Poverty Alleviation through Value Chain Sustainability: Focus on Dairy Industry Bangladesh

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Abstract

Poverty is endemic in developing nation due to abridgement of opportunities and equalities among the members. Multifarious dimension of poverty have been prevailed in the society, but MDGs categorized the extreme poor as those living on less than $1 a day. Seventy-five percent of the world's poor live in rural areas and depend on agriculture as their primary source of income. Agriculture is the first industry in the civilization history and it has maximum in size of employment of the world. It is a chain process among the value generating agents. The dairy value chain is a value-totaling action from production to consumption through processing and commercialization. Sustainability is not an issue, but is a consequence of different performance, such as triple bottom line. 3BL incorporate the three dimensions of performance, i.e. Social, environmental, and financial also referred to as the 3Ps: people, planet, and profit. It has been applied for making sustainability in the business, non-business and government activities as a whole. 3BL have deployed for measuring sustainability in the dairy industry for alleviating the extreme poverty. The study is to concentrate on the eradication of poverty through value chain sustainability, particularly the dairy industry with triple bottom line and the role of sustainable dairy value chain for poverty abolition of Bangladesh. Randomly, 200 samples were surveyed in Chittagong District. Correlation and Multiple Regression Analyses used with the support of SPSS 19. The study found there is a high positive correlation between Poverty Alleviation and Dairy value chain performance, such as Economic, Social and Environmental performance. Also, examine the proposed model for poverty alleviation through value chain sustainability.

Keywords: Poverty alleviation, Agricultural Value Chain, Sustainability, Triple Bottom Line, Dairy Value Chain

INTRODUCTION

Poverty is a common matter of justification in all cultures and throughout history. Rowntree's introduced the poverty standard for individual families, based on nutritional. In 1960's it focus was on the level of income, such as Gross National Product (GNP) per head and in 1970's poverty became prominent. Poverty came to be defined not just as lack of income but also as lack of access to health, education and other services. Poverty is the organic quandary in a state of any economic status. It is endemic in developing nation due to abridgement of opportunities and equalities among the members. Poverty has not inducement itself; however a consequence of dimensional factors likes economic, social, environmental and political factors. Those can spell out likes: lack of access to resources and income opportunities, geographical location, age, gender, class, ethnicity, community structure, community decision making processes and political issues that determine poor vulnerability (yodmani, 2001); Warfare, agricultural cycles and natural disasters, corruption and social inequality, pervasive illiteracy and widespread diseases (Philip & Rayhan, 2004).

Poverty has considered as an offense of the nation. There has no supper strike to confiscate the poverty from

society as a whole. No extreme methodologies have been available for pacifying the poverty from the globe that would be promising throughout differentiated along with the socioeconomic and political structure of any particular state. Poverty has seen in first and foremost in rural areas in considered in urban areas. Principle reasons of poverty are geographical, demographical, physiological and sociological factors rather than other factors. Seventy-five percent of the world's poor live in rural areas and depend on agriculture as their primary source of income. It has estimated economic growth in the agricultural sector is twice as effective in reducing poverty as growth in other sectors of the economy, strengthening agricultural value chains may be among the most effective ways to address global poverty (World Bank, 2007) the participation of smallholders' and ensuring the poverty reducing impacts of agricultural growth" (World Bank, 2008).

Value chain extends the hierarchy of value generating tricks. It refers to the sequence of value adding actions from production to consumption through processing and commercialization (Food & Organization, 2010; kaplisky and Morris, 2001) each individual layer of chain contain the backward and forward linkage (Food & Organization, 2010). The aspiration of the value chain is to convey maximum value to the end user for the least feasible total cost. Agricultural value chain refers the value generating tasks within the chain from production to disseminating to the consumption through the line and commercialization.

Sustainability is an issue of renewed focus as the world is facing more and more environmental risk (Srivastava, 2007). It makes an effort to balance the three components of development, which define the quality of human life in the broadest sense, namely: economic, social and environmental objectives (OECD, 1997; DETR, 1999, cited in Vasileiou & Morris, 2006). 3BL incorporate the three dimensions of performance: social, environmental and financial and also referred to as the three Ps: people, planet, and profit (Scot, 2012; Elkington, 2004;

Hall, n.d; "Global Reporting Initiative, 2006" cited in Jackson, Boswell, & Davis, 2011). It also includes the paying close attention to their economic (financial factors), environmental (risk and requirements factors) and social (human factors) issue (Dutta et at, 2011, cited in Ekwueme, Egbunike, & Onyali, 2013).

Bangladesh is one of the world's most densely populated countries with 150 million people. However, Bangladesh still remains a poor, overpopulated, and inefficiently-governed According to United Nations Population Fund (UNFPA) Bangladesh, though the poverty declined by one percent per year (59% in 1999 to 49% in 2001); more than 63 million people still continue to live below the poverty line (ITU, 2008). 45% of the Bangladeshis employed in the agriculture sector (CIA, 2011). Bangladesh had reduced the number of people living in poverty from 63 million in 2000 to 47 million in 2010. Bangladesh will reach its first United Nations-established Millennium Development Goal, that of poverty reduction, two years ahead of the 2015 deadline.

These rationalizations have been given evidence, population of has been rising; also the number of poor has been decreasing regularly. Substantial ratios of citizens are living in the rural areas with below the standard of poor living based on income and maximum are depends on agriculture as a principal income source. Thus, sustainable value chain in my

support the farmer to profitable farming continued through economic excellence support of the environment and society. The performances as economic, social and environmental of the value chain can be eradicating the poverty through changing standard of living.

The paper is organized as follows. The next section presents the literature review to put our paper in the context of extant literature. This is followed by the research methodology section. The results are then presented, followed by discussions where theoretical and managerial implications are presented. Finally, conclusions are presented.

Objectives

The main objective of this study is to concentrate on the eradication of extreme poverty through value chain sustainability with triple bottom line theory. *Contributory objectives of this study are such as:*

i. To review the value chain sustainability with triple bottom line

ii. To explore ESE performance variables for sustainable value chain with triple bottom line in the dairy industry.

iii. To demonstrate the role of sustainable value chain for extreme poverty eradication of Bangladesh.

Earlier Research

A number of empirical research works have been found in partial and subsequent issues of the subject to research in the different population and sample in international areas. These experimental studies supported the principal study with multidimensional ways.

Poverty

Poverty concept has diversified on the basis of the thinking, skills and others. A lot of empirical study has been shown flexibility in the sense of poverty. Poverty is a scarcity or insufficiency of resources, for instance, poverty as the condition of having insufficient resources or income and lack of basic human needs to sustain as useful and working efficiency such as adequate and nutritious food, clothing, housing, clean water and health services (Encyclopedia Encarta). Famous Nobel laureate economist, like Sen (1999a; 1999b) suggested poverty is a multi-dimensional issue, much linked to aspects of quality of life and the freedom of individuals to gain access to services and express higher aspirations rather than just increasing commodity based material wealth (i.e., agricultural yields) and household incomes. Another Nobel laureate economist, Yunus (1994) recommended, poverty is the denial of human rights relating to the fulfillment of basic human need. Further, Ahmed et al. (2007) justified poverty can be viewed as the absence of peace in an individual. This could be as a result of hunger, lack of medical care, marginalization, denial of human rights relating to the fulfillment of basic human needs, freedom, etc. The UN recommended for MDG's extreme poor as those living on less than $1 a day which survival is questionable. To understand the issue divided the poor into three categories according to the depth of poverty, such as (i) Subjacent poor (those living on between $0.75 and $1 a day), (ii) Medial poor (those living on between $0.50 and $0.75 a day), (iii) Ultra Poor (those living on less than $0.50 a day) cited in (Ahmed et al., 2007).

Value Chain Sustainability

A 'value chain' describes the full range of activities required to bring a

product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Kaplinsky & Morris 2001). The livestock value chain (dairy value chain) unifies the full range of activities required to bring a product to final consumers passing through the different phases of production, processing and delivery (IDRC, 2000). Value chain describes the full range of activities required to bring a product or service through the different phases of production, including physical transformation, the input of various producer services, and response to consumer demand (Kaplinsky & Morris, 2001.)

The organization has come under increasing pressure to minimizing the impacts of environment resulting in the production and consumption of goods and services (Roy, 2000). The modern theory of sustainability or Triple-Bottom-Line concept has been prominent since 1987 (Mebratu 1998).Sustainable business is characterized by its facets to balance triple bottom lines (i.e., Profit, planet, and people). Sustainability can be achieved only when social, economic and environmental aspects move together to achieve long-term economic performance and benefits (Styger, 2010). In addition, Xing et al. (2013) has explained the sustainability profile of business operations necessary to incorporate environmental impact measures with technical performance and cost measures to present a sustainability indicators must have all three sustainability dimensions included (social, environmental, and economic). The triple bottom line (TBL) is an accountability framework for organizations to include social and

environmental dimensions, besides the economic one. (Hall, 2011; Goel, 2010).

Triple Bottom Line

Multiple pattern analysis of the value chain and the triple bottom line concept has been analysed by many researchers', like Foran et al.(2005) identified triple bottom line accounting is widely advanced as a way in which firms can realize broader societal objectives in addition to increasing shareholder value. In addition, Iberia & Maye (2005) suggested an increasing interest in more sustainable forms of land management, few analyses have examined whether 'local' or 'alternative' food supply systems are sustainable in environmental, economic and social terms. Also, Vasileiou & Morris (2006) concluded economic and related market factors associated with staying in business and maintaining competitive advantage were the dominant concern for all supply chain participants. Greater importance, however, is now given to social and environmental factors, both as influences on decision-making and as indicators of business performance. Finally, Ekwueme, Egbunike, & Onyali (2013) suggested the adaptation of sustainability reports for organizations seeking sustainable corporate performance.

Sustainability Indicators with ESE

A few empirical studies have been explored measurement indicators of sustainability or factors persuade the sustainability of different fields of agriculture and industrial issues. Those measurement factors, such as value chain, Economic: Profitability, business uncertainty, market requirements, safety and quality, use of new technologies. Social: Personal management, relationship with value chain, community and local interests. Environmental:

Climate, land and soil quality, water for irrigation, natural resource management, environmental risk (Vasileiou & Morris, 2006). Economic performance :(revenues, operating costs, inventories), lead time + process time, productivity % (coffee produced per worker), spending on local suppliers, investment on local infrastructure. Social performance: Freedom of association & bargaining, working hour's compliance, wage compliance, labor equity / non discrimination. Environmental performance: Carbon footprint, water usage, water and solid discharges, energy consumption (UNMDG, GRI, Rainforest Alliance, UTZ Certified, and the 4C Association). Economics: Income, marketing, trade. Social: Gender, Health, tradition, social culture. Environmental: Soils, water, climate and biodiversity UNEP, GRID-Arendal, 2008 cited in (Guidi, 2011). Environmental: Substituting crops such as maize with cassava for starch production can reduce the burden of farming on the local environment and can reduce the risk of clearing forests for agricultural use. Social: The processing of cassava increases local job opportunities and may lead to more stable revenues for the community. Economics: Developing an export market for cassava supports local economic development and has the potential of lowering costs for starch in importing countries UNEP 2012b cited in United Nations Environment Program, 2013. Economics: Direct cost, potential hidden, contingent, relationship and externalities. Social: Quality of life, peace of mind, illness and disease reduction, accident & injure reduction, health and wellness. Environmental: Material consumption, energy consumption, local impact, regional impact and global impact Fiksel, McDaniel and Mendenhall, (1999).

The extensive study of different national and international literatures on the subject of proposed research, it has been crystal clear that, a number of studies carried out on the multiple issue of the value chain that are directly and indirectly related to agricultural value chain and others. However, there has not found any in depth study on the subject of proposed research. This particular research gap motivated to conduct the research on *"Value Chain Sustainability for Poverty Alleviation of Bangladesh: Focus on Dairy Industry".*

METHODOLOGY

The study was a descriptive nature. Secondary and primary data used for justifying to intends of the study. Data for this study collected through a direct survey using an administered questionnaire including part A & part B with the population consisting of smallholder dairy farmers as a most important agent of the value chain. This study randomly selected 250 dairy farmers as a sample and those were surveyed. This study found 200 samples were appropriate after data preparation. The survey was undertaken for two months (September- October, 2016) in the Chittagong district specially at (Boalkhali, Patia and Anowar Thana) A Likert scale used (1= Strongly Disagree and 5= Strongly Agree) for the respondents to indicate whether factors are important for economic, social and environmental indicators of value chain sustainability of a dairy industry. Apart from, respondents also asked to mention the effects of those for the eradication of extreme poverty from society particularly in sample areas. Data was initially analyses using Statistical Package for Social Scientists (SPSS). Data reduction method such as factor analysis had used for identifying the latent variables ESE. Furthermore, multiple regression models used to analyse the statistical significance responses on IV

Economic, Social and Environmental performance role for with DV (Poverty Alleviation). The study also presents the theoretical and managerial implication of the results.

Inferential Analysis and Findings

Value chain sustainability with triple bottom line in diary industry

Value Chain for dairy industry

Agriculture is called an ancient profession in the world; it has been absorbing a large number of employment and principal sources of income to the rural communities. Branch of agriculture has been fluctuated time to time such as dairy, poultry, horticulture, fishing, etc. Agriculture is not an isolated task; moreover, a collaboration of a coin trick of its agents. Each chain or agent generating the specific value in particular point. A 'value chain' describes the full range of activities required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Narayan & Hegde, 2000). Following Fig; 01 demonstrated the value generating tricks of formal and informal; national and regional; and public and private agents. This diagram exhibited the inbound and outbound activities of agents for supporting the milk production, processing and distribution to the ultimate consumers. Also, it was found that smallholder/ dairy cattle has been supported by the many agents' activities, e.g. Fodder producers, crop residues, pasture, breeding services, vaccinations, deworming, micro-finance and training. Subsequently, small holders are supporting the Hub/ local organization and hub facilitating the collection, processing and distribution of milk to ultimate consumers. These chain tricks attested that agriculture is not an issue, but accretion of the performance of assorted stakeholders.

Value Chain Sustainability with triple bottom line in dairy industry

"Sustainable agriculture involves the successful management of agricultural resources to satisfy human needs while maintaining or enhancing environmental quality and conserving natural resources for future generations"(FAO,2002). 3BL subsequently applied to the management of the U.S. economy during World War 2 and to employment problems in the immediate postwar period. Since then, it has been applied to a wide range of economic analysis of whole economy and regional scales, the oil crises, total living costs, household consumption, trade, net energy considerations, and employment effects. In the immediate Australian context of sustainable chain management issues, and others have developed a generalized analytical approach to whole-economy analysis, energy and greenhouse, water, building, ecological footprinting, life cycle analysis and consumer choice cited in (Foran et al., 2005). It has been proved through some theoretical evidence for the application of 3BL for ensuring sustainable performance that ultimately related to the subject to the study.

Following Fig-2 demonstrated the justified indicators of sustainability in the with triple bottom line concept such as economic performance, social performance and environmental performance for dairy value chain in the sample areas. According to triple bottom line theory, value chain sustainability focused on the sites where has intersection of all indicators such as economic, social and environmental which has marked by arrow. This traffic circle

encoded the sustainability of the value chain in the dairy industry with consideration of people, profit and planet. Through sustainability enhanced the ability of purchasing power for alleviation of poverty from society.

ESE factors for value chain sustainability with triple bottom line in dairy industry.

Mostly, 200 samples were surveyed from the sample areas as a member of the dairy value chain, particularly smallholder's dairy farmer. The study was conducted for exploring the latent variables which known as indicators of the sustainable value chain for the dairy industry. Variables have been identified with explicit terms such as economic performance, social performance and environmental performance, etc. Factor analysis were conducted to identify latent variable from the observed variables. The smallholder's dairy farmers were asked to rate on the 11 economic variables, 16 social variables and 12 environmental variables on a five-point scale according to their experience. The test of validity of data was examined with the help of a Kaiser-Meyer-Ohlin (KMO) measure of sample adequacy and Barlett's test of Sphericity.

Economic Performance:

The above given appendix 1 table (a) present the KMO value lies at 0.711 that confident that factor analysis is appropriate for these data and Bartlett's Test of Sphericity is chi-Square value 720.763 with 55 degrees of freedom @ 0.01 level of significance. The Principal Axis Factoring method, Principal component analysis is used as the extraction method and varimax rotation method for identifying the key factor having a significant correlation with the variables. The table supplied the results of

principle component analysis indicated that there are four factors whose eigenvalues exceed 1. Eigenvalue of a factor represents the amount of the total variance explained by that factor. The four factors identified explain 70.65% of the total variance. The first factor, (Certainty of business with export marketing) with 30.37%, the second factor (Technological adaptation for balanced productivity) with 16.28%, a third factor (Capital Investment for safety and quality) with 13.40% and fourth factor (Profitable Trading) with 10.61% of this variance explained.

Social Performance:

The above given appendix table1 (b) present the KMO value lies at 0.592 which confident that factor analysis is appropriate for these data, and Bartlett's Test of Sphericity is chi-Square value 543.319 with 120 degrees of freedom @ 0.01 level of significance. The Principal Axis Factoring method, Principal component analysis is used as the extraction method and varimax rotation method for identifying the key factor having a significant correlation with the variables. The table demonstrated the results of principle component analysis indicate that there are six factors whose eigenvalues greater than equal to 1. Eigenvalue of a factor represents the amount of the total variance explained by that factor. The six factors identified explain 61.130% of the total variance. First factor healthy and quality of life eigenvalue 2.645 and percentage of variation explain 16.529%; second factor, freedom of association for equality and wages 11.206%; third factor, social interest for job opportunity & sustainability 10.526%; fourth factor, security, health and wealth 9.080%; fifth factor, value chain relationship management 7.136% and sixth factor, tradition of labor equality 6.653% percentage of variation explain.

Environmental Performance:

The above given appendix table1 (c) justified the KMO value lies at 0.655, that secure that factor analysis is appropriate for these data, and Bartlett's Test of Sphericity is chi-Square value 464.829 with 55 degrees of freedom @ 0.01 level of significance. The Principal Axis Factoring method, principal component analysis is used as the extraction method and varimax rotation method for identifying the key factor having a significant correlation with the variables. The table demonstrated the results of principle component analysis indicate that there are three factors whose eigenvalues greater than equal to 1. Eigenvalue of a factor represents the amount of the total variance explained by that factor. The six factors identified explain 55.428% of the total variance. The first factor, Climate variability and quality of natural resources eigenvalue 2.793 and percentage of variation explain 25.388%; second factor, Sustainable consumption 16.538%; third factor, Impact of substitute crops 13.502%; percentage of variation explain.

The Explored latent variables of ESE performances of sustainable value chain for dairy industry have been demonstrated in a snap chart as viz in the following table 1.

Role of sustainable value chain for poverty eradication of Bangladesh

Multiple regression analysis is an analysis of association in which the effects of two or more independent variables on a single interval scaled dependent variable are investigated simultaneously (Zikmund, et al., 2011). Multiple regressions examine the relationship between two or more internal scaled predictor (independent) variables and one internally scaled criterion (dependent) variable

(Krishnaswany, et al., 2011). The regression analysis is using the software SPSS and result model summary have been shown by the following table- 2

Result of regression analysis reveals that, turnover has a significant relation with dependent variable and independent variables (i.e. Social Performance, Economic Performance, Environmental Performance) in our used model. The model summary indicates that, R=.613%, i.e. near to 62%. This indicates the linear association between dependent and independent variables as whole. The coefficient of det-ermination R-squared is 0.376 on converting the R-squared value of percentage it is near to 38% indicates the goodness of fit of the regression model. Table-2 (b) and 2 (c) (Appendix-2) exhibit the result of 'F' tests were found to be significant on the other hand' test was found significant in economic sustainability remaining were less significant with the dependent variable. This is measure the economic sustainability and related variables can influence the extreme poverty alleviation in Bangladesh.

The regression coefficients were shown by Table-2 (c) (Appendix-2), the table shows the value of β (beta) scores which represents "the level at which the independent variables are predictors of the dependent variable". The regression coefficients for the predictor variables such as environmental performance, economical performance and social performance were -0.66, 0.692 and -0.009 respectively. In the table-2 (c) (Appendix-2) the coefficient values β (Beta) have showed the change in a variable value, when all the other variables are held constant.

The Model of Present by Multiple Regressions as Follows:

PA = 1.366+ (-0.66) (EnP) + 0.692 (EcP) + (-0.009) (SoP) + €

[Where, PA = Poverty Alleviation, Environmental Performance = EnP, Economic Performance = EcP, Social Performance = SoP, €= Standard error]

Collinearity (or multicollinearity) is the undesirable situation where the correlations among the independent variables are strong. Most regression programs can compute variance inflation factor (VIF) for each variable. As a rule of thumb VIF 5.00 suggest the problem of multicollinearity which is very common (De Jongh, 2015). The correlation matrix is represented in the table-3 (Appendix) that Pearson correlation coefficient between all the independent variables and their sub factors is less than 0.7, which eliminates the possibility of multicollinearity. The colinearity statistics also confirm that the multicollinearity assumption is despoiled. In the table -2 (c), the tolerance value of the variables is more than. 10 and VIF (Variance Inflation Factor) range from 1.103 to 1.041 ensuring the normality of the data.

DISCUSSION

Dairy industry of Bangladesh has been raised wings separately with inclusion of time and sagacity. Dairy farming is now considered as a principle source of income to the marginal rural people of developing countries like Bangladesh. Rural poor people are highly engaged in this industry for increasing the standard of living with informal employment contained by lack of central economical and political structure. Dairy is not an isolated task, but is amazing job such as chain farm duties in every step from dot of production to consumption. In chain, agents have included values in support of facilitating the dairy performance with a degree of expectation in favour of profitability and social security such as the alleviation of poverty. Value chain member's performances have been influenced by natural and artificial factors, including the profitability. Smallholder's dairy farmers have been suffering from price spreading hitch by middlemen such as gala & gush, etc. (Kamal, & Islam, 2012). Value chain sustainability encompasses performances of ESE with the accord of triple bottom line for consistent action of value chain agents. Sustainable value chain of the dairy industry has been contributed in reducing the gap of social class with enhancing the income, social contribution with risk free environment. Triple Bottom Line is an ancient method for appraising the sustainability and it has been used for solution of diversified tribulations e.g. Economy, employment problem, oil crises, energy cost of goods and services, total living cost, household consumption, trade, net energy considerations, sustainable chain management issues, energy and greenhouse, building design, ecological foot printing, life cycle analysis (Foran et al., 2005). It has been proved through some theoretical evidence for the application of 3BL for ensuring sustainable performance that ultimately related to the subject to the research, such as value chain sustainability for poverty alleviation of Bangladesh: focus on the dairy industry.

Statistically, justified sample was surveyed by structured questionnaire including part A and part B for measuring the ESE performance variables for sustainable value chain in the dairy industry and the role of sustainable value chain ESE for alleviation of poverty of Bangladesh. Data reduction method principal factor analysis was used to

explore the latent variables such as ESE factors for sustainable value chain among the observed variables discussed in literature. The study demonstrated four variables for the economic sustainability. Moreover, it has been verified six variables for social sustainability. Furthermore, the study has been recommended three variables for assessing theenvironmental sustainability, which exhibited on table -1. Multiple Regression analysis, particularly, linear regression analysis was used for evaluating the role of ESE factors, e.g. Economical performance, social performance and environmental performance for the eradication of extreme poverty of sample areas. The study has been suggested 62% significant relationship between a dependent variable (poverty alleviation) and independent variables (ESE) in sample areas. The study further acknowledged there have no possibility to harmful multicollinearity among the independent variables due to VIF is less than 5.

RECOMMENDATION

Value chain sustainability of the dairy industry is a substantial issue for ensuring the contribution of agents on the chain for the solution of hitches of society. Intended of the study has demonstrated the value chain sustainability of the dairy industry for the eradication of extreme poverty of Bangladesh. Inferential analysis along with empirical evidences has verified in support of the objectives of the study. It has proposed some guide in proportion to of findings to the decision makers such as business, national and international agencies, including government and private sectors as well as development partners. Following is the counsel of the study for eradication of poverty such as:

Construct value chain sustainability of the dairy industry, is

specially smallholder dairy farmers with triple bottom line theory as ESE sustainable for equal wealth distribution and social security by reducing the hitches of society.

Facilitating the achievement of the economic sustainability of dairy value chain with consideration of manipulating variables for intensifying per capital income behind the level of poverty.

Assisting the performances of social sustainability in support of influencing variables for console, increasing the income of value chain agents more than poverty standard with supporting the economy and environmental performances.

Make sure environmentally acceptable performance in value chain for reducing the environmental risk and adaptation of substitute products for guarantee the green income of value chain agents in favor to the eradication of extreme poverty in Bangladesh.

Through validation of inferential and empirical analysis has recommended a professional model for eradication of poverty through value chain sustainability in the sample areas, demonstrated by the following fig-3.

The fig-3 demonstrated value chain sustainability with 3BL concept such Economic performance, Social performance and Environmental performance for eradication of poverty. The model recommended that ESE performances, as sustainability could play role in supporting of poverty alleviation from the society. This model also suggested social performance has a significant correlation with economic and environmental performances @ 5% level of significance (2-tailed test). By inferential justification, it has been testified "Poverty

Alleviation Model with Triple Bottom Line" may be a speculatively as well as arithmetically significant for eradication of extreme poverty of Bangladesh.

CONCLUSION

Poverty has been seen in assorted dimensions in the society along with origins as per capita income, relative position of society, etc. All empirical evidence recommended it's a hiccup of society. It has been justified that no super strike is available for solution. But, it has apparently and inferentially recommended "Value Chain Sustainability" significantly contributed to the solution of this social problem through transfer or alleviation of poverty from one dimension to another. Intend to study, to measure the contribution of value chain sustainability for eradication of poverty and has been stumbled on the significant evidence in favor to object through avid methodology in particular sample areas. Furthermore, found a statistically significant relationship between independent variables, e.g. Economic performance, social performance & environmental performance and dependent variables as poverty alleviation. The paper proposed accommodating theoretical and managerial implication of the study with a model entitled "Poverty Alleviation Model through Value Chain Sustainability". Through rationalization of speculative evidences and current arithmetical as well as qualitative evaluation it has been concluded value chain sustainability through economic sustainability, social sustainability and environmental sustainability could be encouraging for eradication of extreme poverty from society particularly in sample areas at the Chittagong district in Bangladesh.

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Figures and Tables

Fig-1:   A Conceptual Framework of Value Chain for Dairy (Liquid Milk
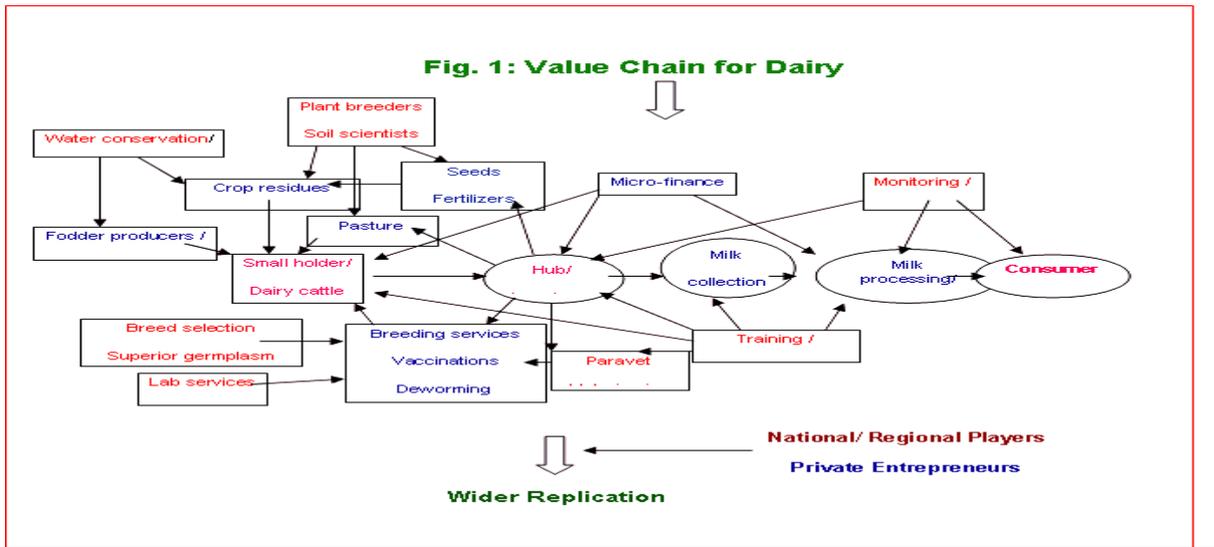
Source: (Narayan G. Hegde, 2000).

Fig-2: Value Chain Sustainability Model with Triple Bottom Line
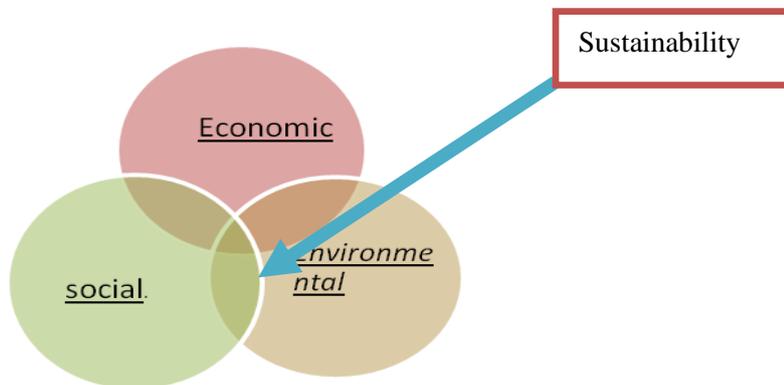
Sources: K. Vasileiou and T. Morris, 2006

Fig-3: Recommended a professional model for eradication of poverty through value chain sustainability in the sample areas

Fig-3: Poverty Alleviation Model through Value Chain Sustainability
Source: Appendix-2 Table- 2(C) and Appendix-3

Table -01 Latent Variables of ESE Performance

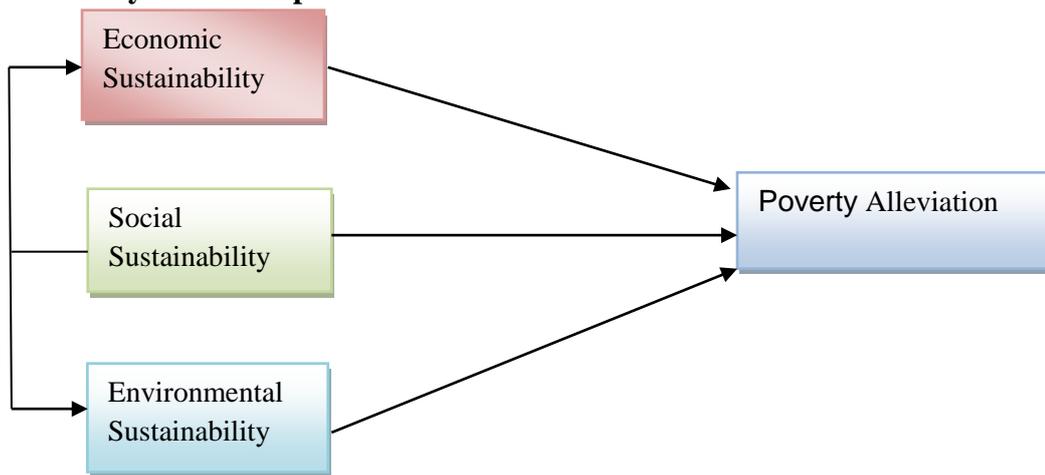| Economic Performance	Social Performance	Environmental Performance
i) Certainty of business with export marketing ii) Technological adaptation for balanced productivity iii) Capital Investment for safety and quality. iv) Profitable Trading	i) Healthy and quality of life ii) Freedom of association for equality and wages iii) social interest for job opportunity& sustainability iv) Security of health and wealth v) Value chain relationship management vi) Tradition of labor equality	i) Climate variability and quality of natural resources ii) Sustainable consumption iii) Impact of substitute crops

Sources: Appendix-1 table 1 (a, b, c)

Table-2: Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613(a)	0.376	0.366	0.98695

a. Predictors: (Constant), Social Performance, Economic Performance, Environmental Performance

b. Dependent Variable: Poverty Alleviation

Appendix -1

Appendix Table 1 (a) Factor Loading of Variables (Economic Indicator)

Latent Factor	Variables	Factor loading	Eigenvalue	Percent of variation explained
Certainty of business with export marketing	Marketing	0.924	3.341	30.37%
	Export marketing	0.846		
	Spend on local suppliers	0.758		
	Business certainty	0.648		
Technological adaptation for balanced productivity.	New technology	0.761	1.79	16.28%
	Market requirement	0.751		
	Productivity	0.575		
Capital Investment for safety and quality.	Investment in local infrastructure	0.812	1.473	13.40%
	Safety and quality	0.671		
Profitable Trading	Profitability	0.831	1.167	10.61%
	Trade	0.719		
Total Variance Explained				70.65%
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.711		
Bartlett's Test of Sphericity	Approx. Chi-Square	720.763		
	Df	55		
	Sig.	0.000		

Appendix Table1 (b) Factor Loading of Variables (Social Indicator)

Latent Factor	Variables	Factor loading	Eigenvalue	Percent of variation explained
Healthy and Quality of life	Social culture	0.810	2.645	16.529%
	Quality of life	0.809		
	Illness and diseases reduction	0.740		
Freedom of association for equality and wages	Wages compliance	0.721	1.793	11.206%
	Gender	0.710		
	Freedom of association	0.572		
Social interest for job opportunity & sustainability	Working hour compliance	0.778	1.684	10.526%
	Community and local interest	0.647		
	Local job opportunity	0.603		
Secure health and wealth	Health and wellness	0.746	1.453	9.080%
	Accident reduction	0.705		
Value chain relationship management	Personal Management	0.795	1.142	7.136%
	Relationship with value chain agents	0.666		
Tradition of labor equality	Labor equality	0.702	1.064	6.653%
	Tradition	0.508		
Total Variance Explained				61.130%
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.592		
Bartlett's Test of Sphericity	Approx. Chi-Square	543.319		
	Df	120		
	Sig.	0.000		

Appendix Table -1 (c) Factor Loading of Variables (Environmental Indicator)

Latent Factor	Variables	Factor loading	Eigen value	Percent of variation explained
Climate variables and quality of natural resources	Natural resources	0.800	2.793	25.388%
	Material consumption	0.729		
	Land and soil quality	0.709		
	Climate and biodiversity	0.624		
	Carbon footprint	0.568		
Sustainable consumption	Energy consumption	0.790	1.819	16.538%
	Environment risk	0.722		
	Water availability	0.712		
Impact of substitute crops	Local regional and global impact	0.777	1.485	13.502%
	Substitute crops	0.665		
Total Variance Explained				55.428%
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.655		
Bartlett's Test of Sphericity	Approx. Chi-Square	464.829		
	Df	55		
	Sig.	0.000		

Appendix Table 2 (a)

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	Social Performance, Economic Performance, Environmental Performance (a)	.	Enter

a. All requested variables entered.
b. Dependent Variable: Poverty Alleviation

Appendx Table 2 (b)

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114.878	3	38.293	39.312	.000(a)
	Residual	190.917	196	0.974		
	Total	305.795	199			

a. Predictors: (Constant), Social Performance, Economical Performance, Environmental Performance
b. Dependent Variable: Poverty Alleviation

Appendix Table 2(c)   **Coefficients (a)**

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.366	.617		2.214	.028		
	Environmental Performance	-.066	.114	-.034	-.573	.567	.907	1.103
	Economic Performance	.692	.066	.607	10.538	.000	.961	1.041
	Social Performance	-.009	.084	-.006	-.108	.914	.928	1.078

a Dependent Variable: Poverty Alleviation

Appendix Table -3   **Correlations**

		Economic Performance	Social Performance	Environmental Performance	Poverty Alleviation
Economic Performance	Pearson Correlation	1	-.178(*)	-.127	.072
	Sig. (2-tailed)		.012	.072	.313
	N	200	200	200	200
Social Performance	Pearson Correlation	-.178(*)	1	.276(**)	-.082
	Sig. (2-tailed)	.012		.000	.248
	N	200	200	200	200
Environmental Performance	Pearson Correlation	-.127	.276(**)	1	-.076
	Sig. (2-tailed)	.072	.000		.284
	N	200	200	200	200
Poverty Alleviation	Pearson Correlation	.072	-.082	-.076	1
	Sig. (2-tailed)	.313	.248	.284	
	N	200	200	200	200

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).