.9	27.1	31.4	43.8	45.7
Yes, With other family members	15.5	12.7	17.9	13.2	16.8	13.0	11.6	6.7	15.6	11.5	13.4	11.3	14.9	11.4
Yes, with others	8.8	6.5	6.6	5.3	7.6	5.8	5.3	4.0	7.0	5.4	4.6	3.8	6.3	4.9
No	26.1	35.0	24.2	25.7	25.0	29.7	30.5	35.8	26.3	31.2	54.9	53.5	35.0	38.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Visit to Parent/ Relative's House	**29**													
Husband/ others family member	13.4	13.0	10.5	8.7	11.8	10.6	6.8	6.0	10.6	9.5	9.0	7.8	10.1	9.0
Own and husband/ other family members together	73.6	72.3	76.1	74.9	75.0	73.8	54.9	53.5	70.2	68.9	72.8	71.7	71.0	69.8
Self	8.9	11.3	11.8	14.6	10.6	13.2	32.3	34.4	15.7	18.3	15.9	18.1	15.8	18.2
Not applicable	4.2	3.4	1.6	1.8	2.7	2.5	6.0	6.1	3.5	3.3	2.4	2.3	3.1	3.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

B: Before 2 years; P: At present

The Table 67 describes the scenario of the mobility of women respondents. In the survey female respondents were asked whether they can go outside of their home for performing different activities. The survey data show that there are significant differences in terms of mobility between program and control households. In case of visiting market for purchasing necessary goods for the households, 37.9 percent of the UPP-Ujjibito respondents in the program households reported that they do not go to market, which is significantly lower than the control respondents, 41.5 percent. Another notable difference between the program and control households is observed in the context of going to Bank or MFIs. About 40.4 percent of the UPP-Ujjibito program respondents reported that they were used to go to MFIs which is significantly higher than that of control respondents, 33.5 percent. This freedom of movement also describes the similar improvement in terms of visiting health care centre, moving outside of village, and attending meeting. This agency centric approach to the freedom of movement is helpful in political empowerment of women which is extended with the freedom of decision making.

Freedom in Decision Making Helpful for Women Empowerment

Women's freedom in decision making is another important empowerment criterion in promoting their agency and taking their own responsibility in household, community, and society. This freedom can be described in the sphere of social and economic activities described in the Table 68. Social dimension includes the decision making aspects in terms of children's education, marriage, family planning, total children, nurturing, training, dowry, divorce rule as well as economic dimension of decision making can be described with expenditure, saving's investment, purchase, microcredit loan, gift purchase, own income, savings, and capacity to borrow.

Table 68: Women's Freedom of Decision Making in Household Affairs (In Percentage)

	Ujjibito		**UPP-Ujjibito**		**Combined UPP**		REMP-2		**Combined**		**Control**		**Total**	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Expenditure, Savings Investment, Purchase														
Husband/ others family member	16.0	15.1	9.7	8.1	12.4	11.2	6.5	5.3	11.0	9.8	10.8	9.6	10.9	9.7
Own and husband/ other family members together	59.2	58.3	67.1	68.3	63.7	63.9	43.9	43.7	58.9	59.1	54.5	54.9	57.6	57.8
Self	5.3	6.4	5.1	5.7	5.2	6.0	23.2	24.4	9.5	10.4	9.2	10.5	9.4	10.4
Not applicable	19.5	20.2	18.1	18.0	18.7	18.9	26.5	26.7	20.6	20.8	25.5	24.9	22.1	22.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Children's Education														
Husband/ others family member	12.0	10.7	5.7	4.7	8.4	7.3	5.3	5.1	7.7	6.8	7.6	6.6	7.7	6.7

	Ujjibito		UPP-Ujjibito		Combined UPP		REMP-2		Combined		Control		Total	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Own and husband/ other family members together	68.3	68.4	76.2	75.5	72.7	72.4	50.2	49.6	67.4	67.0	63.9	62.5	66.3	65.6
Self	8.1	7.8	6.7	7.2	7.3	7.5	28.2	28.9	12.3	12.6	9.4	10.2	11.4	11.9
Not applicable	11.7	13.1	11.4	12.6	11.5	12.8	16.3	16.3	12.7	13.6	19.1	20.7	14.6	15.8
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Children's Marriage														
Husband/ others family member	11.1	9.9	5.0	4.1	7.6	6.7	4.4	4.2	6.9	6.1	6.2	6.0	6.7	6.1
Own and husband/ other family members together	57.8	59.3	62.0	62.6	60.1	61.2	45.6	45.3	56.7	57.4	55.4	54.0	56.3	56.3
Self	5.0	5.5	3.9	3.6	4.4	4.5	22.3	21.4	8.7	8.5	9.1	8.7	8.8	8.6
Not applicable	26.1	25.2	29.2	29.7	27.8	27.7	27.7	29.1	27.8	28.0	29.3	31.3	28.3	29.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Family Planning														
Only husband	1.4	1.0	1.2	0.7	1.3	0.8	1.1	1.1	1.2	0.9	1.3	1.1	1.3	0.9
Discussed with husband	79.3	76.8	77.9	76.0	78.5	76.4	56.0	54.0	73.1	71.0	68.3	66.5	71.7	69.6
Only wife	2.8	3.7	2.6	3.1	2.7	3.4	7.7	8.4	3.9	4.6	3.5	3.9	3.8	4.4
No discussion	0.8	0.6	1.8	2.0	1.3	1.4	2.8	2.8	1.7	1.8	1.8	1.3	1.7	1.6
Not applicable	15.7	17.9	16.6	18.1	16.2	18.0	32.5	33.7	20.1	21.8	25.0	27.2	21.6	23.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Children Nurturing														
Only husband	0.8	0.9	0.9	0.7	0.8	0.8	0.7	0.4	0.8	0.7	1.0	1.0	0.8	0.8
Discussed with husband	73.9	73.3	80.4	78.6	77.6	76.3	53.9	52.6	71.9	70.7	69.6	67.6	71.2	69.7
Only wife	11.2	11.7	8.1	9.9	9.5	10.7	27.0	28.9	13.6	15.0	10.5	11.7	12.7	14.0
No discussion	0.9	1.1	1.6	1.6	1.3	1.4	1.9	1.8	1.4	1.5	1.5	1.5	1.5	1.5
Not applicable	13.2	13.0	9.1	9.3	10.9	10.9	16.5	16.3	12.2	12.2	17.4	18.1	13.8	14.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Number of Children														
Only husband	1.5	1.3	1.2	0.9	1.3	1.0	1.2	0.9	1.3	1.0	1.6	1.6	1.4	1.2
Discussed with husband	76.4	76.2	78.0	76.4	77.4	76.3	56.7	55.3	72.4	71.3	69.5	67.5	71.5	70.1
Only wife	4.7	4.0	3.9	3.8	4.2	3.9	12.6	12.8	6.2	6.0	4.9	5.2	5.8	5.8
No discussion	1.1	1.4	1.8	1.5	1.5	1.4	2.5	2.1	1.7	1.6	1.9	1.8	1.8	1.7
Not applicable	16.2	17.1	15.1	17.5	15.6	17.3	27.0	28.9	18.3	20.1	22.1	23.9	19.5	21.2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Microcredit Loan														
Husband/ others family member	11.3	9.8	5.9	5.5	8.2	7.4	5.1	3.7	7.5	6.5	5.3	5.2	6.8	6.1
Own and husband/ other family members together	77.6	77.6	82.4	80.7	80.3	79.3	50.2	51.1	73.1	72.6	60.9	60.2	69.4	68.8
Self	6.8	7.1	6.0	6.6	6.3	6.8	17.2	17.2	8.9	9.3	6.3	6.6	8.1	8.5
Not applicable	4.3	5.5	5.8	7.2	5.1	6.5	27.5	28.1	10.5	11.6	27.4	28.1	15.6	16.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Loan from Informal Sources														
Husband/ others family member	6.8	6.4	4.9	4.8	5.7	5.5	3.9	3.3	5.3	5.0	4.1	4.1	4.9	4.7

	Ujjibito		UPP-Ujjibito		Combined UPP		REMP-2		Combined		Control		Total	
	B	P	B	P	B	P	B	P	B	P	B	P	B	P
Own and husband/ other family members together	41.8	38.8	44.5	42.1	43.3	40.7	30.9	30.0	40.4	38.1	34.9	33.8	38.7	36.8
Self	2.8	3.1	3.8	3.5	3.4	3.4	10.0	10.2	4.9	5.0	4.9	5.1	4.9	5.0
Not applicable	48.6	51.6	46.8	49.6	47.6	50.5	55.3	56.5	49.4	51.9	56.2	57.0	51.5	53.5
Total	100	100	100	100.	100	100	100	100	100	100	100	100	100	100
Gift Choice for Special Occasion of Relative/Neighbor														
Husband/ others family member	12.3	11.1	8.1	6.8	10.0	8.7	5.6	4.9	8.9	7.8	9.3	8.8	9.0	8.1
Own and husband/ other family members together	75.9	76.2	82.0	81.9	79.4	79.4	58.2	57.4	74.3	74.1	74.3	74.3	74.3	74.2
Self	6.0	7.4	8.3	9.5	7.3	8.6	29.5	30.7	12.6	13.9	12.2	12.7	12.5	13.5
Not applicable	5.7	5.3	1.6	1.9	3.4	3.4	6.7	7.0	4.1	4.2	4.2	4.2	4.2	4.2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

B: Before 2 years; P: At present

The Table 68 data provided us the synopsis of women's access to family decision making affairs. We had a question on who made decision on repairing/building housing infrastructure, purchase of cattle or land between the project beneficiaries and control household. Our survey findings argue that women's access to decision making increases while other family members' control over the women decrease significantly. Two years ago of the program deadline, 8.1 percent of women made this decision independently and this increases to 9.6 percent in the endline of UPP-Ujjibito, RERMP2, and Ujjibito combined. Strangely, this access to decision making is similar in the control household; 9.6 percent. Related to children's education, women's participation in family circle's decision making increases in the program beneficiary households while this decreases in the control household. This participation was 76.2 percent of the surveyed household in two years ago of the UPP-Ujjibito deadline and this decreases to 75.5 percent in the endline. In the control household, it was 62.5 and 66.3 in that time. In terms of child marriage, the survey findings remain almost the same, 62.0 and 62.6 percent, between two years ago and endline. However, this access to decision making gets worse in the control household; it was 55.4 and decreases to 54 percent in that time. The distance between husband and wife about family planning was at very high and this reduces significantly. Women's independent decision making increases; only wife makes this decision in the context of 2.6 percent of respondent and this increases to 3.1 percent. The similar findings are also described in child nurturing, decision about the total number of children, loan from informal sources, and gift choice for special occasion of relative/neighbor. However, in the context of microcredit loan, control household is lagging behind the UPP-Ujjibito program beneficiaries; 6.0 percent of women made decision independently whether they will take loan or not and this increases to 6.6 percent at the endline of the program. On the other hand, the control household remains almost the same, 6.3 and 6.6 percent of the household, between two years ago and endline. Currently, women enjoy greater freedom in visiting relative/parent's house both in the program and control household. Furthermore, the research finding shows more impressive results in the context of own saving. Two years ago of the UPP-Ujjibito program deadline, 70.2 percent of the respondents made their own decision all time and this increases to 70.6 percent. In the context of control household, this was 42.3 and 46.6 percent respectively. This access to decision making is helpful in women's political empowerment that is also helpful in challenging the social problems like violence against women important for the sustainability of empowerment. This sustainability aspect can be explored in-depth by case study analyses.

6.4 Case Studies for Understanding Empowerment

Mousumi's Economic Empowerment Visible but Social Empowerment Lagging Behind

Mousumi lives in Patuakhali district has success in economic empowerment but social empowerment is still not up to the mark. As female members of the household, she and her daughters do not have the same authority like her husband and son. She is not conscious and her agency and accept structural authority as normal. However, compare with their mother's status in terms of marriage age, education, food and nutrition, child birth age and caring, her daughters enjoy better empowerment.

Mousumi is now 36 years old housewife who got married in the age of 12 years and gave birth the first child in 14. She involves in multiple income generating activities like duck, chicken, cow, and goat nurturing, and homestead gardening based on the supports of Ujjibito program's training and microfinance. Her husband has also multiple income sources like tea stall, mosque's moajjin, and decorator business. At the roadside market, moumi's husband, sohel mia, has a tea stall while we bought a cup of tea and cookies. Very close to this tea stall, Sohel mia works as moajjin in a mosque with a very insignificant remuneration. Although local decoration business is profitable, Sohel Mia does not have enough investment for economic crisis. In the tea stall, Khaleque helps his father when his mosque school is closed. Khaleque's parent wants him to be educated with the modern education system and achieve the master's degree after completion of the preliminary religious education. As a profession, the whole family wants him to get a government job to secure their inclusion in the power structure and improve their social status.

To fulfill the dream of having the son for *bongsher bati* or property inheritance, Sohel Mia continues to increase his number of children and successful in the fourth step. All of the three daughters of Mousumi and Sohel Mia's family are in the process of moving to father-in-law's family. The elder daughter has very insignificant formal education and was married in the age of 16 and lives in father-in-law's house. Mousumi along with her male family members believe that daughters belong to their husband's family and they are not supposed to be part of her family decision making process. The second daughter appeared in School Secondary Certificate (SSC) examination but failed to pass it. She got married and her husband stays in her father's family locally called *ghorjamai* that is increasing phenomena in rural Bangladesh to come out of poverty. This phenomenon can be described as the new pattern of dowry and is accepted as 'normal' despite economic hardship. Mousumi's family accepts this ghorjamai on the two major purposes. Firstly, they do not want to send her daughter in an uncertain destination may be prone to violence, insecurity, and poverty. Secondly, they can have better control over son-in-law in the decision making of their daughter's socioeconomic future as they provide financial supports for new investment in addition to housing, food, and security. The son's family accepts this new reality for the future economic security. The younger daughter is HSC pass and would like to continue her education in local college. When we asked about the bride choice, she stands with God's wish and father's decision'; it does not matter to her about the educated bride or illiterate. Although they are senior to their younger brother, they do not have the similar freedom of movement and authority in decision making.

Mousumi does not go outside of home as her son and husband do not like because of traditional social and religious norms. But she is allowed to visit the Ujjibito executed local NGO as this is helpful for getting soft loan to invest in their tea stall. It seemed to me that she adjusted with this restricted movement to secure peace and stability in her family. Although she is responsible for the loan, she has faith on her husband and son to pay the instalment in the course of full return of the loand.. Regarding the expenditure decision, Mousumi needs to consult with her son to finalize the decision in terms of investment or expenditure.

Khodeja's Empowerment Happening Slowly but Surely

Khodeja and her husband in Patuakhali district do not have stable employment and income important in maintaining livelihood. They have six children: two sons and four daughters. The two sons work in a ships and send money in a regular basis which is helpful for their household's socioeconomic security. Khodeja's NGO loan is fully paid with their sons' financial contribution and currently she has been maintaining saving account in a local NGO. In addition to her son's contribution, she has domestic animals like goat, cow, and chicken nurturing with the training from Ujjibito funded local NGO.

Khodeja's husband has the desire in patriarchy and this is changing due to social change. In most of the cases make decisions about family issues and concerns. According to him, *chelemeyeder ei buror kotha sunte hobe, tader kotha cholbena* (sons and daughters are supposed to obey family head's decision, they are not allowed to disrespect it). She sent her daughters in their father-in-law's house in at the age of 13 and provided some gifts like bicycle for her happiness. They do not want to describe it as dowry due to concerns over social pressure and government's legal measures. In some of the cases, many decisions are taken by Khodeja and their distant sons. The youngest daughter also mentioned that she relies on elder sister and sister-in-law in finalizing her marriage decision. This new practice also describe sister-in-law and daughter's inclusion in the decision making process. This transformation in family's decision making can be described with Ujjibito program's impacts.

Despite social awareness and empowerment pathways, local social services like health care facilities are insufficient for the ultra-poor people. Immediately before our visit to Khodeja, her granddaughter encountered bleeding because of road accident. Women members in the family made a quick decision to take him in local clinic for treatment and he was safe after this effort. The government health care facilities are 20 kilometers away from Khodeja's home which causes multiple problems like time consuming, death risk, and income loss in case of major sickness. On the other hand, pharmacist is not the right person in diagnosing health problems and in providing treatment.

Parul Enjoys Freedom of Decision Making for Socioeconomic Empowerment

Parul and her husband, Monju, live in Patuakhali has two children and expecting the third child as she is currently pregnant for six months. The two children are going to school and are assisting her mother in daily chores in terms of taking care of domestic animals, marketing for groceries as their father lives in Dhaka and work as boatman in the Burigangya River. Monju sends money in every week for family expenditures and livelihood improvement. In addition to Monju's money, Parul has a swing machine, got training from Ujjibito program funded local NGO which is another income source. Moreover, Parul has domestic animals like cow, duck, and chicken helpful for adding up income. Her freedom of decision making is the foundation in promoting agency and empowerment.

Parul takes most of the family decision regarding domestic animals, tailoring income, and remitted money. Sometimes, she consults with her husband when she is not sure about a specific issue and concern.

Parul moved in this present residence from another place where they did not have residential land and their housing condition was vulnerable: e.g., mud floor along with tree leaf's roof and wall. The current residential land bought a few years ago after his husband's migration in Dhaka and employed as the boatman. Now their housing is built with brick-built floor along with brick wall and roof.

They use pond water for household cleaning and related activities like bathing, and tube-well water for drinking. They are very concerned over the pond water sources as it accumulates cow dung, chicken waste, domestic waste, and rotten tree leaves.

Maleka's Empowerment Challenged by Socioeconomic Conditions

Maleka and her husband live in Pabna district are married about 12 years ago who do not have own land. Her whole family lives in her father-in-law's land. Her son is now at the grade four and was born in a government hospital. But her daughter was born in the house with the trained *dyema* as, according to Maleka, she did not have any delivery complicacy. The house is made of mud floor along with corrugated tin-made wall and roof worth about BDT 100, 000. All of them reside in a single room house including their domestic chickens due to space scarcity. Their house is almost inside the road; cow shelter place and cooking place are attached to the house. They are forced to tolerate bad smell of cow shelter, dung, and cooking waste as they do not have any other options. Their bathroom is at the unhealthy location passing coking wastage and cow dung into local water canal. Although they face the vulnerable socioeconomic conditions, they have tube well for domestic activities and drinking water source.

Maleka's empowerment is challenged by socioeconomic conditions and her agency is supported by her father and NGO's contribution. Maleka's father gifted a goat during her marriage although she does not term it as dowry. The goat gave calves and they were multiplied. After selling most of the goats, they bought a cow helpful for multiplying but died two of them in 2015. Currently, they bought hybrid cow and a source of future family income and nutrition. Maleka's father also gifted a swing machine and she set this machine inside the same congested room and works in improving economic conditions.

They depend on the income, BDT 2500/month, earned from the grocery store. They have DPS, a saving scheme, with Grameen Bank that was helpful for getting the loan of the same amount for establishing the grocery store. During her son's illness, she was supposed to spend about BDT 60,000 loaned from local NGO and other sources.

During the Ujjibito program period, 2013-19, no paramedic visited her although she has a daughter aged about three. She also did not attend any court yard session. She does not hear about tip-e-top and kishoree club. But she takes all of the vaccines for their two children from the government hospital. She also received seeds for home gardening.

Related to the microfinance, when the instalment schedule appears, she visited to majeda's house, the group leader, for paying the weekly amount. Sometimes, Majeda visited her for collecting the installment when Sabina is late or unable to pay the assigned amount.

Despite the vulnerable economic condition, Sabina's economic empowerment is visible with her father's contribution. The Grameen Bank's DPS is under her own ownership although her husband pays the instalment when she is not in a condition to pay it. She needs to have husband's company to visit a doctor and hospital but does not want to portray her husband's company as surveillance; she describes it as caring, love, attendance, and security. She informs her husband if it needs to go outside of home, for example, for collecting cow's grass. According to Maleka, if she does not inform, her husband may be concerns over her safety or may face difficulty in getting something. When we visited her on 4 July 2019 at noon, her mother-in-law was observing us about what is going on and her sister-in-law's response regarding our question.

Ferdousi's Empowerment in Track by Overcoming Economic Barriers

Ferdosui is a literate person aged 48 years. She has four daughters who are highly educated and currently employed who supported her economically. The younger daughter completed Higher Secondary Certificate and enrols in Bachelor level education. The elder daughter is doing diploma and would like to work as paramedics. She overcomes socioeconomic barriers and successful in promoting her agency for social empowerment.

Her husband was a *gorjamal* due to his economic vulnerability. At the early stage, Ferdousi also encountered economic challenge and worked as house made locally called *kajer buya.* To overcome this challenge, Ujjibito in addition to some other NGOs supported a lot. She got training to make seeds and to produce kecho fertilizer in addition to some other trainings. Paramedics from PCD NGO visited her during the Ujjibito program period. She also participated in the courtyard sessions which were helpful in getting awareness related to social issues like early marriage, dowry, and violence against women.

Currently she has two loans with PCD: BDT 30,000 and 20,000, and another with Grameen Bank: BDT 20,000. She is also involved in Association for Social Advancement (ASA). The NGOs loans and associated activities helped her to overcome the economic crises, to secure her daughter's education, and to increase household property. She has four hybrid cows, two and half bigha agricultural land, four goats, one pond, and two DPS. In addition to these four cows, she sold two other cows, earned BDT 200,000 and deposited into her bank account. One cow gave ten litre milk, a stable source of income about BDT 600 every day. Additionally, she gets extra milk helpful for family nutrition. Among the agricultural land, one bigha is in her ownership and the left, one and half bigha, is leased locally called *kot* with BDT 20,000. The two DPSs are with Grameen Bank, BDT 10,000 and with PCD, BDT 12,000. She earned about BDT 10,000 by selling vegetable every year. For this vegetable production, Ferdousi got lalshak, mistikumra, and kolmishak seeds from PCD NGO. Despite this major contribution, Ferdousi did not hear the name of of Ujjibito. Ferdousi has also earning from pond by selling fish.

While she fall in sickness, one daughter provided her better treatment with her own income. This pattern of social security can be described as daughters as the base of socioeconomic security.

Related to family issues and concerns, Ferdousi has the major role in decision making. Sometimes she talks with her daughter and takes suggestions. She took a decision alone excluding husband and daughters to an investment project and spent BDT 20,000 but this investment suffered from the loss. Currently, her daughters tease her while her husband reminded her about the loss.

Hanifa' Empowerment Challenged by Social Problems

Hanifa does not have formal education and her husband is 59 and not active in income generating activities due to his sufferings from tumor at right leg. They have three sons and three daughters. They built a house ten years ago and it did not have standard floor and wall. The size of their residential land is six katha. Her empowerment is challenged by social problems and she faces the major challenges in using her agency.

All of the three sons are separated three years after their marriage and live in with their wife in the same residential land. They do not have formal education. Wife's demand and poverty are the basic factors for this separation. Hanifa argued that their daughter-in-law get better food and nutrition in their parent's house, they cannot tolerate starvation which creates multiple social problems between daughter-in-law and son, father and son, and mother and son. Hanifa mentioned her present social problems with the comment: *porer meye thai thai shaori kore hi hi* (the mother encounters pain and sufferings when she brings daughter-in-law in house). Their separated sons do not share food even when they face starvation.

Four years ago, they took loan for BDT 30,000 from ASA but returned a significant amount due to incapability of paying the instalment. They do not have savings as they are paying the loan and reducing the debt. Still her husband is incapable of taking treatment for his tumor. Nobody hires him as he is not physically fit in doing manual work.

They do not get government's social services benefit like old age services as, according to him, he does not have connection with local powerful people. She is supposed to pay BDT 1,000 to Union Council member/chair person in getting the government's old age benefit. Acording to Hanifa, *sorkar ekhon kanader dekte paina, chartoler lokder deke* (the government does not care about poor people; they care more to the powerful). Hanifa managed to get road reconstruction tasks for eighty days by the kind consent of Union Council member. Total thirty females work together and everyone gets BDT 105: 100 in cash and 50 savings. But local daily laborer's wage is BDT 250; this indicates that the RERMP2 is paying less to Hanifa.

When we asked about hygienic awareness and practice, she responded that *jar pete vat nei tar abar paikhanar por saban usage* (those who is starved cannot think about using soap after using latrine). Hanifa further elaborated: one shop bar price is about BDT 20 and she has priority to buy rice over soap. Because of this priority, she and her husband do not eat egg, beef, and poultry for months. They eat low quality fish even occasionally; last month one daughter and her husband visited them and thus they got the chance of eating telpia fish three times. However, if they do not visit them, they may not have chance in eating fish. Hanifa and her husband are happy in having their daughter's visit side by side they are concerns over extra economic pressure and loan burden.

Rahima' Empowerment has Potential but Hampered by Social Problems

Rahima is 35 years old and RRF NGO member for the last seven years. They have two children: daughter aged 15 and son aged 10. She dreams to enroll her son in Madrassa education system and dreams to have his Master's degree. However, she seeks only SSC degree for her daughter. Rahima has higher empowerment potential although her agency faces major social problems.
Her husband, Tareq, migrated to Dubai to overcome the curse of poverty. He lives in his mother's residential land as he did not have land property. Before his migration, Tareq worked as an agricultural day laborer but his income was not sufficient in maintaining the descent livelihood. He needed to seek loan from local NGO and neighbors in meeting emergency needs like sickness or disaster effects.

Still Rahima has loan about BDT 25,000 out of BDT 150,000 borrowed for her husband's migration in Dubai. Additionally, her brother-in-law gave BDT 40,000 loan.

Tareq sent money through bKash and they do not know about legal dynamics of this remittance. One person collects money from her husband as bKash agent in Dubai and inform this transaction in Bangladesh. The bKash agent in Bangladesh pays the transacted amount to Rahima. In the last year, Tareq sent about BDT 100,000 in this bKash transaction system. Based on his remittance, Rahima paying the loaned money in a regular basis. Rahima has a swing machine helpful for earning about BDT 800 in a month. She buys cloth from local market and sell the readymade garment at neighborhood and local market. Rahima does not have a bank account; the money she earned and received from her husband use for household and installment payment.

According to Rahima, he is supposed to talk with her husband in the family decision making process as he is the main earner of family. Although her family lives in her mother-in-law's residential land, they are separated in terms of eating meal and expenditure.

Social awareness is visible in terms of violence and dowry based on Ujjibito program although she did not participate in courtyard session. Rahima mentioned that violence against wife and daughter decrease significantly and she does not want to offer her daughter's marriage with dowry.

Despite this visible progress, traditional social organization is breaking down in terms of marriage pattern, love and relationship, level of trust, neo-local residence, and family bond. Due to increasing social problems, Rahima does not want to provide higher education for her daughter. After School

Secondary Certificate (SSC) completion, she wants to send her daughter to father-in-law's house. Otherwise, her daughter may be face social problems like the intimate relationship. Everybody like her husband, mother-in-law, relative, and neighbor will make her responsible for her sister's 'moral degradation.'

6.5 Conclusion

Sustainable Development Goals (SDGs) 5 is one of the driving force of women empowerments as poverty and resource scarcity cause major vulnerable for rural women in Bangladesh in terms of inequality, exclusion, and deprivation. Based on the economic factors, it is expected to improve economic conditions of the ultra-poor in terms of agricultural land ownership, residential land, pond, domestic cow, DPS, and total investment. The economic capability will also be helpful in reducing the concerns like the outstanding loan, risk management, and malnutrition. This sustainable economic condition surely contributes to social condition related to gender equality, disability services, level of education, age of marriage, main & secondary occupation, and residential place by overcoming social concerns like human rights to disable people and causes of dropout. Participation in social awareness programs is the precondition in strengthening individual agency in the empowerment pathways. When adolescent girls and young women have basic information related to their rights and responsibilities, they can address the issues and overcome the concerns effectively. The improvement of socioeconomic conditions can be helpful in promoting the freedom of women's movement, decision making, upward social mobility, political participation and by driving out the concerns over empowerment process: e.g., restrictions to participate in group meeting, took money/ornaments by force, restrictions on visiting parent's house, ongoing outside of home, forced to take loan, physical torture, and mental torture. Women empowerment is described as the freedom of movement like visit at market, health care centre, and participate in political demonstration. Although women empowerment is happening in locality but still a long way is to go in promoting the agency for social empowerment.

Despite the improvement of women empowerment, some other social problems like inequality, selfishness, extra-marital relationships, and divorce are causing the major concerns over the SDGs and sustainability. Local poor people nurture domesticated animals for generations suitable for local economy, environment, and empowerment. But the foreign animal raises concern of social inequality. Again, new disease pattern causes the foreign animals more vulnerable and economically unsustainable. Moreover, local poor people make seed and fertilizer with their local knowledge and women perform stronger role in the process. But new seed and kecho fertilizer making training provided by Ujjibito enlisted NGOs promote new mode of production different from local livelihood. Currently, extra-marital relationships and divorce are increasing phenomena in locality. Based on survey data, respect to seniors are visible at community level but leaving seniors at household level is increasing concerns due to poverty and scarcity. Currently, local social organizations are breaking down because of this new form of society, culture, and transformation.

Again daily wage with RERMP2 is not helpful in reducing the scarcity as local daily wage is about BDT 250 although they received BDT 150 from the RERMP2 program. Again RERMP2 has very limited flexibility in promoting agency centric innovative and creative idea for eradicating poverty and promoting social wellbeing. Furthermore, vocational training is gender biased; most of the male get these trainings and female are lagging behind. Although the ultra-poor's access to social services increase in local level, it is still a long way to reach the standard level based on my fieldwork in Gangni. I observed one respondent has been sufferings from tumor at right leg and is incapable of taking treatment because of poverty.

Despite some of these limitations, the Ujjibito program components, Kishoree club, is one of most successful interventions and works as the source of *alor karkhana*, factory of enlightening mother,

daughter, mother-in-law, and grandmother. Daughters are more helpful in supporting their parents when they have better employment opportunity. Women employment outside of home and their saving increase in local area. Their freedom of movement and access to decision making also increase in individual, household, and community level. It is high time to guide this agency-centric empowerment approach so that poor people can secure its sustainability. In this context *alor karkhana* can be described as the most successful example synonymous to the SDGs and empowerment sustainability for better future in Bangladesh.

Chapter SEVEN: Analysis of The Findings and Policy Implications

7.1 Introduction

The study evaluates the impact of Ujjibito on different outcomes, most importantly on economic wellbeing, health and nutritional wellbeing, and social wellbeing. We have used sustainable development framework to assess the impacts. The goals are primarily oriented towards creating a poverty and hunger world and building a humane society that will ensure inclusive growth and equity along with poverty while protecting resources for future generations. In examining the project outcomes, we have addressed several questions. The questions are:

- Has the project contributed to economic wellbeing?
- Has the project contributed to nutritional wellbeing through dietary diversity?
- Has the project contributed to health wellbeing of the women and children?
- Has the project contributed to social empowerment, particularly of the women?

Above all these questions, the most critical question is, how all these dimensions of economic wellbeing, health and nutritional wellbeing, and social wellbeing together contribute to sustainable poverty alleviation? In most impact studies, impacts have been assessed on different outcomes from very micro perspective. The global view of the impact of a project or a program remains missing. In this chapter, the findings of the study on different dimensions will be evaluated in the context of global relevance of the project. In assessing the global relevance of the project, we intend to address the question of which dimension of the project has contributed to achieving the ultimate goal of the project.

7.2 The Key Findings

We have addressed three dimensions – economic wellbeing, social wellbeing, and health and nutritional wellbeing - of the project. We have considered three broad groups in the impact assessment – RERMP, UPP-Ujjibito, and control. The major findings that have been presented in the last three chapters are as follows:

- We have found that RERMP households are comparable with the control households. Their economic gains are similar to those of the control households. As such, major impacts are evident for the UPP-Ujjibito. These households received training of different nature. As such, impacts that we have found in terms of economic impacts for the UPP-Ujjibito households are the impacts of training interventions, given their access to credit services.

- No evidence on health wellbeing could be found for lack of comparable data. Nevertheless, we found that the project has positive impacts on health wellbeing and dietary diversity. Dietary diversity was outcome of two major factors – production of vegetables and nutritional awareness.

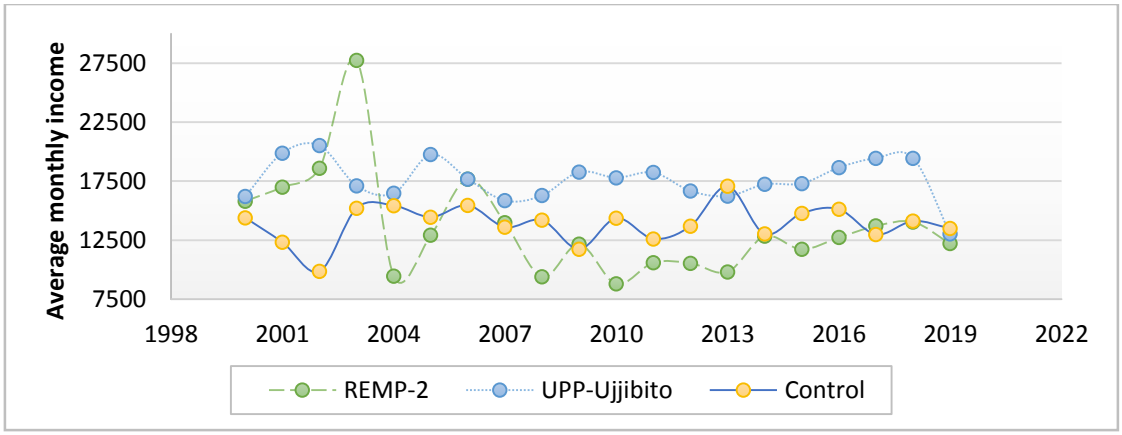
- Although RERMP households did not gain compared to the control households, the RERMP households appeared to be more empowered socially. They have more mobility, more decision-making power and more participation in external environment than the other two comparable groups. It was quite expected as the RERMP participants had to interact with external environment everyday at workplace. However, generally program participants both in RERMP and UPP-Ujjibito were socially empowered compared to the control households.

- The UPP-households were better-off economically in terms of per-capita monthly income and expenditure, savings, investment and assets compared to both RERMP and control households. This means, given access to credit, training has made positive impacts. One may raise question about the role of micro credit in the outcome. Access to credit was given; it was not a given intervention under the project. Nevertheless, we found that more than 70 percent of the control households had access to credit compared to around 80 percent for the UPP-Ujjibito participants. However, intensity of economic gains was higher for the UPP-Ujjibito households with self-employed skilled development training and vocational training. Largest gains were evident for the participants with vocational training. This is corroborated by our field level observations.

- Because of the higher positive economic impacts, the incidence of poverty was lower for the UPP-Ujjibito households compared to other two groups. It may, however, be noted that average monthly income and expenditures were higher for the UPP-Ujjibito households than the other two comparable groups. Regardless of the duration of membership, our data suggested monthly average income has remained more or less around BDT18,000 (Figure 27) and monthly average expenditure had been around BDT15,000 (Figure 28).

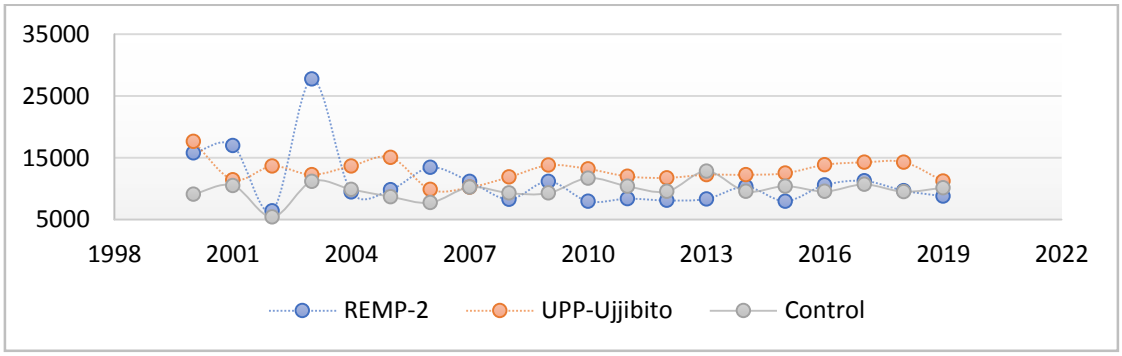
In brief, the project has made positive contribution in reducing hunger, evident from lower food poverty rate, and has substantially contributed to reducing poverty. The critical question is, what has led to reducing poverty? Is it economic wellbeing or social wellbeing or nutritional awareness and dietary diversity or all of these? We have addressed the question by correlating the three dimensions with multi-dimensional poverty.

Figure 27: Trend of current average monthly income by membership year



Source: End line survey (2019)

Figure 28: Trend of current average monthly expenditure by membership year



7.3 Multidimensional Poverty Alleviation as the Prime Goal:

Alleviating multidimensional poverty is expected to be one of the critical outcomes of the seventeen sustainable development goals[32]. At least six goals directly contribute to this expected outcome. These direct goals are presented in the following table:

Table 69: Selected Sustainable Development Goals for Sustainable Poverty Alleviation

Goal-1: No Poverty: The goal is to end poverty of all forms. In addition, the goal envisages resilience building of the poor and the vulnerable population with exposure to different shocks including extreme climate situations by 2030. Among the strategies, the UN recognizes micro finance as a means to eradicate poverty. Goal-2: Zero Hunger The goal is to end hunger and ensure food security of all people, particularly poor and people living in vulnerable situations. Food poverty will be eliminated through doubling agricultural productivity and income of the small farm producers by 2030 through access to land and productive resources, inputs, knowledge and information, different markets, financial services and other economic opportunities. Finance too is recognized as one of the major mechanism of ending hunger. Goal-3: Good Health and Wellbeing The goal is to reduce mortality rate of new born, children and mother, in particular, through access to different institutions and support services. Goal-4: Quality Education By 2030, the goal is to bring all girls and boys under primary and secondary education through building infrastructure, scholarship, reducing disparity in enrollment and other opportunities. Vulnerable areas should have special emphasis. Goal-5: Gender Equality The goal spells out the process to end all forms of discrimination against women and girls. The process includes ending violence against women and girls, recognizing the role of women and girls in unpaid activities and all socio-economic opportunities. Goal-10: Reduced Inequality Income and wealth inequality is a major problem globally with few percentage of people own most of the resources. It can be reduced through increasing income growth at a higher rate than the national average. But reducing inequality requires steps beyond income increasing income. As such, the goal also aims at empowering the poor or low-income individuals to access different socio-economic and political institutions.

These six goals are also relevant for the UPP-Ujjibito project. The multi-dimensional poverty can be achieved through these six goals as identified in the above box. Alleviating multi-dimensional poverty contributes to the process of sustainable poverty alleviation. The question is, why?

7.3.1 Concept of Multi-dimensional poverty:

As a complementary analysis approach to uni-dimensional poverty measurement, multidimensional poverty measurement (MPI) depicts a larger picture of wide-ranging poverty. It helps the policy makers and practitioners to focus on the vulnerable areas of any specific group or people and allocate the

[32] SDGs are reported in the appendix to this chapter.

scarce resource in view of that. In Multidimensional Poverty Index (MPI), despite the unidimensional poverty measurement approach, the human deprivation is visualized through deficit of minimal level of diverse basic needs. More clearly, this can be defined as the aggregate shortfall of all the basic items for any individual. Thus through this method it would be comprehensible that if any individual is income poor, whether is also deprived of other basic needs, like, food, clothing, shelter, education, empowerment, human dignity, employment and so on. Therefore, MPI allows examining the driving indicators behind poverty and the depth of it.

Sen (1976) criticized the head count ratio (percentage of people with income less than the poverty line) and the income gap ratio (average of the ratio of the poverty gap to the poverty line) as those two are not sensitive to redistribution of income among the poor and head count also remains same if the situation of the poor gets worse. Therefore, due to the identification problem, he suggested an alternative approach to establish a poverty-line income, which is ample to satisfy minimum basic needs and consider any person is poor if he or she falls below that poverty line.

Poverty is fundamentally a multidimensional incident and there are several crucial reasons behind measuring multidimensional poverty. Measuring only income poverty, i.e., failure to reach minimum threshold level to meet diverse monetary or non-monetary elements required for a subsistence standard of living is not enough. Several basic factors like, malnutrition, child mortality, primary school completion etc. are not highly correlated with the level of income poverty. Evidences from various countries show that an individual or household might not be income poor but may be multidimensional poor. Incidence of multi-dimensionally may be higher than that of income poverty. For example, where only two-third of Niger's people are income poor but according to MPI measurement 93 percent of it's people are multidimensional poor (Alkire & Santos, 2010). Another example is Bhutan, where Gasa, which has among the lowest income poverty incidence but the highest level of multidimensional poverty in the country, where population face considerable deprivations in access to improved drinking water, electricity and education. Thus, income as the only pointer of well-being is improper and other factors or attributes, e.g., health, housing, education, life expectancy, access to public goods etc. needs to be addressed. In those cases, MPI helps to understand the incidence and intensity of poverty at the same time allows examining the reasons behind their poverty. This means, MPI breaks down the poverty indicators and shed light on the other deprivation attributes of life, which is helpful to understand the diverse deprivation level of a person or an ethnic group or a state or a country.

There have been multiple approaches to capture multidimensional poverty. The research in this area has mostly focused on finding a suitable poverty measure, rather than developing new methods of identifying poor. Poverty measurement can be broken down conceptually into two distinct steps: (1) *the identification* step that defines who is poor (2) *the aggregation* step that brings together the data on the poor into an overall indicator of poverty.

The international Mutidimensional Poverty Index is an adaptation of adjusted headcount ratio ($\boldsymbol{M_0}$) modeled by Alkire-Foster. There are mainly two main steps in measuring poverty in this method i.e. identification step and aggregation step, with a particular choice of indicators, deprivation cutoffs and relative weights, and a poverty cutoff. The summary of the Alkire-Foster method is given in Appendix to this chapter.

Table 70: Dimensions and Indicators of Multi-Dimensional Poverty

Deprivation	Indicators
Food	Food poverty
Health	Protein intake
	Iodized salt intake
	Access to healthcare
	Sources of drinking water

	Sanitary toilet
Education	HH head years of schooling
	Literacy rate of above 50 percent
	Access to vocational training
Standard of living	Housing condition
	Access to electricity
	Living space
	Ownership of mobile
	Transport – ownership
	Investment in bed
	Access to television – ownership
	Use of sandal
Social protection	Access to VGD/VGF
Vulnerability	Seasonal migration
	Exposure to natural disaster

Each dimension was given equal weight. Global MPI was calculated.

Estimate of MPI as a Proxy for Sustainable Poverty Alleviation:

Given the dimensions and the indicators as well as the threshold of 0.33, MPI was calculated. Incidence of poverty based on uni-dimensional and multi-dimensional poverty is reported in Table 71.

Table 71: Incidence of Headcount Poverty

Poverty Status	CBN based Poverty	MPI based Poverty
Poor	43.72	60.17
Non-poor	56.18	39.83

The divergence between CBN based incidence of poverty and multi-dimensional poverty. Expectedly, incidence of poverty based on CBN method is lower than that of multi-dimensional poverty. The percentage of non-poor reduces to 39.83 percent when estimated based on MP threshold from the CBN based estimate of 56.18 percent. This means, percentage of multi-dimensional poverty rate 60.17 percent. Now the question is, how the estimates are different by the participation status.

Table 72: Incidence of Multidimensional Poverty and Dietary Diversity Index

	Headcount (MPI based)	Average Deprivation Score	Average Dietary Diversity Score	Average Women Empowerment Score
REMP-2 Skill Dev. Training (RSD)	68.12	32.29	31.65	63.60
UPP- Skill Dev. Training (USD)	60.51	31.58	35.85	62.18
UPP-Self Employment Training (USET)	55.19	28.92	37.64	63.40
UPP-Youth Vocational Training (UYVT)	52.06	28.68	37.44	61.68
UPP-General Dev. Group (UGDG)	61.09	31.56	35.15	61.96
Control Group	68.59	33.16	32.80	57.19

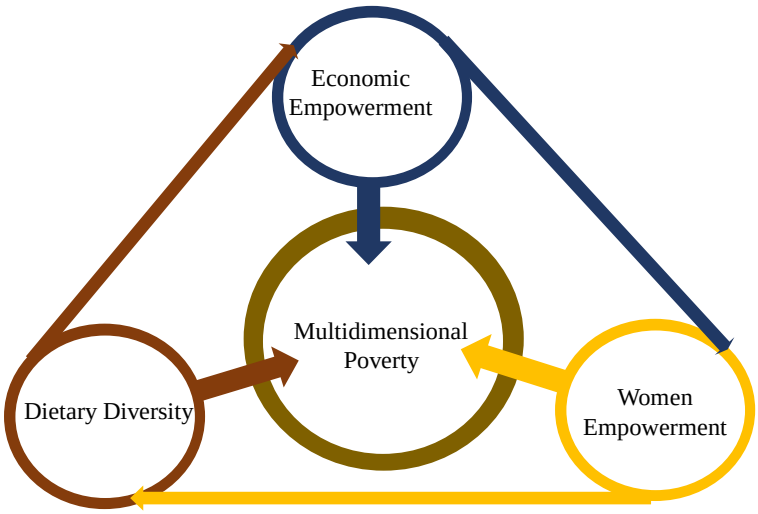
Table 72 shows that the incidence of poverty based on MPI threshold is higher for control and RERMP households than the comparable UPP-Ujjibito households. Around 68 percent of these households are multi-dimensionally poor. Lowest incidence of multi-dimensional poverty is evident for the UPP-Ujjibito

households that received vocational training. Indeed it appears that the incidence of poverty is higher for the UPP-general development group among the UPP-households. This also demonstrates that access to micro credit with simple awareness building has limited impact on the incidence of poverty. Nevertheless, it does reveal that given access to credit, skill development training creates significant impact on poverty reduction.

Do Project Impacts Contribute to Sustainable Poverty Alleviation?

Given the fact that the UPP-Ujjibito project has multi-dimensional interventions with multidimensional impacts, we have found that the project goals have been attained. That is, the program participants have been benefitted from participation in the project. It has impacts on economic wellbeing, nutritional diversity and social wellbeing. We have estimated the impacts separately for each dimension. Given the complex objectives and goals, it is relevant to raise the question of which contributes to sustainable poverty alleviation, proxied by reduction in multidimensional poverty.

Figure 29: Causality between MPI and the Dimensions of UPP-Ujjibito



The above figure shows that multidimensional poverty alleviation can be determined by the combined effect of three individual impacts – economic wellbeing, dietary diversity and women empowerment. It shows that these three dimensions directly contribute to reduction in MP. But measuring this contribution is complex as these three are also endogenous. The diagram shows inter-relationship between those three individual impacts.

We, therefore, developed a structural model to estimate contribution of each element of impacts to multi-dimensional poverty. It was specified as follows:

$$MP = \alpha_0 + \alpha_1 EE + \alpha_2 DD + \alpha_3 SE + \varepsilon \quad (1)$$

$$EE = \beta_0 + \beta_1 DD + \beta_2 SE + \delta Z + \zeta \quad (2)$$

$$DD = \rho_0 + \rho_1 EE + \rho_2 SE + \kappa Z + \varsigma \quad (3)$$

$$SE = \theta_0 + \theta_1 DD + \theta_2 EE + \gamma Z + \omega \quad (4)$$

The above four equations are termed as structural or system equations. Vector Z contains HH characteristics including equation identification variable. MP refers to multi-dimensional poverty. EE is Economic Empowerment, defined as an ordered variable (4 for non-poor, 3 for moderate poor, 2 for extreme poor and 1 for food poor). DD refers to dietary diversity, defined in terms of dietary score. SE is social empowerment (women empowerment) defined in terms of women empowerment score. The

structural equations were fully identified. Therefore, coefficients could be estimated using the structural model. The results are presented in Table 73.

All three variables of equation (1) were significant and had negative signs. This means that the three wellbeing variables (economic, dietary diversity, social) contributed to reducing multidimensional poverty. Based on the magnitude of the coefficient, it can be inferred that dietary diversity had made more contribution followed by economic empowerment and women empowerment.

As expected and evident earlier, the RERMP did not positively contribute to economic empowerment and dietary diversity, but it did contribute positively to women empowerment. All types of UPP-Ujjibito households with diverse training have higher economic empowerment, dietary diversity and women empowerment. Interestingly, day labor headed households had dietary diversity but not economic empowerment.

Table 73: Estimates of Structural Model of Multi-dimensional Poverty

	Multidimensional Poverty			Dietary Diversity Model			Economic Empowerment Model			Women Empowerment Model		
Dietary Diversity Model	-0.052	0.013	-3.880									
Economic Empowerment	-0.041	0.002	-25.330									
Women Empowerment	-0.035	0.010	-3.300									
Cultivable land (Bigah)				0.009	0.002	3.770						
Ownership of enterprise (yes=1)							0.298	0.058	5.120			
Years of schooling of spouse										0.001	0.001	1.020
REMP-2				-0.001	0.007	-0.140	-0.136	0.060	-2.270	0.060	0.009	6.570
UPP- Skill Dev.				0.024	0.007	3.470	0.282	0.056	5.040	0.049	0.009	5.720
UPP-Self Employm				0.038	0.008	5.000	0.319	0.063	5.040	0.056	0.010	5.780
UPP-Youth Vocati				0.015	0.017	0.870	0.391	0.137	2.850	0.047	0.021	2.220
UPP-General Dev.				0.016	0.007	2.180	0.219	0.060	3.670	0.049	0.009	5.410
Day labor				0.008	0.004	1.920	-0.079	0.034	-2.320	0.009	0.005	1.720
Cultivation/nursery				0.026	0.008	3.100	0.075	0.063	1.190	-0.002	0.010	-0.220
Fishery and Livestock				0.014	0.007	1.990	0.066	0.056	1.180	0.030	0.009	3.520
Vehicle Driving				0.027	0.007	4.040	0.045	0.055	0.820	0.011	0.008	1.320
Services				0.020	0.006	3.170	0.014	0.052	0.270	0.021	0.008	2.680
Business				0.022	0.007	3.310	0.133	0.056	2.360	-0.002	0.008	-0.290
Household chores				0.025	0.004	6.640	0.021	0.031	0.690	-0.022	0.005	-4.680
Tailoring				0.022	0.009	2.310	-0.061	0.078	-0.780	0.028	0.012	2.390
Others				0.012	0.005	2.320	-0.092	0.043	-2.150	0.007	0.007	1.140

7.4 Validation of the Findings: Use of Propensity Score Matching (PSM)

The findings that we derived in the earlier chapters were based on the unmatched data. It may often raise the question of reliability and validity of the findings. From the impact methodology perspective, the question is reasonable. Reliable estimates can be derived when the data set is balanced considering the identification criteria. The PSM estimates of impact outcomes are reported in Table 74. We have considered some key outcome variables and three dimensions of the project outcomes.

Table 74: Average treatment effects among unmatched and matched group

Economic variables		Control VS UPP-Ujjibito		REMP-2 VS UPP-Ujjibito	
		Treatment Effect	Test-value	Treatment Effect	Test-value
Monthly income	Unmatched	4178	8.96	6121	10.83
	Matched	2401	4.96	4176	7.83
Monthly expenditure	Unmatched	3296	10.96	3935	10.38
	Matched	1964	6.36	2825	7.36

Accumulated savings	Unmatched	1062	5.02	1216	4.40
	Matched	1051	4.92	1034	3.00
Annual investment	Unmatched	7210	2.23	10907	2.62
	Matched	6576	1.61	11177	2.62
Food poverty	Unmatched	-0.069	-5.12	-0.092	-5.08
	Matched	-0.07	-4.30	-0.098	-4.1
Multidimensional poverty	Unmatched	-0.033	-2.14	-0.023	-1.21
	Matched	-0.035	-2.05	-0.041	-1.78
Dietary Diversity Score	Unmatched	0.021	3.93	0.028	4.23
	Matched	0.022	4.02	0.0388	4.90
Women Empowerment Score	Unmatched	0.056	8.37	-0.013	-1.6
	Matched	0.054	7.06	-0.015	-1.62

Source: End line survey (2019)

Table 74 shows the difference in outcomes between control and UPP-Ujjibito households, and RERMP and UPP-Ujjibito households. The results that we derived from the unmatched data hold with that of matched data set. The estimates show that the UPP-Ujjibito households have higher income, expenditure and savings, lower food poverty and multi-dimensional poverty, and higher dietary diversification and women empowerment. Compared to the control group, incidence of food poverty is lower by seven percentage point, and multidimensional poverty by about four percentage point. Similar trend is also found for dietary diversity and women empowerment. However, investment was higher by around BDT 7,000 for the UPP-Ujjibito households, the difference was not statistically significant at five percent level.

The results are better for the UPP-Ujjibito households when compared with the RERMP households. All economic variables were statistically significant. Investment was higher by BDT 11,177. Incidence of food poverty was lower by four percentage point for the Ujjibito participants. Multi-dimensional poverty was lower by four percentage point. Similarly, dietary diversity was higher. However, we reported earlier that the RERMP households were more socially empowered than the UPP-Ujjibito households. The PSM estimate shows that the difference is not statistically significant at five percent level, although the direction suggests that the RERMP households are more socially empowered – women are more empowered.

In brief, the findings of the impact assessment are robust and consistent. Based on the estimates, we can argue that the probability of staying poor is higher for the control households than the other two comparable groups.

7.5 Policy Implications

The findings that have been derived are quite robust. Not only the findings have been derived from descriptive analysis, they have been corroborated by the econometric analysis. Use of different techniques generated similar results. In light of the robust findings, we derive some important policy implications.

First, UPP-Ujjibito as a program has made significant impact on the overall impact of sustainable poverty alleviation, as proxied by multidimensional poverty. Therefore, there can be a similar project with similar features that will contribute to achieving the sustainable development goals.

Second, training has made significant impact on economic outcomes like income, expenditure, savings and investment compared to other groups. But the participants that had received skill development training and self-employment training had higher economic outcomes, compared to the conventional

micro finance groups with general awareness training. Therefore, this finding will have implication in future project development to emphasize on self-employment and skill development training.

Third, the importance and impacts of self-employment and vocational training suggests that access to credit with general two-training day training did not have higher impact. Based on the positive impacts of self-employment training, it can be argued that self-employment skill development training if tied to access to credit will lead to larger impacts.

Fourth, vocational training has made more impacts than any other training interventions. More emphasis should be given on vocational training. What is important is the selection of the training areas. Not all types of vocational training will have similar impacts. It should be decided and imparted based on the economic structure, local demand and future competition.

Fifth, RERMP households have not gained from participation in the project. But all rationale arguments would suggest that the design of RERMP would make the extreme households more sustainable after two years of participation with accumulated savings and equal amount of grant from LGED under the project. Their conditions were comparable with those of the control households. Several factors may have contributed to it. They were the most vulnerable households, and they could be connected with micro finance programs only after two years, but not all did. Based on the results and our observations, it can be argued that the RERMP type of interventions could be more effective had they been members of partner organization from the beginning of their participation in the program and had their savings been maintained by the partner organization. This would have made relationship with partner organization deeper and they could be guided into more professional training. The design of RERMP as it stands now needs to be examined, tested further different alternatives and revised, if needed.

Sixth, we have found that monthly income of the UPP-Ujjibito participants even with training has remained more or less around BDT 16,000, though higher than the average monthly income of both RERMP and control households. The income level may be good enough to stay above lower poverty level, but needs extra push through entrepreneurial training. Therefore, we suggest that self-employment training can be scaled up to take them to micro enterprises.

Seventh, although access to credit was given, training was assumed to scale up level of activities. This has proven to be successful, as evident from our analysis. But it was our observations had access to finance been formally linked and targeted as a part of the project design, the project could have made higher impact.

Eighth, day labor remains to be vulnerable. Their economic gains are quite limited compared to other groups. They have very small amount of land. Their livelihood is dependent on wage employment. This problem cannot be easily solved through day labor. Sustainable employment opportunities are required. It can be created through micro enterprise development. On the other hand, multiple income opportunities need to be created. It requires specific investigation and special program design to address the issue of day-labor in unsustainable labor market.

Ninth, it was evident that dietary diversity has higher positive impact on multi-dimensional poverty reduction, after controlling for endogeneity. Training has contributed to it. Therefore, training on nutrition should be an important and integral element in future project designing; it can be extended to the existing programs.

Tenth, equally important is the role of women empowerment in sustainable poverty alleviation. Interaction in external environment and awareness building do contribute to empowerment. Understanding effectiveness of women empowerment requires long-term observation and study. Nevertheless, our data analysis and field level observations reveal that training has contributed to

increasing social and women empowerment. One of the remarkable interventions that we thought have made significant and will be visible in the long run is the role of Kishori club. Not only this intervention has contributed to bringing all the girls under a single platform and building social bondage as well as awareness about social issues. With the kind of role that they have been playing, we strongly argue that kishori club in particular should be part of all project design for poverty alleviation. However, we felt that awareness program should go beyond the women and social issues; it should encompass issues like climate change and deprivation and vulnerabilities.

Eleventh, although at the aggregate level significant achievement has been made in poverty alleviation, the issue of food poverty remains a critical issue. Despite positive impacts of the project, we found that some 13 percent of the samples remain as food poor. We found that these food poor households have some important features – dependent on wage employment for livelihood, relatively low level of access to training, small amount of savings, more exposure to disaster and small landholding. Therefore, we reinforce our earlier suggestion that food poverty is closely linked with higher dependency on wage employment for livelihood. Therefore, as argued earlier, these households need to be specially targeted and linked with development of local economy.

Twelfth, exposure to disaster increases vulnerability. This has been evident from earlier studies and this study. In this study we found that some 15 percent of the households had experienced some idiosyncratic shock during the past one year. The rate has really made them vulnerable. Some 12 percent of the non-poor households experienced idiosyncratic shocks but they could withstand it because of their income level. Nevertheless, it limits their ability to invest. Others are affected. As such, micro insurance becomes a critical issue. Subject to regulatory framework, insurance should be tied to the other financial and non-financial interventions.

In brief, UPP-Ujjibito program is one of the successful programs of PKSF for poverty alleviation in Bangladesh. The critical message that emerges from the study that self-employment training, technical assistance and skill development training makes a difference in graduating from poverty alleviation. Access to financial services will make larger impact when skill development training is tied to it. Multi-dimensional interventions like dietary diversity and women empowerment will make lasting impacts on sustainable poverty alleviation.

Table 75: Characteristics of Poverty

	Uni-dimensional Poverty				Multidimensional Poverty	
	Food poor	Extreme poor	Moderate poor	Non-poor	Non-poor	Poor
Monthly income	8947.22	11047.21	12240.1	18384.84	15926.79	13888.91
Monthly expenditure	4842.698	6980.805	8174.466	14686.69	12093.19	10008.17
Savings	2660.089	3028.492	3813.222	4417.835	4166.436	3500.539
Household size	4.361656	4.316993	4.107551	4.04305	4.078464	4.212935
Ownership of enterprise	0.078431	0.083333	0.102975	0.173067	0.156372	0.111663
Cultivable land (bigah)	0.246022	0.364087	0.444525	0.471066	0.439135	0.394773
Day labor	0.72549	0.745098	0.617849	0.576764	0.586533	0.681513
Cultivation/nursery	0.078431	0.081699	0.086957	0.121369	0.109627	0.098231
Fishery and Livestock	0.082789	0.122549	0.08238	0.125519	0.121313	0.105552
Vehicle Driving	0.139434	0.137255	0.157895	0.161826	0.163606	0.14338
Services	0.122004	0.111111	0.102975	0.13278	0.135225	0.111043
Business	0.082789	0.109477	0.146453	0.164938	0.150807	0.131788
Household chores	0.814815	0.898693	0.901602	0.899378	0.90985	0.864552
Tailoring	0.050109	0.076797	0.098398	0.075726	0.081247	0.068945
Others	0.259259	0.197712	0.201373	0.19917	0.223706	0.18914

Have training	0.429194	0.46732	0.508009	0.534403	0.552588	0.453163
Non-seasonal migration	0.008715	0.014706	0.004577	0.011047	0.005008	0.016745
Non-exposed to risk	0.115468	0.084967	0.086957	0.129406	0.086811	0.144541
Dietary diversity index	0.283951	0.303105	0.317124	0.362156	0.351141	0.31754

Table 76: Summary statistics of various economic indicators by household types

	Average	REMP-2 VS Others		Control VS Others	
		Gap	t-value	Gap	t-value
	Monthly				
REMP-2 Skill Dev. Training (RSD)	8835	-		-639	-1.63
UPP- Skill Dev. Training (USD)	13080	4245	9.91	3606	9.72
UPP-Self Employment Training (USET)	13032	4197	9.22	3558	8.86
UPP-Youth Vocational Training (UYVT)	13844	5009	5.26	4370	4.71
UPP-General Dev. Group (UGDG)	11986	3151	6.97	2512	6.31
Control Group	9474	639	1.63	-	
	Expenditure				
REMP-2 Skill Dev. Training (RSD)	11135	-		-1943	-3.23
UPP- Skill Dev. Training (USD)	16733	5598	8.52	3655	6.42
UPP-Self Employment Training (USET)	17820	6685	9.56	4742	7.68
UPP-Youth Vocational Training (UYVT)	18907	7772	5.2	5829	4
UPP-General Dev. Group (UGDG)	17158	6023	8.69	4080	6.68
Control Group	13078	1943	3.23	-	
	Average Accumulated Savings (Among savers)				
REMP-2 Skill Dev. Training (RSD)	4449	-		-153	-1.29
UPP- Skill Dev. Training (USD)	5468	1019	10.16	866	10.5
UPP-Self Employment Training (USET)	6092	1643	11.78	1490	12.24
UPP-Youth Vocational Training (UYVT)	6225	1776	6.68	1623	6.31
UPP-General Dev. Group (UGDG)	5401	952	9.46	799	9.58
Control Group	4602	153	1.29	-	
	Average investment (among investor)				
REMP-2 Skill Dev. Training (RSD)	25800	-		21198	-0.2
UPP- Skill Dev. Training (USD)	33759	29310	3.65	29157	4.07
UPP-Self Employment Training (USET)	40149	35700	3.37	35547	3.68
UPP-Youth Vocational Training (UYVT)	35552	31103	2.85	30950	2.85
UPP-General Dev. Group (UGDG)	37441	32992	3.66	32839	4.02
Control Group	29498	25049	0.2	-	

Table 77: Correlation Analysis

	Multidimensional Deprivation Score	Dietary Diversity Score	Economic Empowerment Score	Women Empowerment Score
Multidimensional Deprivation Score	1			
Dietary Diversity Score	-0.152	1		
Economic Empowerment Score	-0.4232	0.2226	1	
Women Empowerment Score	-0.0577	0.0883	0.0033	1

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Chapter 5: Health and Nutritional Wellbeing

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Appendix

Chapter 4: Assessing the Economic Impact

Table A.1: Distribution of primary occupation of male household members

	REMP-2	UPP- Skill Dev. Training (USD)	UPP-Self Employment Training (USET)	UPP-Youth Vocational Training (UYVT)	UPP-General Dev. Group (UGDG)	Control Group
Labor	49.34	43.19	37.34	32.56	38.6	46.73
Cultivation and Nurse	2.81	11.25	10.94	10.85	9.26	6.62
Fishery and Livestock	3	3.94	1.72	2.33	4.99	3.31
Vehicle Driving	15.57	12.26	13.91	10.08	12.25	12.38
Services	6.38	6.97	12.03	9.3	10.11	8.06
Business	9.76	10.01	10.78	21.71	11.4	11.11
Household chores	0.56	0.56	0.94	0.78	1.71	1.1
Tailoring	0.38	0.34	0.94	0	1.42	0.08
Others	12.2	11.47	11.41	12.4	10.26	10.6

Source: Survey Data (2019)

Table A.2: Distribution of primary occupation of female household members

	REMP-2	UPP- Skill Dev. Training (USD)	UPP-Self Employment Training (USET)	UPP-Youth Vocational Training (UYVT)	UPP-General Dev. Group (UGDG)	Control Group
Labor	29.52	4.25	4.01	3.03	4.54	8.74
Cultivation and Nurse	0.28	0.45	0.15	1.01	0.73	0.24
Fishery and Livestock	6.21	8.84	4.01	6.06	4.54	5.18
Vehicle Driving	0.41	0	0	0	0	0
Services	2.48	1.45	1.93	1.01	1.17	1.7
Business	1.52	0.67	0.74	0	0.29	1.13
Household chores	51.72	74.27	60.39	83.84	82.14	74.51
Tailoring	0.69	3.69	23.0	3.03	2.34	2.02
Others	7.17	6.38	5.79	2.02	4.25	6.47

Source: Survey Data (2019)

A.3: The treatment effect on employability

Explanatory Variable	OLS Method		Errors in measurement	
	Model 1	Model 2	Model 3	Model 4
	Coefficient / se	Coefficient /se	Coefficient /se	Coefficient /se
Number of adult members	0.399***		0.399***	
	(0.014)		(0.014)	
Treatment household (yes=1)	0.074	0.096	0.084	0.109
	(0.049)	(0.065)	(0.055)	(0.073)
Years of schooling of head		0.012**		0.013**
		(0.005)		(0.006)
Years of schooling of spouse		0.021***		0.023***
		(0.006)		(0.006)
Constant	0.749***	1.727***	0.743***	1.685***
	(0.118)	(0.160)	(0.119)	(0.165)
note: .01 - ***; .05 - **; .1 - *;				

Source: End line survey data (2019)
Note: Insignificant variables are not presented here.

A.4: Treatment effect on investment

Explanatory variable	Amount of investment in last 1 year	Log of amount of investment in last 1 year
	Coefficient /se	Coefficient /se
Treatment household (yes=1)	28,798.372**	2.490**
	(11,963.657)	(1.064)
Years of schooling of head	3,238.717***	0.307***
	(1,034.582)	(0.092)
Years of schooling of spouse	1,266.106	0.022
	(1,040.083)	(0.093)
Amount of cultivable agriculture land (Bigah)	12,459.206***	0.903**
	(3,894.625)	(0.354)
Ownership of enterprise (yes =1)	122,810.087***	12.301***
	(12,765.757)	(1.162)
Constant	7,672.589	0.435
	(11,322.092)	(1.010)
/sigma	-211,753.451***	-16.347***
	(22,255.697)	(1.975)

Source: End line survey data (2019)
Note: .01 - ***; .05 - **; .1 - *;

A.5: Treatment effect on savings

Explanatory variable	Amount of investment in last 1 year	Log of amount of investment in last 1 year
	Coefficient /se	Coefficient /se
Treatment household (yes=1)	2,635.617***	2.007***
	(579.602)	(0.318)
Years of schooling of head	45.424	0.009
	(49.364)	(0.027)
Years of schooling of spouse	-29.658	-0.009
	(51.437)	(0.028)
Amount of cultivable agriculture land (Bigah)	1,013.406***	0.616***
	(201.242)	(0.112)
Ownership of enterprise (yes =1)	2,832.109***	1.661***
	(659.465)	(0.366)
Constant	-363.400	-0.394
	(551.765)	(0.305)
/sigma	328.383	3.757***
	(926.303)	(0.510)

Source: End line survey data (2019)
Note: .01 - ***; .05 - **; .1 - *;

Sustainable Development Goals

UN has set sixteen goals to ensure sustainable development, and the seventeenth goal is to ensure institutional arrangements for attaining sixteen goals.

***Goal-1: No Poverty*:**
The goal is to end poverty of all forms. In addition, the goal envisages resilience building of the poor and the vulnerable population with exposure to different shocks including extreme climate situations by 2030. Among the strategies, the UN recognizes micro finance as a means to eradicate poverty.

Goal-2: Zero Hunger
The goal is to end hunger and ensure food security of all people, particularly poor and people living in vulnerable situations. Food poverty will be eliminated through dublind agricultural productivity and income of the the small farm producers by 2030 through access to land and productive resources, inputs, knowledge and information, different markets, financial services and other economic opportunities. Finance too is recognized as one of the major mechanism of ending hunger.

Goal-3: Good Health and Wellbeing
The goal is to reduce mortality rate of new born, children and mother, in particular, through access to different institutions and support services.

Goal-4: Quality Education
By 2030, the goal is to bring all girls and boys under primary and secondary education through building infrastructure, scholarship, reducing disparity in enrollment and other opportunities. Vulnerable areas should have special emphasis.

Goal-5: Gender Equality
The goal spells out the process to end all forms of discrimination against women and girls. The process includes ending violence against women and girls, recognizing the role of women and girls in unpaid activities and all socio-economic opportunities.

Goal-6: Clean Water and Sanitation
The target is to ensure by 2030, equitable access of all people to safe and affordable drinking water, and ensure access of all to adequate and equitable sanitation and hygiene, particularly for vulnerable people.

Goal-7: Affordable and Clean Energy
The UN set the target to ensure access of all people by 2030 access to affordable, reliable and modern energy services through expanding technology and infrastructure.

Goal-8: Decent Work and Economic Growth
This goal is important from the perspective of attaining higher and sustainable economic growth of at least 7 percent of GDP per annum. The strategies to attain such high growth rate include diversification and development of different sectors through technological development. It sets to promote development-oriented policies supporting productive activities, decent job creation, enterprise development and growth of MSMEs through access to finance.

Goal-9: Industry, Innovation and Infrastructure
The goal is to promote inclusive and sustainable industrialization through increasing access of

industrial firms (MSMEs and large enterprises) to credit and integrated value chain and markets. It further sets to develop sustainable and resilient infrastructure with access for all.

Goal-10: Reduced Inequality
Income and wealth inequality is a major problem globally with few percentage of people own most of the resources. It can be reduced through increasing income growth at a higher rate than the national average. But reducing inequality requires steps beyond income increasing income. As such, the goal also aims at empowering the poor or low-income individuals to access different socio-economic and political institutions.

Goal-11: Sustainable Cities and Communities
The basic objective is to ensure access to affordable housing and ancillary services by 2030 for all citizens. The goals provide for developing accessible and transport system with special focus on vulnerable areas.

Goal-12: Responsible Consumption and Production
This is one of the major goals that aims at protecting and preserving use of natural resources through achieving sustainable development and efficient use of resources. It also aims at halving per-capita food waste at the consumer level and reducing food losses including harvesting time loss at the producer level. Better chemical and waste management is underscored in this goal.

Goal-13: Climate Action
This is a much-discussed issue that climate change adversely affects socio-economic livelihood of the people exposed to. Given the intensity of adverse impacts, households and communities are required to integrate resources and build resilience and adaptation capability. Therefore, the goal targets to integrate climate change measures and national policies.

Goal-14: Life Below Water
The goal number 14 is yet another goal for preserving natural resources for future generation. It focuses on marine resource management. It targets at preventing and significantly reducing marine pollution by 2025, and ensuring sustainable management and protecting marine and coastal ecosystem by 2020.

Goal-15: Life on Land
Protect, conserve and ensure sustainable use of terrestrial and inland freshwater ecosystems and their services, particularly forests, wetlands, mountains and drylands is the primary target of this goal. By 2020, it requires to promote sustainable management of all types of forests. Similarly, it also aims at restoring degraded land and soil affected by natural disasters by 2030.

Goal-16: Peace and Justice Strong Institutions
Governance and justice is the underlying objective of this goal. While it aims at reducing crime and violence, it also aims at reducing corruption and bribery of all forms through participatory, accountable and transparent governance and judicial systems.

Goal-17: Partnerships to Achieve the Goal.
The goal of sustainable development, as set in goals 1-16, cannot be achieved and attained without partnership of the institutions and governments. Such partnerships are required in the area of finance, technology, capacity building, trade and systemic issues in ensuring better management. The partnerships are more focused at the international level than at the national level.

A Note on Multidimensional Poverty Index

Identification Method

When poverty measures draw on multiple variables it is more complex to choose an approach by which to identify the poor. The three-benchmark methods of identification are unidimensional approach, union, and intersection.

In the unidimensional approach, the multiple indicators of well-being are combined into a single aggregate variable, and a poverty cutoff is set on this aggregate variable. When a person's achievements fall below this cutoff level, he or she is identified as poor. Although unidimensional method considers dimensional deprivations but it is only as far as their effect on the aggregate indicator. Conceptually the crucial drawback of looking into multidimensional poverty by using a unidimensional method is losing information on dimension specific shortfalls. It happens because aggregation before indentification converts dimensional achievements into one another without considering dimension specific cutoffs (Alkire & Foster, 2007). If dimensions are independently valuable and needed, and independent shortfall are undesirable, then it makes sense to rather use multidimensional approach than unidimensional one.

The unidimensional approach entails a person deprived in a single dimension to be poor. On the contrary, people deprived in all dimension, are regarded as poor under the intersection approach. Both approaches maybe used to apply to ordinal variables. However, when it comes to separating poor from non-poor they can prove to be ineffective. Many studies have found large array of values while using when both approaches on same regions. For example, Alkire and Seth (2009) used ten dimensions to identify poor in India; the difference in results was vast. Under union approach, 97 percent of the population are identified as poor, while intersection approach identifies 0.1 percent as poor. The findings using these two methods are rather extreme and present difficulties in separating poor from non-poor.

The alternative to the benchmark methods mentioned above is intermediate cutoff, where cutoff point would lie somewhere between two extremes 0 and 1. This intermediate approach is adopted by Alkire-Foster method, which is a dual-cut off identification method. The dual-cut off identification refers to the approach where at first it is identified whether a person is deprived in a dimension; then second step of identification is to determine if that person is multidimensionally poor across dimensions. This approach of Alkire-Foster method should address the problems in indentifying who is poor and enable policy makers to properly understand poverty and draw targeted policies. The identification method in Alkire-Foster is discussed below in details starting with units of measurement.

Units of Measurement:
In Alkire-Foster method, usually the unit of measurement or analysis is an individual or household but it could also be a community, school, district, or other unit. After choosing units on measurement, the next step is to decide on dimensions and indicators to be used for identifying the poor.

Dimensions and Indicators:
There is no fixed list of what should be included as dimensions and indicators. The MPI is flexible in that regard but the most important thing is the process through which the list is selected. There should be a certain degree of consensus on what the list will constitute. Such a consensus may derive from different sources such as a legal basis, international agreements like the MDGs or human rights, and empirical evidence regarding people's values. Statistical properties must be explored and understood, for example, when possible and reasonable, choosing indicators that are not highly correlated, and using exploratory factor analysis.
Deprivation Cutoff:

Any multidimensional poverty measure of its type requires a deprivation cut-off for each indicator, the MPI is not different. A deprivation cutoff is a threshold point that separates poor from non-poor. Generally the indicators' deprivation cutoffs are noted as z_i , so that person or household i is deemed deprived if his or her achievement in that indicator x_j is below cutoff (threshold),

$$x_{ij} < z_j$$

If a person or household is deprived due to lower achievement than threshold, then it is denoted by 1 otherwise 0. The MDG standards are used to base of most deprivation cutoffs in the global MPI. However, if a government or in case of national measure, factors like current policy priorities, constitution, law, culture and such can be used to set up deprivation cutoff.

Weights:

Weights indicate the relative importance of the different deprivations. Weights are at first set on each dimension, and then indicators inside each dimension. The decision of whether to set equal or different weight on each dimension depends on how important each dimension is relative to each other. Two alternatives are considered: The first is equal weighting, which is justified when there is no particular reason to weight one dimension more than another. Second is a nested constellation of weights, in this case the weight is equally split between the income and non-income dimensions and within the non-income dimensions equal weighting is applied.

Provided all dimensions are deemed equal, then equal weights are given to each dimension. Similarly, if each indicator inside each dimension is thought to be equally important then equal weights are applied. In that case all weights (w) are one and sum to the number of dimension d. The relative weight attached to each indicator j is the same for all individuals considered. It is denoted by w_j, such that

$$w_j > 0 \; and \; \sum_{j=1}^{d} w_j = 1$$

However, if deprivations are deemed with different importance then different weights are given on dimensions and perhaps on indicators inside dimension. Then vector is still summed to d but entries could vary from one. Higher weights will indicate greater importance.

The deprivation values will affect identification as they help in determining the minimal combination deprivations, which will indentify a person as poor. Moreover, aggregation is affected when relative contributions of deprivation to overall poverty are altered.

Deprivation Count:

It reflects the breadth of each person's deprivation, i.e. weighted sum of the number of indicators each person is deprived in and it is obtained from *deprivation score*. To attain deprivation count, $c_i \in [0,1]$, of each person a weighted sum of the number of deprivations is calculated, so that the deprivation count for each person lies between 0 and 1.

The number of deprivations or *deprivation score* is denoted by g_{ij} on each person in each dimension based on his or her deprivation status. The deprivation score is equal to 1 $(g_{ij} = 1)$ if person i is deprived in indicator j, i.e. his or her achievement in that indicator is below threshold, $x_{ij} < z_j$; otherwise it is equal to 0 $(g_{ij} = 0)$ if his achievement in that indicator is above threshold, $x_{ij} \geq z_j$.
To indentify a person as poor or non-poor, the deprivation scores are then weighted for all d indicators. The deprivation count (overall deprivation score) is calculated for each person by adding weighted status scores such that
\

$$c_i = w_1 g_{11} + w_2 g_{12} + \ldots\ldots w_d g_{nd}$$
$$c_i = \sum_{j=1}^{d} w_j g_{ij}$$

Where c_i is the deprivation count for person i and w_j is the weight on the indicator.

The count increases as the number of deprivations of the person increases and reaches its maximum of 1 when the person is deprived in all component indicators. A person, who is not deprived in any indicator, receives a count equal to 0.

Until this stage, if a headcount were conducted then it would be referred to as **raw headcount**. This shows the person or households deprived in a given dimension or indicator regardless if they are considered poor on multidimensional level. Raw headcount is worth looking into as it may turn focus towards the most deprived dimension and indicator, which should be an important tool in policymaking. After the raw headcount, the next stage is to separate poor person or household from non-poor and it is achieved through poverty cutoff.

Poverty Cutoff:

To determine if a person has sufficient share of deprivations (k) to be deemed poor, poverty cutoff is used. A person i is considered poor if his or her deprivation count is at the level or above,
$c_i \geq k$, where $k \in (0,1]$

and non-poor if $c_i < k$. So if an individual's count is below the cutoff, "0" replaces the value even if it is non-zero, this is known as censoring in poverty measurement. Hence, even if an individual could have been deprived in education but not in all other indicators to meet the poverty cutoff e.g. a businessman, then value of 0 is given.

A poverty cutoff is basically an **identification function** of poor. The identification function indicates whether a person is poor given ***deprivation cutoff z, weight w,*** and ***poverty cutoff k***. The notation for identification function is ρ_k, it charts the achievement x_i of person i and cutoff z to an indicator.
In other words, if a person's deprivation count is at least equal to set poverty cutoff $(c_i \geq k)$ then identification function is takes the value of 1 $(\rho_k = 1)$ i.e. the person i is indentified poor, and it takes the value of 0 $(\rho_k = 0)$ when $c_i < k$ and he is deemed non-poor.

This is referred as *dual cutoff* method since the *within dimension* z_j cutoff is used to determine if a person is deprived or not in each dimension, and also the *cross-dimensional* cutoff k in order to determine who is poor.

In the international MPI built by Alkire& Santos (2010), a person is considered poor if he or she has a deprivation count higher than or equal to 1/3. In case of a national or regional measure, different poverty cutoffs can be set. After the identification of the poor, the next step is to aggregation for the purpose of analysis.

Aggregation Method

The aggregation method proposed in Alkire-Foster methodology is based on the *Foster–Greer–Thorbecke* (FGT) indicators and adapted to the multidimensional space. The aggregation measures used by the FGT and adapted for the Alkire-Foster methodology are the following:

Adjusted headcount ratio (M_0):

The adjusted headcount ratio is simply the average of censored deprivation score $M_0 = \frac{1}{n}\sum_{j=1}^{d} c_i\,(k)$. In other words, it is the weighted sum of the deprivations the poor experience divided by the total number of people times the total number of dimensions.

However, a more useful way of interpreting M_0 is expressing it as a product of two components. The two components are *multidimensional head count ratio*(H) and *intensity of deprivation* (*A*).
The multidimensional headcount ratio(H) or multidimensional poverty incidence rate is the share of population who are multidimensionally poor. It represents the share of population who are deprived in at least at the level of poverty cutoff e.g. deprived in at least 35% of weighted indicators. It is denoted as

$H = \frac{q}{n}$ where,
q: the number of people suffering a deprivation share of at least k (number of people multidimensionally poor)
n: is the total population.

On the other hand, the *intensity* is the average deprivation count of the multidimensionally poor people. In other words, the average deprivations experienced by poor people at the same time e.g. 50% of the weighted indicators. It is denoted as,

$A = \frac{\sum_{i=1}^{n} c_i(k)}{q}$ where,
$c_i(k)$: the censored deprivation count for individual i
q: the number of people multidimensionally poor

In order to obtain *Multidimensional Poverty Index (MPI)*, the product of these two components is taken. The reason behind taking MPI instead of just M_0, is to analyze any change in M_0may be caused due to change in H or/and A. For example, if M_0 decreases due to decline in H and not A then it may imply that the number of people who are marginally poor has fallen. On the other hand if H does not change and fall in $M_0$is caused due to decreased A, then it may indicate that the reduction in the number of deprivations of poorest of the poor. By simply looking at M_0such information would not be revealed.

Hence, we get:

$$M_0 = \frac{q}{n}\ X\ \frac{1}{q}\sum_{j=1}^{d} c_i\,(k) = \frac{1}{n}\sum_{j=1}^{d} c_i\,(k) = H\ X\ A$$

Here
$M_0 = MPI = Multidimensional\ Poverty\ Index$
$H = percentage of people\ who\ are\ MPI\ poor\ (incidence\ of\ poverty)$
A: Average intensity of multidimensional poverty across the poor

In summary, the MPI is an index of acute multidimensional poverty. It is the summary of information on multiple deprivations into a single number.

It illustrates the number of people who are multidimensional poor (e.g. suffering deprivations in 35% of weighted indicators) and the number of deprivations that poor households typically face, i.e. it is basically headcount ratio weighted by average intensity.