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Mediating Effects on Economic Service Quality for the Sustainability of Self Help Groups in India

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Abstract: The purpose of this empirical research is to develop a new model, namely economics service quality in self-help groups (SHGs QUAL) in India for the measurement of service quality. Data were collected by means of structured questionnaire comprising eight Sections. Section A consists of eight questions pertaining to Team Work (TW). Section B consists of eight questions pertaining to Welfare Schemes by Government (WSG). Section C consists of seven questions relating to Technological Implementation (TI). Section D consists of nine questions related to the Credit Facilities (CF). Section E consists of seven questions pertaining to Market Promotion (MP). Section F consists of nine questions pertaining to Product Quality (PQ). Section G consists of six questions pertaining to Economic Service Quality (ESQ). Section H consists of five questions pertaining to Social Development (SD). Finally, in part I 9 questions pertaining to respondent's (SHGs Member's) demographic profile information were given. All the items in sections A-H were presented as statements on the questionnaire, with the same rating scale used throughout, and measured on a seven-point, Likert-type. In addition to the main scale addressing individual items, respondent's (SHGs Member's) were asked in section H to provide an overall rating of the economic service quality, satisfaction level. For conducting an empirical study, data were collected from SHGs Members of India. The sampling procedure used for the study was stratified random sampling. The stratification has been done based on the blocks are Perambalure (Perambalure

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District), Jayakondam (Ariyalur District), Veralimalai (Pudhukottai District), Thogamalai (Karur District) and Manikandam (Trichy District) for the nature of region south, east, west and north while selecting the groups from each category, non-probabilistic convenience and judgmental sampling technique was used. However, within such block, the respondents were selected by stratified random sampling. The data collected were analyzed for the entire sample.The model described in this empirical research will assist self-help groups when mapping the level of economics service quality and thereby enhance the same.

Keywords: Modelling, Mediating Effects, Self Help Groups, Economics Service Quality, India and Service Quality assurance.

INTRODUCTION

India is essentially a rural-based country is virtually the cultivator, the village handicraftsman and the agricultural labourer. Rural India where 70 percent of all Indians live still depends heavily on agriculture. However, it is increasingly becoming one of the most diversified markets with a strong demand for credit for agriculture and non-agricultural purposes, savings, insurance and money transfers. Both policy and institutional, during pre and post reform periods; well on the concerns relating to financial exclusion and touch upon the Self-Help Groups (SHGs) bank linkage model, which is a meaningful "inclusive response" to this concern. In the development strategy adopted by independent India, the primary focus was growth with equity. Given an understanding of the seasonal credit requirements of farm operations, institutional credit was perceived early in the development process as a powerful tool for enhancing production and productivity and for poverty alleviation.

Self Help Groups is a method of organising the poor people and the marginalized to come together to solve their individual problem. The SHGs method is used by the government, Non-government Organisations (NGOs) and others worldwide. The poor collect their savings and save it in banks. In return they receive easy access to loans with a small rate of interest to start their micro unit enterprise. Thousands of the poor and the marginalized population in India are building their lives, their families and their society through Self Help Groups. The 9th five-year plan of the government of India had given due recognition on the importance and the relevance of the Self-help group method to implement developmental schemes at the grassroots level. Self Help Groups (SHGs) Bank Linkage Programme is emerging as a cost-effective mechanism for providing financial services to the "Unreached Poor" which has been successful not only in meeting financial needs of the rural poor women

but also strengthen collective self-help capacities of the poor, leading to their empowerment.

Sunildro L.S. Akoijam(2013) reveals that the rural credits serve as a tool for providing a sustainable livelihood for millions of rural Indians who don't have a means of livelihood. Several organisations like RRBs, Microfinance Institutions, National Bank for Agriculture and Rural Development (NABARD), etc. are playing a major role in providing rural credit facilities to rural India. Reserve Bank of India (RBI) is formulating and regulating the policies and procedure to make the rural credit facilities available to most of the needy. In spite of several efforts put up by various organisations to increase the rural credit facilities, several challenges will prevail in the years to come.

Hence, self-help mutual aid organizations are member organized and managed associations that provide its members with a format and forum for sharing information and personal experiences about common concerns or afflictions (Kessler, Mickelson and Zhoa, 1997). The last two decades have seen a dramatic rise in the number of people who participate in self-help groups. Women in India constitute about 50 percent of the total population and comprise one third of the labour force. It is, therefore, important that when considering the economic development of this segment of the population, due attention is given to their socio-economic empowerment. The Union Minister of Finance, while presenting the budget for 2004-05, identified Self Help Groups (SHGs) as the potential tool for rural development through microfinance. National Bank for Agriculture and Rural Development (NABARD) was established in the year 1982 by an Act of Parliament and was entrusted will all matters concerning policy, planning and operation in the field of credit for agriculture and other economic activities in the rural areas. Before that, this job was being done by RBI itself. NABARD works for progressive institutionalisation of the rural credit and ensures that the demands for credit from agriculture including the new and upcoming areas like floriculture, tissue culture, bio-fertilisers, sprinkler irrigation, drip irrigation, etc. are met. The number of SHGs has been increasing ever since NABARD introduced the concept in the country in the early nineties. The performance of SHGs has been overwhelming and they seem to have come to stay so for as rural development is concerned. Women are now seen as economic actors with a particularly important role to plan in the efforts to reduce poverty. At the same time, as women are found to be the core of the poor, it is accepted that their poverty and non-access to various productive resources is related to their gender. The need for programmes specially targeted

for women has been emphasized. As a result, the major poverty alleviation programmes, such as, Integrated Rural Development Programme (IRDP), Training of Rural Youth for self-Employment (TRYSEM) and programmes specifically targeted at women such as Development of Women and Children in Rural Areas (DWCRA). Training of rural women is especially important to increase their involvement in the development process, enhance their skills and make them equal partners in the National Development (Gurumoorthy, T.R, 2000).

EMPIRICAL STUDIES OF SELF-HELP GROUPS (SHGs)

Self-help groups are popular in India since they are easy to set up within the legal framework in the country (Krishnan, 2006). A SHG uses the savings of the members (usually about 20 members) as the basis for lending (Conroy, 2003). However, the SHG can also turn to external sources for funding to increase the capital base. It is common for SHGs to be linked to NGOs where the NGOs can support the SHG by serving as an intermediary to a wide range of other social functions – health related, education related etc or by helping the SHG to bring in external capital (Krishnan, 2006). SHG: s set their own interest rates based on the members' decision on what an appropriate rate should be. Some light is shed on the fact that due to its rather "loose" structure SHGs are harder to assess in terms of outreach and performance evaluation (Conroy, 2003).

EMPIRICAL STUDIES OF SHG LINKAGE-THE INDIAN EXPERIENCE

The SHG movement in India is basically aimed at utilizing the SHG's as an 'intermediately' between the banks and the rural poor to help drastically reduce transaction costs for both the banks and the rural clients (Nanda, 1995). NABARD with its headquarters at Mumbai is an Apex Development Bank in India for financing and promoting agriculture, small scale industries, cottage and village industries, handicrafts and other rural crafts so as to promote integrated rural development. In wake of banking sector reforms invoked in early 1990's the role of commercial banks in providing credit to rural poor came under intensive debate vis-à-vis the sustainability of entire banking operation for providing banking services-both in terms of savings and credit-to the rural poor.

Sheokand (1998) has indicated that as the rural poor's share in availing formal sector credit got further marginalized, NABARD, in 1992 launched

the SHG - Bank linkage programme with the policy backup of the Reserve Bank of India (Sheokand, 1998). According to Shanmugam (1998) the SHG – Bank linkage programme initiated by NABARD, in active collaboration with Non- Governmental Organisations (NGOs), aimed at enhancing the coverage of rural poor under institutional credit thereby focusing on poverty alleviation and empowerment (Shanmugam, 1998). Prior to this, NABARD's initiative in promoting active partnership between banks and SHGs was encouraged by the findings of a study conducted in 1988-89 by NABARD in collaboration with member institutions of Asia Pacific Rural and Agricultural Credit Association (APRACA), Manila. The study covered 43 NGOs involved in promoting savings and credit SHGs in 11 states of the country. As per a NABARD report (1995) the scheme on SHGs was made applicable to RRBs and co-operative banks of the country in 1993 and in April'96, RBI advised the banks that lending to SHGs should be considered as an additional segment under priority sector advances and it be integrated with mainstream normal credit operation. Rao and Dasgupta (1999) have commented that the SHG-bank linkage programme has gained considerable movement in southern region of the country, though the northern states too are also now catching up fast and an overwhelming (78%) of the listed SHGs are Women Self Help Groups (WSHG's), that is the SHGs which constitute of only women members (Rao and Dasgupta, 1999). Since the inceptions of NABARD promoted SHG linkage programme there has been an appreciable increase both in formation of SHG and their linkage with the banks. The concept and importance of SHGs has been accepted and adopted by policy makers and they will form the backbone of rural poverty alleviation strategies, implemented by Government of India.

EMPIRICAL STUDIES OF GENESIS OF SHGs

Self Help in essence is forging 'collaborative' ties between individuals who need each other's co-operation in solving their day-to-day crisis. Lawson and Anderson (1996) have defined collaboration "as a process of pooling resources, linking and allying with one another to develop innovative, new responses for tackling social problems including poverty (Lawson and Anderson, 1996). Bailey and Koney (1996), has pointed out that collaboration is necessary to address social issues that require multi-agency approach to alleviate them. SHGs are one such medium to achieve social collaboration.

Graham and Barter (1999) have described collaboration as a relational system in which two or more stake holder's pool together resources in order

to meet objectives that neither could meet individually (Graham and Barter, 1999). Collaboration' differs from 'co-operation' in the sense that cooperation facilitates support and assistance for meeting the goals that are specific to an individual stake-holder, whereas collaboration insists on goals that are mutually agreed upon based on an established value base to which all stake-holders have a commitment. According to Hord (1986) collaboration proposes joints sharing and decision making in the interest of change, as well as changes in relationships to facilitate these ends (Hord, 1986). He has also indicated that motivation to engage or refrain collaboration is necessarily influenced by differences among stakeholders in expertise, status, empowerment and access to external and internal resources.

EMPIRICAL STUDIES OF FORMATION AND DEVELOPMENT OF SHGs

According to Rao *et., al.* (1999) a systematic and scientific approach in the formation of SHGs is of paramount importance to the long-term sustainability of these informal community-based organizations (Rao *et., al.* 1999). It has been observed by Fernandes (1992) that SHGs formed and promoted for limited purposes of availing subsidy laced bank loans, grants and other materialistic benefit generally disintegrate, while according to Srinivasan and Rao (1996; Rena,2006) the SHGs developed for genuine purpose of self-help in the wake of needs had much better chances of long-term sustainability (Srinivasan and Rao, 1996). SHGs like any other type of groups have distinct phases through which they pass over a period. According to Johnson and Johnson (1994) there have been well over 100 theories to describe the development stages of groups (Johnson and Johnson, 1994). Hill and Gruner (1973) have opined that most of these theories are based on Sequential Stage Theory while others are best described as in the Recurring Phase Theory (Hill and Gruner, 1973).

Theories based on sequential stage of group development are based on the identification of definite phases in the life cycle of group. The most famous of these theories has been proposed by Tuckman (1965) and Tuckman and Jensen (1977). Tuckman studied several groups of varying nature and objectives such as therapy, training, and focus groups and identified four distinct development stages, viz. Forming, Storming, Norming and Performing. These distinct stages are characterized by the specific focus attributed by the groups during each stage and the related consequences on the behaviour of the members. Forming Stage is marked with initial attraction towards each other in a group. The stage

is characterized by initial euphoria of coming together, chaos and uncertainty. Kruger and King (1998) have indicated that during forming stage each member tries to figure out his/her own role in the group and gets indulged in evaluating his likely individual gains vis-à-vis group objectives. Lingering suspicion and anxiety prevail among the group members during this stage. Storming Stage is earmarked by the expression of varying thoughts by the individual members, which reflects the prevailing conflict and confusion in the group.

Kruger and King (1998) have indicated that this stage is completed with the evolution of leadership and decision-making capabilities within the group. Norming Stage is reached when the group under the chosen leader/s starts evolving group norms and the group's solidarity comes into force. The group becomes more cohesive and development oriented as gradually the individualistic tendencies are replaced by the collectivism. Performing Stage is the state of readiness. Leadership is established, role clarity is developed and the group behaves in a unified manner so as to achieve its mission with the help of collective action. Harper (1995) has also identified the above four stages in the development of SHG's. Other researchers such as Moreland and Levine (1982) and (1988) have identified stages of development based on the status of membership and proposed a sequential theory based on the membership. They termed the various stages of group development as prospective membership stage, new member stage, full member stage, marginal member stage and ex-member stage (Moreland and Levine, 1982). Similarly Worchel et., al (1992) have also identified six sequential stages of group development, which have been identified on the basis of prevailing 'feelings' in the members. These are discontent stage, participative stage, identifying with the group stage, involvement in the group activities stage, proactive involvement stage and disintegration stage (Johnson and Johnson, 1997).

EMPIRICAL STUDIES OF ECONOMIC SERVICE QUALITY

People's participation in self-help organizations is not new, but a strategy spread across many countries and executed in various location specific ways. In the areas of urban development and housing, self-help takes the form of neighbourhood groups, tenant groups and slum development committees, while in rural development, SHGs focus more on the establishment of credit groups, development committees and specific user groups. In East Africa (for example, Kenya), for example, the tradition of local self-help development efforts, or harambee, is characterized by local initiatives to control and collectively work to

use local resources focused on rural development (Thomas 1985). In Southeast Asia (for example, Vietnam), the Tontine or Hui (also Hawala or Fei Chein) tradition of SHGs focuses on financial activities through cash or kind (Abiad 1995), while self-help efforts in Indonesia, are also organized around credit unions and village-based banks, with some SHGs composed of fishermen and irrigation groups (Gaonkar 2004).

Generalised as Rotating Savings and Credit Associations (ROSCA), the SHG function of locally provided, organised material support or, informal banking has been seen as a "middle rung in development", historically contextualised by peasant social structure (Geertz 1962). In re- cent times, however, it has been given a new lease of life with the concept of microcredit, the extension of small loans to support the entrepreneurial ambitions of the poor, those least able to gain access to capital. The specific SHG form of microcredit groups has been set up in different countries in the South now. The Grameen groups in Bangladesh are the most well-known example of this phenomenon, and various microcredit groups have also been formed in other countries in the region, such as in Thailand, Nepal and Sri Lanka, as well as in India where SHG's have been helping to set up micro-enterprises for income generation.

The alleged success of such schemes – in general, about 95 percent of microcredit recipients pay back their loans (Cohen 2001) – has led to the perception of microcredit borrowers as pre- bankable, a potentially lucrative market for the banking sector to exploit (rather like students in the rich countries). It has also facilitated social targeting within the general class of the poor, most notably of the rural poor and of women and women's groups (Rena,2006). Against this, however, microcredit has also been criticised, among other reasons for tending to operate only around the border of poverty (especially helping people with pre-existing businesses) rather than in its deeper reaches, and for typically offering a one-dimensional support (financial credit) without other services (Islam 2007). Thus, for example, a study of the gender aspect of micro financing in the South Indian context (Holvoet 2005) leads to an argument for the need for financial and social group intermediation as part of the micro- credit input to support women's involvement in decision making processes.

PROPOSED CONCEPTUALIZED RESEARCH MODEL

There are eight dimensions were framed for this study. Those are; i) Team Work, ii) Welfare Scheme of Government, iii) Technological Implementation,

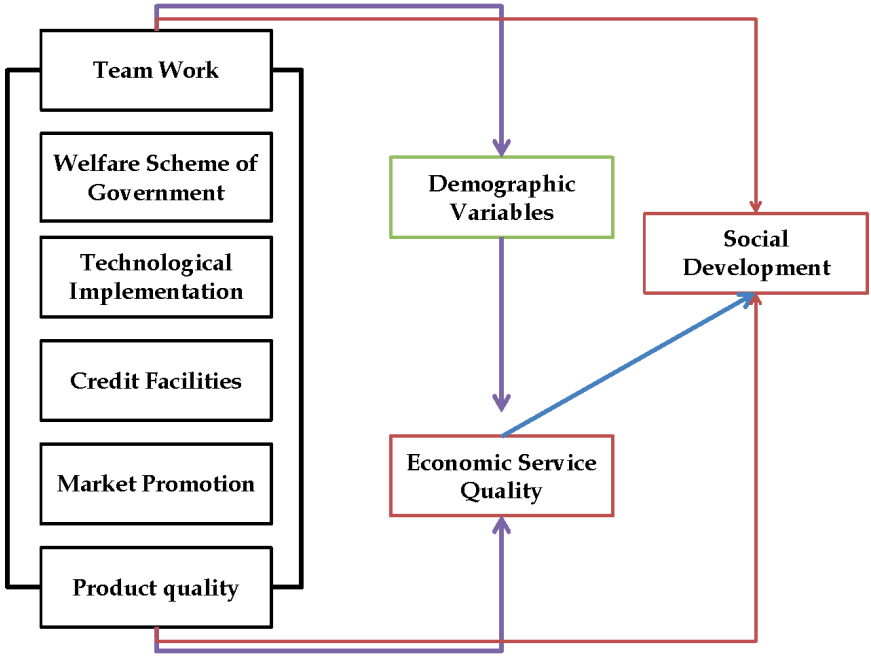

Figure 1: Conceptual Model for studying Economic Service Quality for the Sustainability of Self Help Groups in Central Districts of Tamil Nadu

iv) Credit Facilities, v) Market Promotion, vi) Product Quality, vii) Economic Service Quality, and viii) Social Development. Here Demographic variables Team Work, Welfare Scheme of Government, Technological Implementation, Credit Facilities, Market Promotion, Product Quality, are independent variables and Economic Service Quality, and Social Development are the dependent variable. It is studied that how and what extent the independent variables make changes in the dependent variable.

SELF-HELP GROUP IN INDIA

Even after more than 62 years of planning, various poverty alleviation programmes, official estimates shows that around 26.1 percent of total population still lives below the poverty line in India the financial requirement is one of the basic needs of the poor rural people of the society for their socio-economic upliftment. Amongst the poor the most disadvantageous group are the women and they constitutes almost half of the population of India. According to new data, 29.8 per cent or 360 million Indians were poor in 2009-10 as compared to 37.2 per cent or 400 million in 2004-05. However, the decline is based on a poverty line calculated at Rs.22.43 per person per day

in rural areas, and Rs.28.65 per person per day in urban areas, which is lower than the earlier Rs.32 a day mark. In rural areas, Scheduled Tribes exhibit the highest level of poverty (47.4percent), followed by Scheduled Castes (SCs), (42.3percent), and other Backward Castes (OBC) is 31.9percent), against 33.8percent for all classes. In urban areas, SCs have HCR of 34.1percent followed by STs (30.4percent) and OBC (24.3percent) against 20.9percent for all classes. Nearly 50percent of agricultural labourers and 40percent of other labourers are the poverty line in rural areas, whereas in urban areas, the poverty ratio for casual labourers is 47.1percent. Monthly per capita incomes of Rs 859.60 in urban regions and Rs 672.80 in rustic regions, respectively, have been determined as the novel poverty line.

The unemployment rate in India was last reported at 9.4 percent in 2009/10 fiscal year. Historically, from 1983 until 2010, India Unemployment Rate averaged 8.11percent reaching an all time high of 9.4 Percent in December of 2009 and a record low of 5.9 percent in December of 1994. The unemployment rate can be defined as the number of people actively looking for a job as a percentage of the labour force. While India's unemployment rate has dropped from 8.2percent in 2004-05 to 6.6percent in 2009-10, the number of jobless is still huge in absolute terms. The country added some 11.7 million people to the workforce between 2004-05 and 2009-10, and the labour pool, based on the 2009-10 national sample survey, and is estimated at 428.9 million. Over half the country's workforce is self-employed and women receive less pay than men for similar jobs, latest government data shows. While 51percentof the country's total workforce is self-employed, only 15.5percent are regular wagers or salaried employees and 33.5percent casual labourers, according to a survey by the National Sample Survey Office (NSSO 2009-2010).

The proportion of the self-employed (vulnerable workers) has declined significantly in the development process. The proportion of self-employment in the total employment is as low as 8percent and 10percent for women and men respectively in developed regions and as high as 64percent and 57percent for women and men in developing regions.

In India the overwhelming proportion of workers is in the self-employment category. About 64percentof the rural and 46percent of the urban workforce is engaged in self-employment. In India 20.51percent of the workforce are living below the poverty level. The proportion is highest (31.9percent) among casual labour and second highest (17.17percent) among the self-employed. However, in terms of absolute number, the self-employment category has the highest

number of poor – 45.28 million, followed by casual labour – 41.45 million. As per 2001 census 48.2 percent (49.60 cores) of total population are women, while the 2011 census provisional figures released on 31 March 2011 reveals that the female population has risen by 18.12 percent to reach 586.5 million (58 cores).Microfinance to Self Help Groups (SHGs) may be considered as a vital tool for meeting the Women constitute around fifty percent of the total human resources in our economy.

The SHGs-bank linkage model of NABARD is an outstanding example of an innovation leveraging on community based structures and existing banking institutions. The SHGs-bank linkage was conceived at a time when the financial sector reforms were motivating policy planners to search for innovative products and strategies for delivering financial services to the poor in a sustainable manner consistent with high repayment rates. The search for these alternatives started with internal introspection regarding the innovations which the poor had been traditionally making, to meet their financial service's needs. It was found that the poor tend to come together in a variety of informal ways for pooling their savings and dispensing small and unsecured loans at varying costs to group members on the basis of need. The essential contribution of NABARD in the SHGs-bank programme was to recognize this process, which had been catalysed by non- governmental organisations (NGOs), and to create an interface of these informal arrangements of the poor with the banking system.

Neeta Tapan (2013) has empirically studied that micro-credit delivery through the thrift and credit group approach was evolved as a blend of financial and social intermediation where social cohesion and group lending are ensured through joint liability to bridge the gaps created by poverty, illiteracy, gender and remoteness. Self-Help Group is a voluntary organisation and the functional efficiency of the groups can head start the growth of the SHGs whereas inefficiency on this level can lead to passiveness or disintegration of the groups. The SHGs have no written bylaws for their formation or functioning but some basic norms, ensured through regular interventions of the facilitator, can help the SHGs become vibrant entities as functional efficiency is the foundation stone of the successful edifice of bank linkage and income generation.

Hence, there is a need for the study on mediating effects of service quality for sustainability of these SHGs in Tamil Nadu to increase the productivity and plays an important role in the process of development of economy. Researchers have paid little attention to the SHGs since there is lack of a sound model to capture the drivers of sustainability of SHGs.

HYPOTHESES DEVELOPMENT

Mediation refers to a process or mechanism through which one variable (i.e., exogenous) causes variation in another variable (i.e., endogenous). Studies designed to test for moderation may provide stronger tests of mediation than the partial and whole covariance approaches typically used (e.g. Baron and Kenny, 1986; Bing, Davison, LeBreton, and LeBreton, 2002; James and Brett, 1984). It is useful to distinguish between moderation and mediation. Moderation carries with it no connotation of causality, unlike mediation, which implies a causal order. Based on the arguments discussed in the previous chapters and this chapter the researcher formulated the following hypotheses.

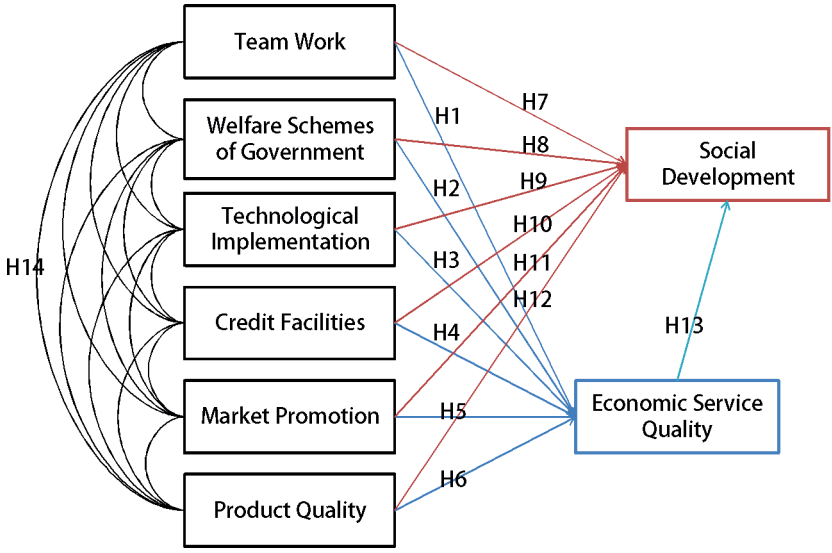

Figure 2: Proposed Hypothetical Model of "SHGs QUAL Model"

- The dimensions of Self Help Groups were influenced by the mediating factor Economic Service Quality.
- The dimensions of Self Help Groups were positively influenced by the Economic Service Quality.

A mediator hypothesis is supported if the interaction path (TW, WSG, TI, CF, MP, PQ, ESQ, and SD) are significant. There may also be significant main effects for the predictor (Economic Service Quality) and mediator (Social Development). Therefore, this research seeks to explore whether the relationship between Social Development (SD) and TW, WSG, TI, CF, MP, and PQ are fully or partially mediated by Economic Service Quality.

Hypothesis 1: *The Economic Service Quality is mediated through the Team Work (TW) towards attainment of Social Development to the sustainability of Self Help Group.*

Hypothesis 2: *The Economic Service Quality is mediated through the Welfare Schemes by Government (WSG) towards attainment of Social Development to the sustainability of Self Help Groups.*

Hypothesis 3: *The Economic Service Quality is mediated through the Technical Implementation (TI) towards attainment of Social Development to the sustainability of Self Help Groups.*

Hypothesis 4: *The Economic Service Quality is mediated through the Credit Facilities (CF) towards attainment of Social Development to the sustainability of Self Help Groups.*

Hypothesis 5: *The Economic Service Quality is mediated through the Market Promotion (MP) towards attainment of Social Development to the sustainability of Self Help Groups.*

Hypothesis 6: *The Economic Service Quality is mediated through the Product Quality (PQ towards attainment of Social Development to the sustainability of Self Help Groups.*

Hypothesis 7: *The Economic Service Quality dimension Team Work (TW) positively influences the Social Development to the sustainability of Self Help Groups.*

Hypothesis 8: *The Economic Service Quality dimension Welfare Schemes by Government (WSG) positively influences the Social Development to the sustainability of Self Help Groups.*

Hypothesis 9: *The Economic Service Quality dimension Technical Implementation (TI) positively influences the Social Development to the sustainability of the Self Help Groups.*

Hypothesis 10: *The Economic Service Quality dimension Credit Facilities (CF) positively influences the Social Development to the sustainability of Self Help Groups.*

Hypothesis 11: *The Economic Service Quality dimension Market Promotion (MP) positively influences the Social Development to the sustainability of Self Help Groups.*

Hypothesis 12: *The Economic Service Quality dimension Product Quality (PQ) positively influences the Social Development to the sustainability of Self Help Groups.*

Hypothesis 13: *The Economic Services Quality mediating dimension Economic Service Quality (ESQ), positively influence the Social Development (SD) to the sustainability of Self Help Groups.*

Hypothesis 14: *Including the interaction between dimensions of Economic Service Quality (ESQ) will explain more of the variance in Social Development (SD) than the direct influence of dimensions of Economics Service quality on their own.*

RESEARCH DESIGN

The research employed a cross sectional methodological approach. Methodology described as cross sectional "is one used to collect data on all relevant variables at one time" (O'Sullivan and Rassel, 1999). This approach is particularly useful for studies designed to collect information on attitudes and behaviours of large geographically diverse populations (O'Sullivan and Rassel, 1999). The survey design is regarded as the most appropriate research design to measure the perceptions of the respondents in this study. A survey is the most appropriate research design as it can enable the researcher to collect information from a large population. The information obtained from the sample can then be generalized to an entire population (Kerlinger and Lee, 2000). Survey research is usually a qualitative method that requires standardized information in order to define or describe variables or to study the relationships between variables.

Surveys generally fall into one of two categories, descriptive or relational. Descriptive surveys are designed to provide a snapshot of the current state of affairs while relational surveys are designed to empirically examine relationships among two or more constructs either in an exploratory or in a confirmatory manner. The current study is a relational survey that seeks to explore the relationship between the Team Work (TW), Welfare Schemes by Government (WSG), Technological Implementation (TI), Credit Facilities (CF), Market Promotion (MP), Product Quality (PQ), Economic Service Quality (ESQ), and Social Development (SD) on Self Help Groups.

PILOT STUDY

Prior to beginning actual data collection with the procedure described above, the researcher utilized similar procedures to conduct a pilot study to ensure that the survey materials and procedure were clear and did not provoke any confusion or problems for participants. The draft questionnaire was eventually subjected to pilot testing with a total of 50 SHG spread across the different regions and they were asked to comment on any perceived ambiguities,

omissions or errors concerning the draft questionnaire. The feedback received was rather ambiguous thus only minor changes were made. For instance, technical jargon was rephrased to ensure clarity and simplicity. The revised questionnaire was subsequently submitted to three experts (an academician, a researcher and a consultant) for feedback before being administered for a full-scale survey. These experts indicated that the draft questionnaire was rather lengthy, which in fact coincided with the preliminary feedback from SHG. Nevertheless, in terms of number of items in the questionnaire, the current study conforms broadly with similar research work (Cronin and Taylor, 1992; Teas, 1993a; Lassar et., al., 2000; Mehta et., al., 2000; Robledo, 2001) that attempted to compare various instruments for measuring mediating factor of service quality for sustainability of SHG in Tamil Nadu.

CONSTRUCT MEASURES AND DATA COLLECTION

Data were collected by means of a structured questionnaire comprising eight dimensions namely (1) Team Work (TW), (2) Welfare Schemes by Government (WSG), (3) Technological Implementation (TI), (4) Credit Facilities (CF), (5) Market Promotion (MP), (6) Product Quality (PQ), (7) Economic Service Quality (ESQ), and (8) Social Development (SD), Team Work (TW) consists of Eight Questions, Welfare Schemes by Government (WSG) consists of Eight Questions, Technological Implementation (TI) consists of Seven Questions, Credit Facilities (CF) consists of Nine Questions, Market Promotion (MP) consists of Seven Questions, Product Quality (PQ) consists of Nine Questions, Economic Service Quality (ESQ) consists of Six Questions, and Social Development (SD) consists of Five Questions. Finally in the Ten Questions pertaining to respondents demographic profile information was given. All the dimensions were presented as statements on the questionnaire, with the same rating scale used throughout and measured on a seven point, Likert-type scale that varied from 1 highly dissatisfied to 7 highly satisfied and Strongly Disagree to Strongly Agree. For conducting an empirical study, data were collected from respondents in Central Districts of Tamilnadu.

A total of 650 nos. of questionnaire were circulated to Members of the Self Help Groups 5 Districts of Tamilnadu of these 650 were collected. Hence, the sample size for the analysis is 650. The sampling procedure used for the study was stratified random sampling. The stratification has been done based on the blocks are Perambalure (Perambalure District), Jayakondam (Ariyalur District), Veralimalai (Pudhukottai District), Thogamalai (Karur District)

and Manikandam (Trichy District) for the nature of region south, east, west and north while selecting the groups from each category, non-probabilistic convenience and judgmental sampling technique was used. However, within such block, the respondents were selected by stratified random sampling. The data collected were analyzed for the entire sample.

PROCEDURE FOR DATA ANALYSIS

The data collected were analysed for the entire sample. Data analyses were performed with Statistical Package for Social Sciences (SPSS) using techniques that included descriptive statistics, Correlation analysis and Analysis of Moment Structures (AMOS) package for Structural Equation Modeling and Bayesian estimation and testing.

STRUCTURAL EQUATION MODELING

The main study used Structural Equation Modeling because of two advantages: "(1) Estimation of Multiple and Interrelated Dependence Relationships, and (2) The Ability to Represent Unobserved Concepts in These Relationships and Account for Measurement Error in the Estimation Process" (Hair et al., 1998). Therefore simultaneously estimated multiple regressions; the direct and indirect effects were identified (Tate, 1998). However, a series of separate multiple regressions had to be established based on "theory, prior experience, and the research objectives to distinguish which independent variables predict each dependent variable" (Hair et al., 1998). In addition, because SEM considers a measurement error, the reliability of the predictor variable was improved. AMOS 7.0 (Arbuckle and Wothke, 2006), a computer program for formulating, fitting and testing Structural Equation Models (SEM) to observed data was used for SEM and the data preparation was conducted with SPSS 13.0.

Linear Structural Equation Models (SEMs) are widely used in sociology, econometrics, management, biology, and other sciences. A SEM (without free parameters) has two parts: a probability distribution (in the Normal case specified by a set of linear structural equations and a covariance matrix among the "error" or "disturbance" terms), and an associated path diagram corresponding to the causal relations among variables specified by the structural equations and the correlations among the error terms. It is often thought that the path diagram is nothing more than a heuristic device for illustrating the assumptions of the model. However, in this research, the researcher will show

how path diagrams can be used to solve a number of important problems in structural equation modeling.

Structural Equation Models with latent variables (SEM) are more and more often used to analyse relationships among variables in marketing and consumer research (see for instance Bollen, 1989; Schumacker and Lomax, 1996, or Batista-Foguet and Coenders, 2000, for an introduction and Bagozzi, 1994 for applications to marketing research). Some reasons for the widespread use of these models are their parsimony (they belong to the family of linear models), their ability to model complex systems (where simultaneous and reciprocal relationships may be present, such as the relationship between quality and satisfaction), and their ability to model relationships among non-observable variables (such as the domains in the SHGs Model) while taking measurement errors into account (which are usually sizeable in questionnaire data and can result in biased estimates if ignored).

As is usually recommended, a Confirmatory Factor Analysis (CFA) model is first specified to account for the measurement relationships from latent to observable variables. In our case, the latent variables are the four perception dimensions and the observed variables the 30 perception items. The relationships among latent variables cannot be tested until a well-fitting CFA model has been reached. In our case, the relationships among Social Development (SD) of Self Help Groups, the mediating impact of Economic Service Quality (ESQ) with the TW, WSG, TI, CF, MP, PQ, dimensions are of interest. This modeling sequence stresses the importance of the goodness of fit assessment. As a combination of regression, path and factor analyses, in SEM, each predictor is used with its associated uncontrolled error and, unlike regression analyses; predictor multi-collinearity does not affect the model results.

EVALUATION OF MODEL FIT

According to the usual procedures, the goodness of fit is assessed by checking the statistical and substantive validity of estimates, the convergence of the estimation procedure, the empirical identification of the model, the statistical significance of the parameters, and the goodness of fit to the covariance matrix. Since complex models are inevitably misspecified to a certain extent, the standard χ^2 test of the hypothesis of perfect fit to the population covariance matrix is given less importance than measures of the degree of approximation between the model and the population covariance matrix. The Root Mean

Squared Error of Approximation (RMSEA) is selected as such a measure. Values equal to 0.05 or lower are generally considered to be acceptable (Browne and Cudeck, 1993). The sampling distribution for the RMSEA can be derived, which makes it possible to compute confidence intervals.

These intervals allow researchers to test for close fit and not only for exact fit, as the χ^2 statistics does. If both extremes of the confidence interval are below 0.05, then the hypothesis of close fit is rejected in favour of the hypothesis of better than close fit. If both extremes of the confidence interval are above 0.05, then the hypothesis of close fit is rejected in favour of the hypothesis of bad fit.

Several well-known goodness-of-fit indices were used to evaluate model fit: the chi-square, The Comparative Fit Index (CFI), The Unadjusted Goodness-of-Fit Indices (GFI), The Normal Fit Index (NFI), The Tucker-Lewis Index (TLI), The Root Mean Square Error of Approximation (RMSEA) and The Standardized Root Mean Square Error Residual (SRMR).

BAYESIAN ESTIMATION AND TESTING IN SEM

With modern computers and software, a Bayesian approach to structural equation modeling (SEM) is now possible. Posterior distributions over the parameters of a structural equation model can be approximated to arbitrary precision with AMOS, even for small samples. Being able to compute the posterior over the parameters allows us to address several issues of practical interest. First, prior knowledge about the parameters may be incorporated into the modeling process in AMOS. Second, we need not rely on asymptotic theory when the sample size is small, a practice which has been shown to be misleading for inference and goodness-of-fit tests in SEM (Boomsma, 1983). Third, the class of models that can be handled is no longer restricted to just identified or over identified models. Whereas each identifying assumption must be taken as given in the classical approach, in a Bayesian approach some of these assumptions can be specified with perhaps more realistic uncertainty.

THE REGRESSION "SHGS QUAL" ECONOMIC SERVICE QUALITY OVERALL MODEL

In hierarchical regression, the predictor variables are entered in sets of variables according to a pre-determined order that may infer some causal or potentially mediating relationships between the predictors and the dependent variable (Francis, 2003). Such situations are frequently of interest in the social sciences. The logic involved in hypothesizing mediating relationships is that "The

Independent Variable Influences the Mediator Which, In Turn, Influences the Outcome" (Holmbeck, 1997). However, an important pre-condition for examining mediated relationships is that the independent variable is significantly associated with the dependent variable prior to testing any model for mediating variables (Holmbeck, 1997). Of interest is the extent to which the introduction of the hypothesized mediating variable reduces the magnitude of any direct influence of the independent variable on the dependent variable. Hence the researcher empirically tested the hierarchical regression for the model conceptualized in the figure 3 within the AMOS 20.0 graphics environment.

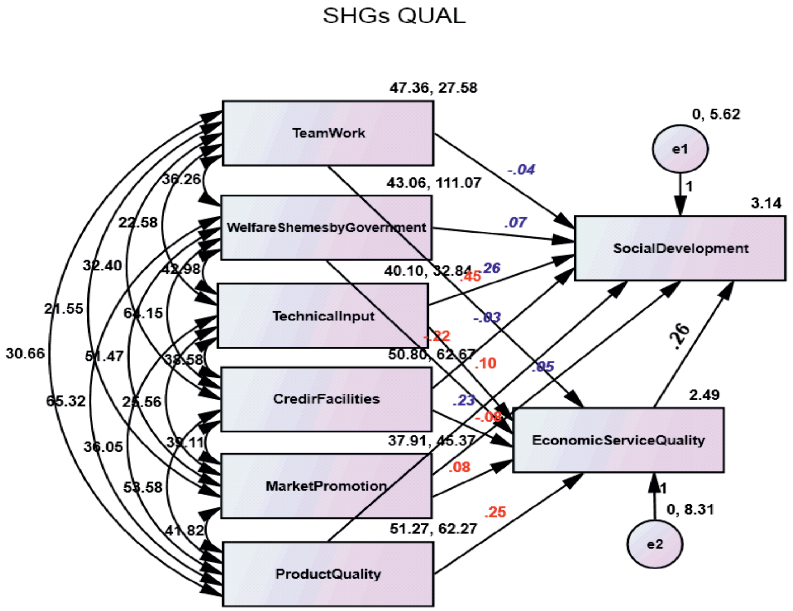

Figure 3: Shows the AMOS Output with Regression Weights of "SHGs QUAL" Mediated Model

The analyses conducted, the parameter estimates are then viewed within AMOS graphics and it displays the standardized parameter estimates. The regression analysis revealed that the Economic Service Quality on the various dimensions of Mediated Model Sustainable SHGs, Economic Service Quality (ESQ) influenced 0.26 of the Social Development (SD), followed by Team Work (TW) which explains 0.45 of the Economic Service Quality the R^2 value of 0.26 is displayed above the box Social Development in the AMOS graphics output. The visual representation of results suggest that the relationships between the dimensions of Sustainable Self Help Groups, procedure and

formalities Team Work (TW) => Economic Service Quality (ESQ) = 0.45) resulted significant impact on the mediated factor Economic Service Quality. The Welfare Schemes by Government (WSG), Technical Implementation (TI) and Product Quality (PQ) are resulted very limited influence on the Economic Service Quality. It shows that the Customer perception towards the Service Quality, Team Work (TW) and Welfare Schemes By Government (WSG) towards outcome of Self Help Groups in insignificant whereas the impact of the same is very high on mediating variable.

BAYESIAN ESTIMATION AND TESTING FOR REGRESSION MODEL OF "SHGS QUAL" MEDIATED STRUCTURAL EQUATION MODEL

The research model is a SEM, while many management scientist are most familiar with the estimation of these models using software that analyses covariance matrix of the observed data (e.g. LISREL, AMOS, EQS), the researcher adopt a Bayesian approach for estimation and inference in AMOS 20.0 environment (Arbuckle and Wothke, 2006). Since, it offers numerous methodological and substantive advantages over alternative approaches.

Table 1: Bayesian Convergence Distribution for "SHGs QUAL" Regression Model

Regression weights									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
ESQ<--TW	0.449	0.001	0.037	1.001	-0.013	-0.094	0.315	0.585	W1
ESQ<-WSG	-0.225	0.001	0.019	1.001	0.020	-0.170	-0.297	-0.165	W2
ESQ<--TI	0.094	0.001	0.041	1.001	0.168	0.113	-0.051	0.251	W3
ESQ<--CF	-0.074	0.001	0.035	1.001	0.002	0.110	-0.204	0.089	W4
ESQ<--MP	0.082	0.001	0.028	1.001	0.136	0.200	-0.026	0.202	W5
ESQ<--PQ	0.254	0.002	0.034	1.001	-0.064	-0.006	0.119	0.392	W6
SD<--ESQ	0.699	0.002	0.038	1.001	0.016	0.062	0.536	0.836	W7
Means									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
TW	47.356	0.010	0.210	1.001	-0.018	-0.063	46.516	48.124	M1
WSG	43.055	0.017	0.424	1.001	0.044	0.222	41.267	44.944	M2
TI	40.085	0.011	0.230	1.001	0.025	-0.018	39.259	40.998	M3
CF	50.781	0.015	0.318	1.001	0.015	-0.005	49.463	52.248	M4
MP	37.921	0.011	0.270	1.001	0.064	0.097	36.879	39.034	M5
PQ	51.265	0.014	0.318	1.001	0.041	0.131	49.813	52.575	M6
Intercepts									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
ESQ	2.535	0.032	1.119	1.000	-0.070	-0.014	-2.418	7.121	I1
SD	13.422	0.050	1.15	1.001	-0.024	0.046	9.181	18.408	I2

Covariances									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
TW<->PQ	31.350	0.098	2.077	1.001	0.106	-0.035	24.070	39.332	C1
WSG<->PQ	66.840	0.165	4.265	1.001	0.099	-0.017	50.446	83.315	C2
TI<->PQ	36.762	0.102	2.324	1.001	0.121	-0.075	29.187	47.110	C3
CF<->PQ	54.812	0.131	3.357	1.001	0.109	-0.015	43.246	69.107	C4
MP<->PQ	42.768	0.100	2.695	1.001	0.174	-0.030	33.328	53.730	C5
TW<->MP	22.096	0.065	1.662	1.001	0.142	-0.027	16.417	28.259	C6
WSG<->MP	52.775	0.152	3.586	1.001	0.122	-0.064	39.131	67.763	C7
TI<->MP	26.089	0.064	1.863	1.001	0.109	-0.071	19.031	33.023	C8
CF<->MP	40.055	0.084	2.696	1.000	0.101	-0.006	29.560	50.016	C9
TI<->CF	39.425	0.082	2.395	1.001	0.147	-0.107	30.874	48.698	C10
WSG<->CF	65.752	0.156	4.314	1.001	0.146	0.103	49.796	82.961	C11
TW<->CF	33.168	0.097	2.148	1.001	0.134	-0.033	25.357	41.311	C12
WSG<->TI	43.879	0.136	3.024	1.001	0.113	0.103	31.72	56.561	C13
TW<->TI	23.048	0.067	1.493	1.001	0.132	-0.128	17.889	28.717	C14
TW<->WSG	37.139	0.104	2.660	1.001	0.164	0.064	27.356	47.337	C15
Variances									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
TW	28.220	0.079	1.574	1.001	0.212	-0.071	23.022	34.652	V1
WSG	113.858	0.250	6.461	1.001	0.245	0.176	89.771	141.689	V2
TI	33.500	0.078	1.855	1.001	0.154	-0.023	27.120	41.369	V3
CF	64.192	0.118	3.633	1.001	0.129	-0.049	51.892	79.201	V4
MP	46.485	0.115	2.595	1.001	0.200	0.007	37.314	57.889	V5
PQ	63.597	0.152	3.499	1.001	0.107	-0.053	51.488	77.423	V6
e2	8.464	0.024	0.480	1.001	0.280	0.218	6.828	10.831	V7
e1	15.741	0.030	0.875	1.001	0.281	0.284	12.660	20.058	V8
Source: Amos 18 output									

POSTERIOR DIAGNOSTIC PLOTS OF 'SHGS QUAL' MEDIATED REGRESSION MODEL

To check the convergence of the Bayesian MCMC method the posterior diagnostic plots are analysed. The following figure (figure 4 and 5) shows the posterior frequency polygon of the distribution of the parameters across the 70000 samples. The Bayesian MCMC diagnostic plots reveals that for all the figures the normality is achieved, so the structural equation model fit is accurately estimated.

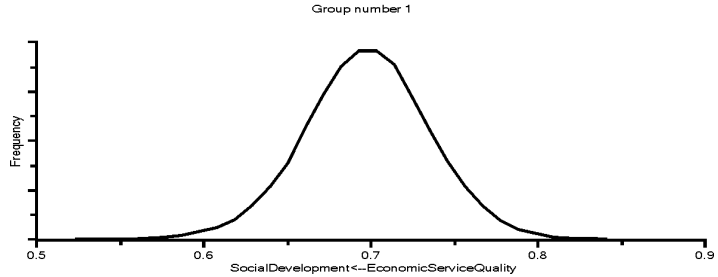

Figure 4: Posterior frequency polygon distribution of the Mediating Factor Social Development and Economic Service Quality regression weight

Figure 5: Posterior frequency polygon distribution of the Mediating Factor Social Development and Economic Service Quality regression weight (W8)

The trace plot also called as time-series plot shows the sampled values of a parameter over time. This plot helps to judge how quickly the MCMC procedure converges in distribution. The following figures (figure 6) show the trace plot of the mediated SHGs QUAL Model for the mediated factor Economic Service Quality to Social Development dimension across 70000 samples. If we mentally break up this plot into a few horizontal sections, the trace within any section would not look much different from the trace in any other section. This indicates that the convergence in distribution takes place rapidly. Hence the mediated SHGs QUAL MCMC procedure very quickly forgets its starting values.

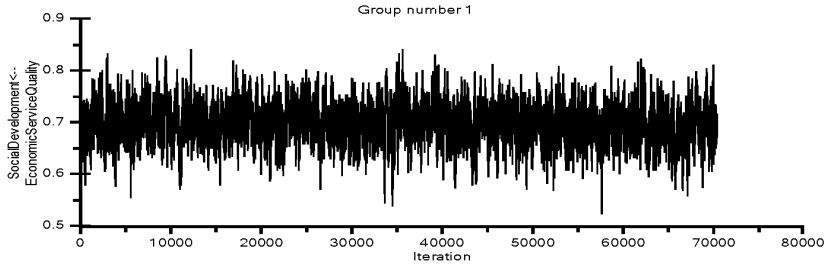

Figure 6: Posterior frequency polygon distribution of the Mediating Factor Social Development and Economic Service Quality regression weight (W8)

To determine how long it takes for the correlations among the samples to die down, autocorrelation plot which is the estimated correlation between the sampled value at any iteration and the sampled value k iterations later for k = 1, 2, 3,…. is analysed for the SHGs QUAL regression model. The figure 7 shows the correlation plot of the SHGs QUAL model for the mediated factor Economic Service Quality with Social Development dimension across 70000 samples. The figure exhibits that at lag 100 and beyond, the correlation is effectively 0. This indicates that by 90 iterations, the MCMC procedure has essentially forgotten its starting position. Forgetting the starting position is equivalent to convergence in distribution. Hence it is ensured that convergence in distribution was attained and that the analysed samples are indeed samples from the true posterior distribution.

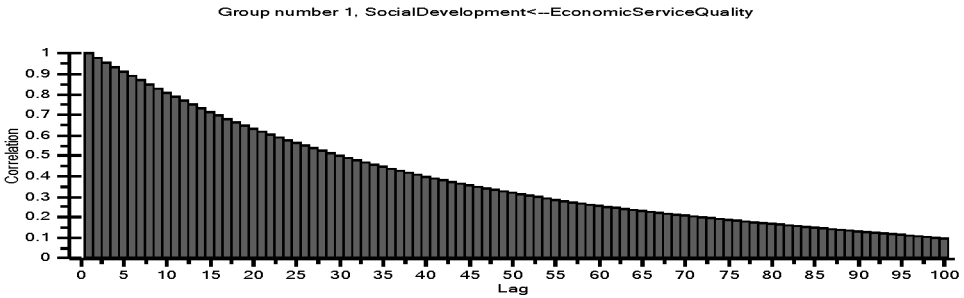

Figure 7: Posterior frequency polygon distribution of the Mediating Factor Social Development and Economic Service Quality regression weight (W8)

Even though marginal posterior distributions are very important, they do not reveal relationships that may exist among the two parameters. The frequency polygons given in the figure 8 and figure 9 describe only the marginal posterior distributions of the parameters. Hence to visualize the relationships among pairs of Parameters in two-dimensional. The surface plots following figures (figure 8 and figure 9) provides bivariate marginal posterior plots of the SHGs QUAL model for the mediated factor Economic Service Quality with other dimensions across 75000 samples. From the two figures it is revealed that the two dimensional surface plots also signifies the interrelationship between the mediating variable Economic Service Quality with the other dimensions SD,TW.

The following figure 10 displays the two-dimensional plot of the bivariate posterior density across 70000 samples. Ranging from dark to light, the three shades of gray represent 50%, 90% and 95% credible regions, respectively.

From the figure, it is revealed that the sample respondent's responses are normally distributed.

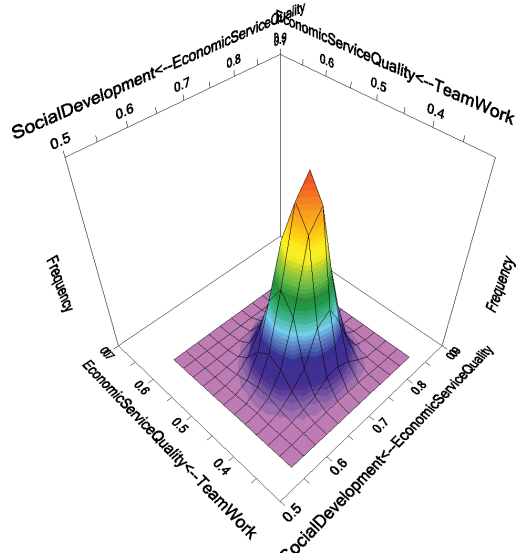

Figure 8: Two-dimensional surface plot of the marginal posterior distribution of the mediating factor Economic Service Quality with SD and TW

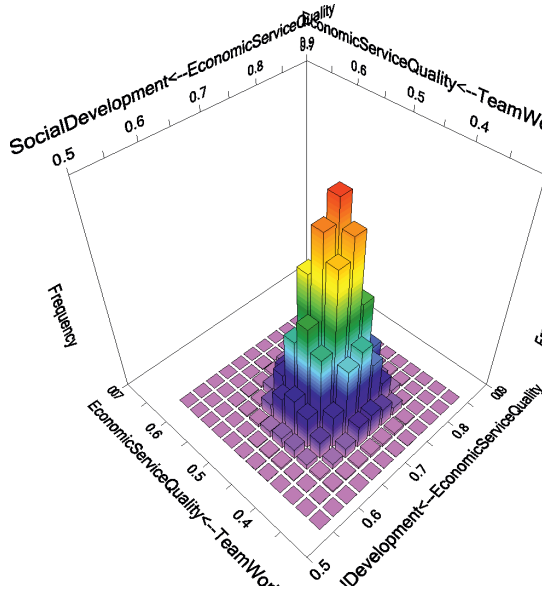

Figure 9: Two-dimensional surface plot of the marginal posterior distribution of the mediating factor Economic Service Quality with SD and TW

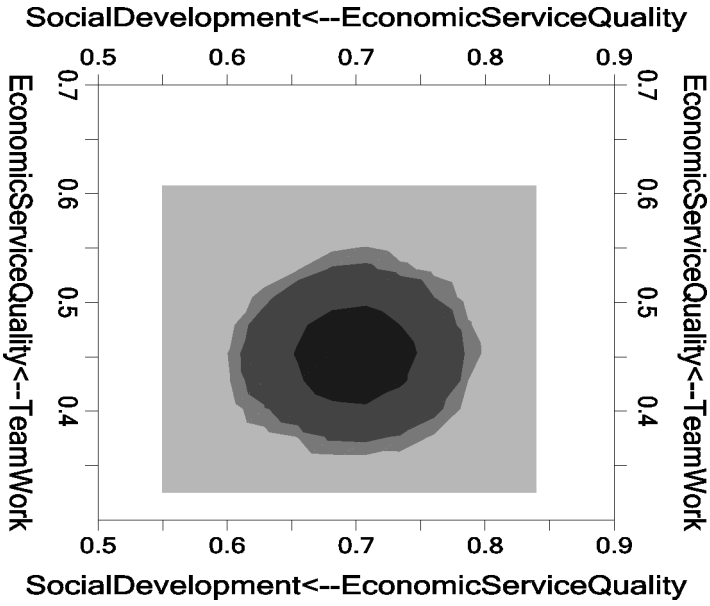

Figure 10: Two-dimensional surface plot of the marginal posterior distribution of the mediating factor Economic Service Quality with SD and TW

The various diagnostic plots featured from figure 4 to figure 10 of the Bayesian estimation of convergence of MCMC algorithm confirms the fact that the convergence takes place and the normality is attained. Hence absolute fit of the SHGs QUAL regression model. From the SHGs QUAL regression model which is empirically tested with mediating factor with the dimensions Team Work and the Social Development (SD) it is evident that the Self Help Groups Service Sector should concentrate on the Economic Service Quality (ESQ) as the mandatory aspect of Self Help Groups in Central District of Tamilnadu, India.

STRUCTURAL EQUATION MODELING OF "OVERALL MEDIATED INCLUSIVE MODEL FOR SHGS" MEDIATED MODEL

Since the Service loyalty in Overall Mediated Inclusive Model for SHGs is theoretical construct, researcher has defined its dimension based on the setting used to explore the construct. If Mediated "OVERALL MEDIATED INCLUSIVE MODEL FOR SHGs" Model is to be applicable in the Indian context, the dimensions and the sub dimensions on Self Help Groups have to be reliable and valid in measuring Social Development in Self Help Groups. The model examines the relative importance of dimensions of Social Development

and Economic Service Quality in Self Help Groups in Central District of Tamilnadu, India. The "OVERALL MEDIATED INCLUSIVE MODEL FOR SHGs" Model examines the relative importance of Economic Service Quality as a mediating factor for Social Development to Central Districts Tamilnadu, India.

After identifying a potential model that best explains the data in terms of theory and model fit, a Confirmatory Factor Analysis (CFA) using Structural Equation Modeling (SEM) was used to test the invariance of the factorial model. All tests of model invariance begin with a global test of the equality of covariance structures across groups (Joreskog, 1971). The data for all groups were analysed simultaneously to obtain efficient estimates (Bentler, 1995). The constraints used include, from weaker to stronger: (1) Model Structure, (2) Model Structure and Factor Loadings, and (3) Model Structure, Factor Loadings, and Unique Variance.

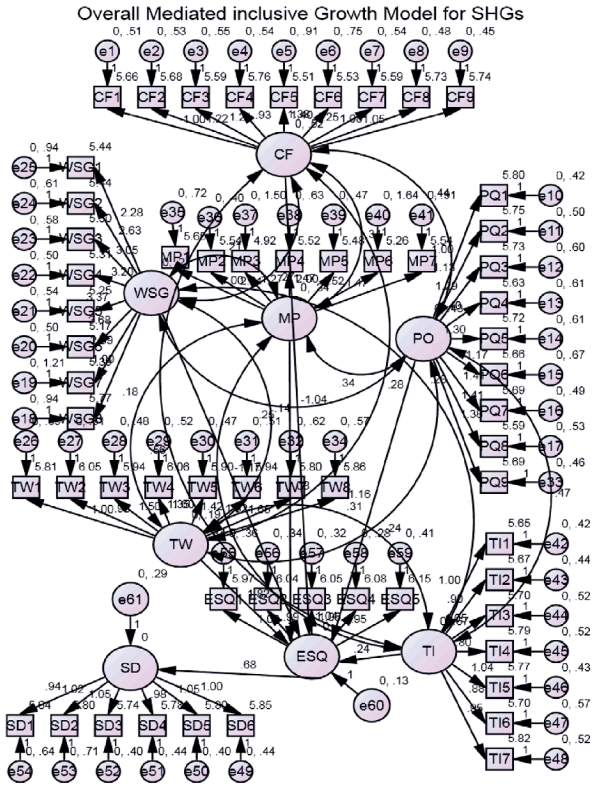

Figure 11: Shows AMOS path diagram output for the overall OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs Structural Equation Model

Figure 9 shows Amos's path diagram output for the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs Structural Equation model., You can see that the, Team Work (TW) dimension consists of 8 sub dimensions, Welfare Schemes by Governments (WSG) dimension consists of 7 sub dimensions, Technical Implementation (TI) dimension consists of 7 sub dimensions, Credit Facilities (CF) dimension consists of 9 sub dimensions, Market Promotions (MP) dimension consists of 7 sub dimensions, Product Quality (PQ) dimension consists of 9 sub dimensions, Social Development (SD) dimension consists of 6 sub dimensions and Economic Service Quality (ESQ) dimension consists of 5 sub dimensions. The RMSEA fit statistics for the model was 0.05, which was considered as a best fit model (Brown and Cudeck, 1993; Diamantopoulos and Siguaw, 2000). The path diagram shows the Economic Service Quality is the mediating factor for Social Development. The regression co-efficient 0.68 signifies the impact of mediating factor Economic Service Quality (ESQ) on the other Dimensions towards Social Development of the Self Help Groups.

EVALUATION OF OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs MEDIATED MODEL

The following table 2 gives the summary of the various goodness-of-fit statistics and other values corresponding to the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs Mediated Structural Equation Model. Also the last column in the table provides the acceptable level for the various goodness-of-fit statistics and other values.

Table 2: Summary of the Various Goodness of Fit Statistics and Other Values Corresponding To the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs Mediated Structural Equation Model

S.No.	*Measures of fit*	*Over All Mediated Inclusive Model For SHGs*	*Acceptable level for good fit*
1	Chi-square (x^2) at p 0.01	11079.059	Significant
2	Degree of freedom (d.f)	1630	Accepted
3	Comparative Fit Index (CFI)	.721	>0.90
4	Bentler – Bonett Indes or Normed Fit Index (NFI)	.688	>0.90
5	Root Mean Squared error of Approximation (RMSEA)	.043	<0.05 Accepted
6	Non Centrality Parameter (NCP)	9449.059	Accepted

S.No.	*Measures of fit*	*Over All Mediated Inclusive Model For SHGs*	*Acceptable level for good fit*
7	Non Centrality Parameter, Lower Boundary (NCPLO 90)	9119.086	Accepted
8	Non Centrality Parameter, Upper Boundary (NCPHI 90)	9785.640	Accepted
9	Parsimony adjusted NFI (PNFI)	.656	Accepted
10	Parsimony adjusted CFI (PCFI)	.687	Accepted
11	Minimum value of Discrepancy (FMIN)	17.071	Accepted
12	Lower Limit of FMIN (LO90)	14.051	Accepted
13	Upper Limit of FMIN (HI90)	15.078	Accepted
14	Browne-Cudeck Criterion (BCC)	11517.602	Accepted
15	ECVI	17.684	Accepted
16	LO90	17.176	Accepted
17	HI90	18.203	Accepted
18	MECVI	17.747	Accepted
19	HOELTER .05	202	<=
20	HOELTER .01	204	Atleast 200
Source: Amos 20.0 output			

From the above table it is revealed that all the criterions of goodness-of-fit statistics and other measures of statistics are acceptable for the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs Structural Equation Model.

BAYESIAN ESTIMATION AND TESTING OF "OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGS" STRUCTURAL EQUATION MODEL

The research model is a SEM, while many management scientist are most familiar with the estimation of these models using software that analyses covariance matrix of the observed data (e.g. LISREL, AMOS, EQS), the researcher adopt a Bayesian approach for estimation and inference in AMOS 20.0 environment (Senthilkumar. N and Arulraj.A, 2011; Arbuckle and Wothke, 2006). Since, it offers numerous methodological and substantive advantages over alternative approaches.

Table 3: Bayesian Convergence Distribution for "OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs" Structural Model

Regression weights									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
CF2<--F1	1.225	0.003	0.065	1.001	0.169	0.058	0.991	1.506	W1
CF3<--F1	1.217	0.003	0.065	1.001	0.153	0.141	0.935	1.476	W2
CF4<--F1	0.931	0.002	0.059	1.001	0.319	0.521	0.704	1.189	W3
CF5<--F1	1.381	0.003	0.078	1.001	0.101	0.231	1.051	1.701	W4
CF6<--F1	1.406	0.003	0.075	1.001	0.228	0.224	1.130	1.748	W5
CF7<--F1	1.253	0.003	0.067	1.001	0.295	0.498	1.007	1.572	W6
CF8<--F1	1.083	0.002	0.058	1.001	0.201	0.168	0.88	1.349	W7
CF9<--F1	1.055	0.002	0.058	1.001	0.186	0.139	0.852	1.286	W8
PQ2<--F2	1.137	0.002	0.063	1.001	0.075	-0.080	0.91	1.383	W9
PQ3<--F2	1.296	0.003	0.070	1.001	0.109	-0.007	1.036	1.567	W10
PQ4<--F2	1.412	0.003	0.076	1.001	0.040	0.062	1.129	1.757	W11
PQ5<--F2	1.310	0.003	0.074	1.001	0.142	0.132	0.998	1.621	W12
PQ6<--F2	1.180	0.004	0.069	1.001	0.136	0.063	0.923	1.494	W13
PQ7<--F2	1.426	0.003	0.072	1.001	0.163	0.170	1.180	1.745	W14
PQ8<--F2	1.427	0.004	0.076	1.001	0.191	0.023	1.159	1.768	W15
WSG7<--F3	3.035	0.014	0.275	1.001	0.395	0.259	2.174	4.130	W16
WSG6<--F3	3.723	0.017	0.321	1.001	0.348	0.034	2.700	4.943	W17
WSG5<--F3	3.420	0.016	0.296	1.001	0.342	0.096	2.531	4.637	W18
WSG4<--F3	3.242	0.015	0.277	1.001	0.394	0.214	2.444	4.366	W19
WSG3<--F3	3.083	0.013	0.266	1.001	0.387	0.055	2.254	4.135	W20
WSG2<--F3	2.670	0.013	0.237	1.002	0.402	0.201	1.941	3.586	W21
WSG1<--F3	2.316	0.01	0.212	1.001	0.281	-0.009	1.576	3.170	W22
TW2<--F4	1.000	0.004	0.102	1.001	0.189	-0.121	0.683	1.417	W23
TW3<--F4	1.531	0.007	0.138	1.001	0.335	0.061	1.066	2.090	W24
TW4<--F4	1.376	0.007	0.129	1.001	0.257	0.034	0.943	1.963	W25
TW5<--F4	1.631	0.007	0.143	1.001	0.257	-0.011	1.175	2.198	W26
TW6<--F4	1.454	0.006	0.129	1.001	0.244	0.027	1.042	2.009	W27
TW7<--F4	1.548	0.007	0.145	1.001	0.352	0.245	1.068	2.236	W28
PQ9<--F2	1.393	0.003	0.071	1.001	0.257	0.270	1.150	1.734	W29
TW8<--F4	1.682	0.007	0.15	1.001	0.297	0.044	1.208	2.298	W30
MP2<--F5	2.023	0.005	0.136	1.001	0.306	0.267	1.550	2.664	W31
MP3<--F5	1.286	0.005	0.116	1.001	0.235	0.108	0.883	1.796	W32
MP4<--F5	1.474	0.003	0.102	1.000	0.202	0.005	1.111	1.884	W33
MP5<--F5	2.016	0.006	0.133	1.001	0.295	0.194	1.585	2.611	W34
MP6<--F5	1.519	0.005	0.128	1.001	0.184	-0.120	1.042	2.034	W35
MP7<--F5	1.482	0.005	0.114	1.001	0.216	-0.001	1.086	1.955	W36
TI2<--F6	0.901	0.002	0.047	1.001	0.161	0.106	0.730	1.088	W37
TI3<--F6	1.051	0.002	0.051	1.001	0.227	0.104	0.856	1.262	W38
TI4<--F6	0.808	0.002	0.047	1.001	0.192	0.303	0.639	1.027	W39

TI5<--F6	1.040	0.002	0.049	1.001	0.221	0.138	0.872	1.263	W40
TI6<--F6	0.880	0.002	0.051	1.001	0.219	0.050	0.701	1.066	W41
TI7<--F6	0.954	0.002	0.051	1.001	0.124	-0.081	0.756	1.164	W42
SD5<--F7	1.054	0.002	0.057	1.001	0.205	0.095	0.858	1.284	W43
SD4<--F7	0.984	0.002	0.050	1.001	0.230	0.033	0.805	1.188	W44
SD3<--F7	1.052	0.003	0.057	1.001	0.075	-0.063	0.839	1.282	W45
SD2<--F7	1.019	0.003	0.060	1.001	0.165	0.157	0.766	1.277	W46
SD1<--F7	0.947	0.003	0.057	1.001	0.201	0.121	0.719	1.193	W47
ESQ2<--F8	0.991	0.002	0.046	1.001	0.156	0.009	0.824	1.173	W48
ESQ3<--F8	1.041	0.002	0.045	1.001	0.183	0.025	0.885	1.231	W49
ESQ4<--F8	1.049	0.002	0.046	1.001	0.079	-0.040	0.871	1.223	W50
ESQ5<--F8	0.947	0.001	0.047	1.000	0.160	-0.033	0.775	1.126	W51
F8<--F1	-1.094	0.017	0.367	1.001	-0.466	0.321	-2.748	0.037	W52
F8<--F3	-1.192	0.007	0.159	1.001	-0.194	0.174	-1.890	-0.534	W53
F8<--F4	1.904	0.016	0.298	1.001	0.448	0.307	0.979	3.203	W54
F8<--F6	0.260	0.007	0.192	1.001	0.281	0.272	-0.447	1.084	W55
F8<--F2	1.187	0.009	0.209	1.001	0.3	0.303	0.449	2.122	W56
F7<--F8	0.679	0.002	0.047	1.001	0.081	0.022	0.514	0.869	W57
F8<--F5	0.083	0.006	0.15	1.001	0.068	0.19	-0.477	0.762	W58
Intercepts									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
CF1	5.657	0.001	0.04	1.000	0.054	0.031	5.505	5.814	I1
CF2	5.684	0.002	0.045	1.001	-0.005	0.034	5.507	5.867	I2
CF3	5.592	0.001	0.045	1.000	0.060	0.028	5.426	5.764	I3
CF4	5.760	0.002	0.040	1.001	0.016	0.003	5.612	5.915	I4
CF5	5.507	0.002	0.056	1.001	0.070	0.134	5.296	5.739	I5
CF6	5.532	0.002	0.053	1.001	-0.122	0.007	5.305	5.746	I6
CF7	5.586	0.002	0.046	1.001	0.000	-0.107	5.431	5.772	I7
CF8	5.732	0.002	0.042	1.001	0.036	-0.062	5.573	5.905	I8
CF9	5.737	0.001	0.041	1.001	0.063	-0.126	5.572	5.893	I9
PQ1	5.803	0.001	0.036	1.000	-0.039	-0.044	5.648	5.933	I10
PQ2	5.750	0.001	0.042	1.001	-0.027	-0.144	5.594	5.921	I11
PQ3	5.731	0.001	0.046	1.000	0.051	-0.158	5.542	5.896	I12
PQ4	5.631	0.001	0.047	1.000	0.025	-0.171	5.450	5.806	I13
PQ5	5.719	0.002	0.046	1.001	0.039	-0.176	5.545	5.888	I14
PQ6	5.655	0.001	0.044	1.000	-0.005	-0.062	5.492	5.814	I15
PQ7	5.694	0.002	0.047	1.001	-0.064	0.022	5.476	5.855	I16
PQ8	5.591	0.001	0.047	1.001	-0.022	0.045	5.391	5.764	I17
WSG8	5.769	0.001	0.042	1.000	0.002	0.043	5.608	5.947	I18
WSG7	5.381	0.002	0.071	1.000	-0.009	0.011	5.108	5.687	I19
WSG6	5.168	0.002	0.074	1.001	0.031	-0.052	4.902	5.463	I20
WSG5	5.244	0.002	0.067	1.000	-0.041	-0.047	4.962	5.501	I21
WSG4	5.304	0.002	0.064	1.000	-0.025	-0.053	5.036	5.577	I22

WSG3	5.305	0.002	0.065	1.000	-0.077	-0.215	5.076	5.544	I23
WSG2	5.432	0.002	0.058	1.001	-0.011	0.019	5.215	5.684	I24
WSG1	5.438	0.002	0.059	1.000	-0.068	0.096	5.190	5.666	I25
TW1	5.814	0.001	0.036	1.001	-0.023	0.150	5.683	5.968	I26
TW2	6.046	0.001	0.033	1.001	0.059	0.245	5.912	6.189	I27
TW3	5.946	0.001	0.038	1.001	-0.015	-0.141	5.804	6.083	I28
TW4	6.061	0.002	0.038	1.001	0.015	0.159	5.909	6.213	I29
TW5	5.896	0.002	0.039	1.001	0.035	-0.143	5.752	6.037	I30
TW6	5.943	0.001	0.038	1.001	0.014	0.059	5.790	6.079	I31
TW7	5.801	0.002	0.041	1.001	-0.076	0.095	5.650	5.957	I32
PQ9	5.694	0.002	0.045	1.001	-0.076	-0.007	5.519	5.851	I33
TW8	5.855	0.002	0.042	1.001	-0.117	0.033	5.678	6.008	I34
MP1	5.653	0.002	0.040	1.001	-0.021	0.228	5.490	5.828	I35
MP2	5.538	0.002	0.053	1.000	-0.049	0.013	5.304	5.725	I36
MP3	4.915	0.002	0.057	1.001	0.040	0.104	4.715	5.154	I37
MP4	5.525	0.001	0.045	1.000	-0.058	-0.033	5.342	5.688	I38
MP5	5.473	0.002	0.053	1.001	0.099	0.128	5.255	5.696	I39
MP6	5.259	0.002	0.061	1.001	-0.069	0.116	4.998	5.552	I40
MP7	5.543	0.002	0.052	1.001	-0.017	-0.032	5.33	5.734	I41
TI1	5.645	0.001	0.041	1.000	0.004	0.073	5.503	5.799	I42
TI2	5.669	0.001	0.039	1.001	0.094	0.015	5.527	5.834	I43
TI3	5.694	0.001	0.044	1.000	-0.022	-0.044	5.538	5.852	I44
TI4	5.789	0.002	0.038	1.001	0.060	-0.020	5.648	5.927	I45
TI5	5.773	0.002	0.042	1.001	0.036	-0.034	5.613	5.931	I46
TI6	5.705	0.002	0.042	1.001	0.016	-0.055	5.547	5.85	I47
TI7	5.818	0.002	0.042	1.001	-0.009	0.099	5.649	5.98	I48
SD6	5.847	0.002	0.041	1.001	-0.044	0.025	5.697	6.01	I49
SD5	5.799	0.002	0.042	1.001	0.064	-0.106	5.655	5.947	I50
SD4	5.777	0.002	0.040	1.001	0.046	-0.019	5.620	5.933	I51
SD3	5.739	0.002	0.040	1.001	0.087	0.035	5.578	5.902	I52
SD2	5.797	0.002	0.046	1.001	-0.053	-0.181	5.643	5.954	I53
SD1	5.646	0.001	0.042	1.001	0.036	-0.012	5.499	5.800	I54
ESQ1	5.971	0.002	0.039	1.001	0.039	0.155	5.809	6.112	I55
ESQ2	6.041	0.001	0.038	1.001	0.014	0.006	5.894	6.192	I56
ESQ3	6.047	0.001	0.039	1.001	0.078	0.134	5.885	6.206	I57
ESQ4	6.08	0.002	0.039	1.001	0.008	0.091	5.936	6.240	I58
ESQ5	6.147	0.001	0.039	1.001	0.032	0.150	5.991	6.323	I59
Covariances									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
F1<->F5	0.348	0.001	0.035	1.001	0.230	-0.002	0.233	0.473	C1
F6<->F2	0.473	0.001	0.038	1.001	0.336	0.295	0.352	0.638	C2
F3<->F5	0.218	0.001	0.027	1.001	0.372	0.340	0.134	0.35	C3
F4<->F5	0.178	0.001	0.022	1.001	0.305	0.100	0.108	0.273	C4

F2<->F5	0.342	0.001	0.033	1.001	0.294	0.065	0.232	0.472	C5
F6<->F1	0.570	0.002	0.045	1.001	0.266	0.052	0.428	0.753	C6
F1<->F4	0.285	0.002	0.030	1.001	0.242	-0.075	0.191	0.410	C7
F1<->F3	0.273	0.002	0.031	1.001	0.133	-0.073	0.167	0.393	C8
F1<->F2	0.444	0.001	0.036	1.001	0.198	0.268	0.321	0.606	C9
F2<->F3	0.254	0.001	0.028	1.001	0.189	0.017	0.161	0.371	C10
F2<->F4	0.238	0.001	0.025	1.001	0.341	0.070	0.156	0.357	C11
F3<->F4	0.144	0.001	0.02	1.001	0.392	0.197	0.081	0.224	C12
F6<->F3	0.286	0.001	0.032	1.001	0.254	0.175	0.178	0.417	C13
F6<->F4	0.311	0.002	0.033	1.001	0.319	0.004	0.209	0.438	C14
F6<->F5	0.350	0.002	0.036	1.001	0.360	0.194	0.237	0.500	C15
Variances									
	Mean	*S.E.*	*S.D.*	*C.S.*	*Skewness*	*Kurtosis*	*Min*	*Max*	*Name*
F1	0.532	0.003	0.053	1.001	0.143	0.060	0.358	0.727	V1
e1	0.514	0.001	0.03	1.001	0.215	0.274	0.405	0.665	V2
e2	0.542	0.001	0.032	1.001	0.149	-0.032	0.425	0.663	V3
e3	0.558	0.002	0.034	1.001	0.231	0.140	0.444	0.714	V4
e4	0.545	0.001	0.031	1.001	0.221	-0.059	0.444	0.676	V5
e5	0.924	0.003	0.057	1.001	0.365	0.565	0.724	1.199	V6
e6	0.757	0.002	0.045	1.001	0.395	0.372	0.608	0.972	V7
e7	0.543	0.001	0.033	1.001	0.148	-0.001	0.433	0.669	V8
e8	0.487	0.001	0.029	1.001	0.212	0.042	0.393	0.619	V9
e9	0.452	0.001	0.027	1.001	0.147	-0.051	0.357	0.556	V10
F2	0.440	0.002	0.042	1.001	0.255	0.094	0.299	0.619	V11
e10	0.427	0.001	0.026	1.001	0.202	-0.031	0.338	0.537	V12
e11	0.502	0.001	0.029	1.001	0.169	-0.111	0.399	0.613	V13
e12	0.605	0.001	0.035	1.001	0.160	0.157	0.483	0.784	V14
e13	0.615	0.002	0.039	1.001	0.243	-0.043	0.474	0.763	V15
e14	0.613	0.002	0.037	1.001	0.217	-0.012	0.486	0.763	V16
e15	0.680	0.002	0.039	1.001	0.133	0.034	0.541	0.848	V17
e16	0.493	0.001	0.031	1.001	0.211	0.082	0.369	0.634	V18
e17	0.536	0.001	0.032	1.001	0.230	0.213	0.425	0.665	V19
F3	0.218	0.002	0.038	1.001	0.395	0.124	0.105	0.387	V20
e18	0.948	0.002	0.054	1.001	0.153	-0.009	0.756	1.155	V21
e19	1.227	0.003	0.075	1.001	0.487	1.415	0.968	1.739	V22
e20	0.501	0.001	0.034	1.000	0.152	0.037	0.377	0.647	V23
e21	0.552	0.002	0.039	1.001	0.173	-0.077	0.427	0.691	V24
e22	0.505	0.001	0.035	1.000	0.254	0.088	0.391	0.663	V25
e23	0.586	0.001	0.037	1.001	0.270	0.399	0.440	0.772	V26
e24	0.613	0.001	0.037	1.001	0.155	0.036	0.481	0.784	V27
e25	0.944	0.003	0.055	1.001	0.248	-0.061	0.733	1.156	V28
F4	0.190	0.002	0.031	1.001	0.436	0.162	0.106	0.329	V29
e26	0.702	0.001	0.040	1.001	0.120	0.006	0.561	0.872	V30

e27	0.516	0.001	0.030	1.001	0.137	-0.156	0.404	0.646	V31
e28	0.490	0.001	0.031	1.001	0.287	0.053	0.387	0.615	V32
e29	0.531	0.001	0.033	1.001	0.265	0.098	0.423	0.655	V33
e30	0.481	0.001	0.03	1.001	0.205	-0.014	0.378	0.61	V34
e31	0.522	0.001	0.031	1.001	0.116	0.100	0.399	0.657	V35
e32	0.625	0.002	0.038	1.001	0.118	-0.010	0.486	0.776	V36
e33	0.468	0.001	0.029	1.001	0.230	0.056	0.360	0.584	V37
e34	0.572	0.001	0.036	1.001	0.270	0.360	0.436	0.737	V38
F5	0.346	0.002	0.047	1.001	0.382	0.291	0.189	0.556	V39
e35	0.732	0.002	0.043	1.001	0.189	0.011	0.575	0.908	V40
e36	0.406	0.001	0.032	1.001	0.245	0.131	0.286	0.546	V41
e37	1.514	0.003	0.088	1.001	0.203	0.171	1.185	1.876	V42
e38	0.635	0.002	0.039	1.001	0.192	0.016	0.512	0.829	V43
e39	0.471	0.001	0.034	1.000	0.031	0.012	0.343	0.600	V44
e40	1.657	0.003	0.097	1.001	0.249	0.255	1.322	2.076	V45
e41	0.919	0.003	0.056	1.001	0.299	0.145	0.715	1.148	V46
F6	0.684	0.003	0.059	1.001	0.222	0.132	0.481	0.928	V47
e42	0.429	0.001	0.027	1.001	0.198	0.096	0.343	0.553	V48
e43	0.448	0.001	0.028	1.001	0.125	-0.063	0.340	0.561	V49
e44	0.523	0.001	0.033	1.001	0.256	0.097	0.400	0.671	V50
e45	0.524	0.001	0.032	1.001	0.179	-0.012	0.409	0.653	V51
e46	0.439	0.001	0.028	1.000	0.170	-0.043	0.35	0.543	V52
e47	0.574	0.001	0.035	1.001	0.210	0.019	0.451	0.708	V53
e48	0.528	0.001	0.034	1.001	0.177	0.001	0.412	0.655	V54
e49	0.444	0.001	0.031	1.001	0.191	0.148	0.327	0.574	V55
e50	0.406	0.001	0.030	1.001	0.285	0.240	0.315	0.550	V56
e51	0.447	0.001	0.032	1.001	0.377	0.416	0.347	0.615	V57
e52	0.403	0.001	0.031	1.001	0.223	0.103	0.296	0.525	V58
e53	0.725	0.002	0.048	1.001	0.291	0.236	0.564	0.937	V59
e54	0.645	0.002	0.040	1.001	0.184	0.271	0.500	0.814	V60
e55	0.364	0.001	0.024	1.001	0.249	0.211	0.282	0.469	V61
e56	0.343	0.001	0.023	1.001	0.186	0.075	0.252	0.429	V62
e57	0.326	0.001	0.023	1.000	0.248	0.025	0.249	0.422	V63
e58	0.280	0.001	0.020	1.001	0.068	0.063	0.195	0.368	V64
e59	0.420	0.001	0.027	1.001	0.192	0.027	0.328	0.533	V65
e60	0.125	0.001	0.027	1.001	0.046	0.046	0.029	0.245	V66
e61	0.295	0.001	0.030	1.001	0.197	-0.024	0.185	0.403	V67

Source: AMOS 20.0 output

POSTERIOR DIAGNOSTIC PLOTS OF "OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGS" MODEL

To check the convergence of the Bayesian MCMC method the posterior diagnostic plots are analysed. The following figures (figure to 12 and 13) show

the posterior frequency polygon of the distribution of the parameters across the 57000 samples. The Bayesian MCMC diagnostic plots reveals that for all the figures the normality is achieved, so the structural equation model fit is accurately estimated.

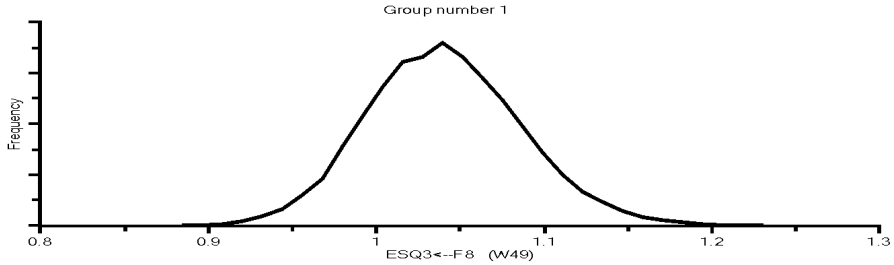

Figure 12: Posterior frequency polygon distribution of the mediating factor Economic Service Quality and Social Development (F8) (W49)

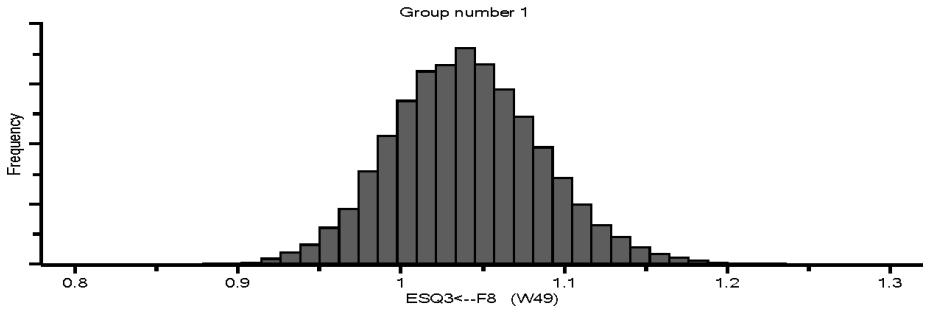

Figure 13: Posterior frequency polygon distribution of the mediating factor Economic Service Quality and Social Development (F8) (W49)

The trace plot also called as time-series plot shows the sampled values of a parameter over time. This plot helps to judge how quickly the MCMC procedure converges in distribution. The following figure (figure 14) shows the trace plot of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs for the mediated factor Economic Service Quality with Social Development dimension across 57000 samples. If we mentally break up this plot into a few horizontal sections, the trace within any section would not look much different from the trace in any other section. This indicates that the convergence in distribution takes place rapidly. Hence the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs MCMC procedure very quickly forgets its starting values.

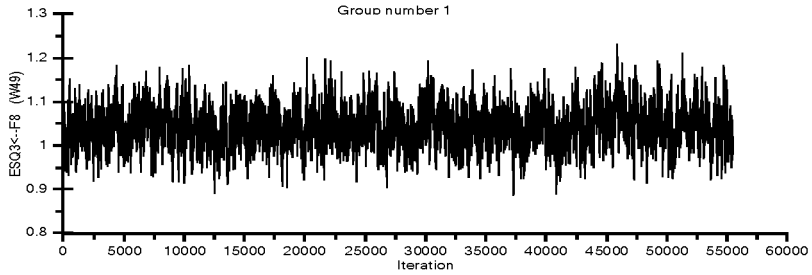

Figure 14: Posterior trace plot of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs for the mediated factor Economic Service Quality (ESQ) and Social Development (SD)

To determine how long it takes for the correlations among the samples to die down, autocorrelation plot which is the estimated correlation between the sampled value at any iteration and the sampled value k iterations later for k = 1, 2, 3,…. is analysed for the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs regression model. The figure (figure 15) shows the correlation plot of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs model for the mediated factor Economic Service Quality with Social Development dimension across 57000 samples. The figure exhibits that at lag 100 and beyond, the correlation is effectively 0. This indicates that by 90 iterations, the MCMC procedure has essentially forgotten its starting position. Forgetting the starting position is equivalent to convergence in distribution. Hence it is ensured that convergence in distribution was attained, and that the analysis samples are indeed samples from the true posterior distribution.

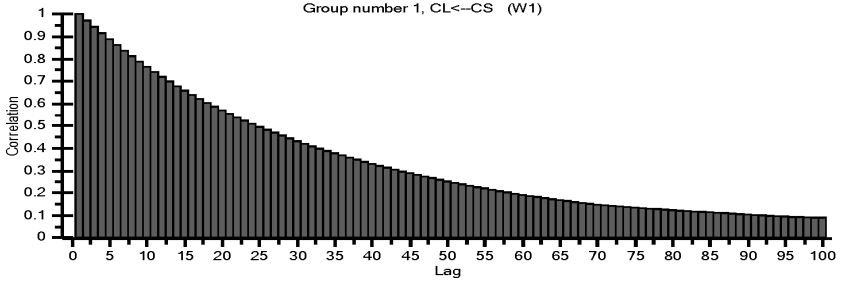

Figure 15: Posterior correlation plot of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs for the mediated factor Economic Service Quality (ESQ) and Social Development (SD)

Even though marginal posterior distributions are very important, they do not reveal relationships that may exist among the two parameters. The frequency

polygons given in the figure 16 and figure 17 describe only the marginal posterior distributions of the parameters. Hence to visualize the relationships among pairs of Parameters in two-dimensional. The surface plots following figures (figure 16 and figure 17) provides bivariate marginal posterior plots of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs model for the mediated factor Economic Service Quality with other dimensions across 57000 samples. From the two figures it reveals that the two-dimensional surface plots also signifies the interrelationship between the variable of Economics Service Quality with the other sub dimensions SD and ESQ3.

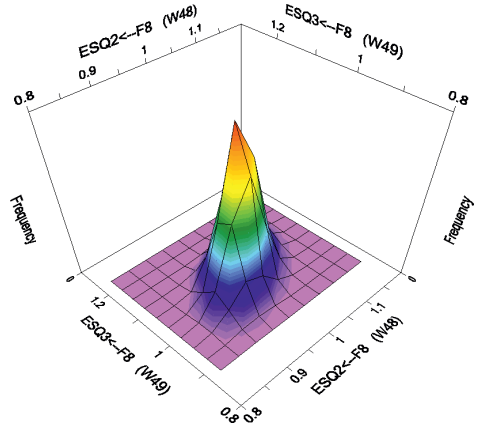

Figure 16: Two-dimensional surface plot of the marginal posterior distribution of the Economic Service Quality with the (SD) and (ESQ3)

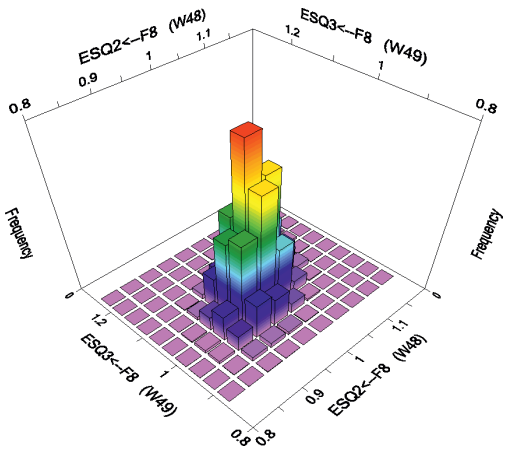

Figure 17: Two-dimensional surface plot of the marginal posterior distribution of the Economic Service Quality with the (SD) and (ESQ3)

The following figure 18 displays the two-dimensional plot of the bivariate posterior density across 57000 samples. Ranging from dark to light the three shades of gray represent 50%, 90%, and 95% credible regions, respectively. From the figure, it reveals that the sample respondent's responses are normally distributed.

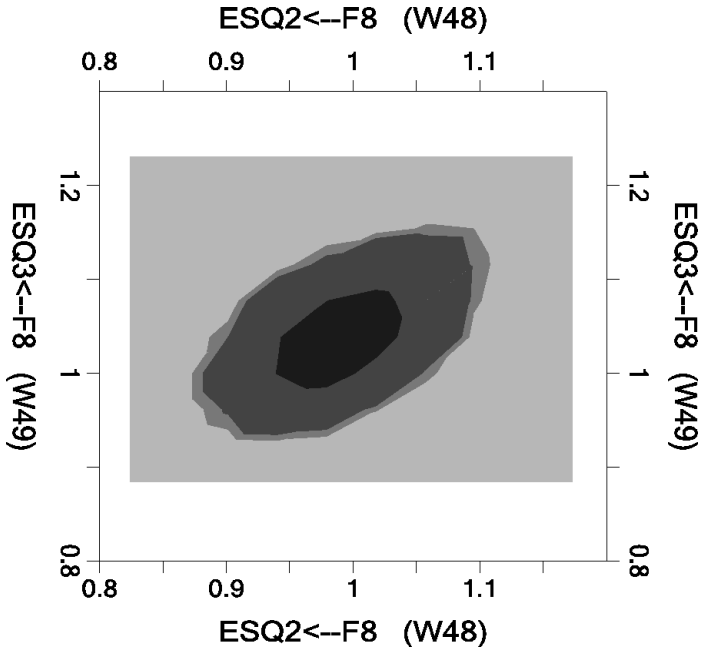

Figure 18: Two-dimensional plot of the bivariate posterior density for the regression weights Economic Service Quality (ESQ) and Social Development (SD) (ESQ2=> SD) (ESQ3=>SD)

The various diagnostic plots featured from figure 12 to figure 18 of the Bayesian estimation of convergence of MCMC algorithm confirms the fact that the convergence takes place and the normality is attained. Hence absolute fit of the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs regression model. From the OVER ALL MEDIATED INCLUSIVE MODEL FOR SHGs regression model which is empirically tested with mediating factor Economic Service Quality (ESQ) with the dimensions TW, WSG, TI, CF, MP, PQ and the Social Development (SD) it is evident that the Self Help Groups should concentrate on the Economic Service Quality (ESQ) as the most important aspect of Social Development on Self Help Groups in Central District Tamilnadu, India.

ECONOMICAL IMPLICATIONS FOR SUSTAINABILITY OF SELF HELP GROUPS

The overall regressed mediated model is accepted with help of the structural equation modelling. The above stated model shows that the economic service quality is mediated factors for the sustainability through the social development in rural areas. The RMSA is accepted.

One of the primary benefits of participation in SHGs is the opportunity to save regularly, access formal savings institutions and participate in the management of these savings. They save regularly, have their own bank accounts and make deposits into these accounts. SHGs are having a good impact on members, in their ability to save their hard-earned money.

A corollary of participation in SHGs is an improvement in a woman access to credit. Since the project is perhaps too early in its implementation to directly improve women's access to credit. The financial mobility due to participation in the SHGs has led to an improvement in the quality of life, according to some of the successful groups. Overall, many families were able to address their basic needs better than before. Some of NGOs reports have shown that the record on the repayment of loans by women was often better than that of men, and that women were also more likely to spend the income earned, on their families, leading to improved health and nutrition of the poor population and for improving the quality of their lives.

The implementation of SHGs has generated Self-employment opportunities for the rural poor. The National Bank for Agriculture and Rural Development (NABARD) will create Rs.15 billion fund to cater to women's Self-Help Groups in economically weaker districts in the country, after joining the self-help group the women are economically and socially empowered. This empowerment cannot be transformed or delivered it must be self-generated such that it enables those who are empowered to take control over their lives.

The social impact of the SHGs program increased involvement in Decision-making, awareness about various programs and organisations, increased access to such organisations, increased expenditure on Health and Marriage events, there is a Change in the attitude of male members of the families, now they are convinced about the concept of SHGs and encourage women to participate in the meetings and women reported that they have savings in their name and it gives them confidence and increased self-respect. Within family the respect and status of women has increased. Children Education has improved significantly.

Especially girl education was very low but now SHGs members are sending their children including girls to school. The Sanitation in member's households has improved and it has led to better health in members families. Now women are taking treatment from qualified doctors, even if they must travel to nearby towns. Members are now confident enough to raise social status.

Because of SHGs, women know about their local political institutions such as the Gram Panchayats and have better knowledge of where to report certain types of grievances. As part of the political empowerment process, it is a pertinent fact that many women have not only been elected to the Grama Panchayats but have become the role holders too. In most of the cases, the women perceived themselves as now having some influence over decisions in the political life of village, and in a smaller number of cases, the women named their participation and influence in village political life as an important and note-worthy change. However, in general, the opportunities available to the women to participate in village life were limited, as most of the village processes were still being male-dominated and patriarchal. Though the SHGs generate positive impact on the rural economy through empowering women and enhancing the rural income of those participant households, the issue of group size has been of long-standing concern.

Microfinance movement is having a good impact on members, in their ability to express their feelings and has made people more confident to express themselves. The group formation brought out the hidden talent and leadership qualities among the members. Therefore, it can be concluded that after joining the SHGs the members have improved their status in family, become helpful in family finance and sometimes helped others too. Now, most of the SHGs people feel that they get more respect; not only in the village, but our own family members treated us more respectfully. People of the village now invite us for social and community functions. Now our family members value our opinions whereas earlier they had no use for it. They encourage us and support us in our activities". "Now they get respected in the village society and have a definite identity in society. Family members think of them as a working woman and encourage them in their work". Improve their knowledge of banking, of how to undertake the different banking transactions, as also of dealing with government officials. They now feel confident about these things. They too feel an improvement in their social status. Family members changed their attitudes towards them after they started participating in the SHGs. They now regard them brave women. The people of the village too give much more respect than

before". Family members seek her opinion in many of the family decisions. Moreover, people from the society in general respect them.

Involvement with SHGs has reduced this violence in 25 percent cases especially due to reduction in economic difficulties. In most of cases the members revealed that their husbands should also be involved in SHGs. Members generally, got lesser opportunity to interact with bankers, Government officials, NGOs and others in the Pre-SHGs period. It can be seen that in the Pre SHGs period 25 percent of the members were not interacting with officials whereas after associating with SHGs, 91 percent members had interacted with the outsiders and out of total 44 percent have interacted more than 4 times with outsiders. This interaction helped them to articulate their problems and improved their self-confidence.

Since SHG programme has economic as well social implications. There has been an increase of 40 per cent in SHGs members in terms of their status of access to amenities factors. Therefore, it can be concluded that after joining the SHGs the members have improved in getting access to amenities like medical, sanitation, education, market, water supply, transport.

PARTICIPATION IN COMMUNITY ISSUES

The involvement of SHGs in community issues displays a higher level of integration of the SHGs with the community. Over a period, the SHGs becomes the forum for members to discuss their personal problems. Apart from providing comfort, this also acted an informal "problem redressal" mechanism. In some cases, SHGs members as a group had taken initiatives in interacting with the affected families and solving problems. This was the first step towards the community initiative of SHGs. Addressing personal problems of members was a common practice among many SHGs.

As a next step, most SHGs had taken up a small 'external' role in micro-issues and helped in cash/kind – assistance to balwadis/ schools, contributions to disaster relief (earthquakes, Tsunami etc.), small gifts for children during Independence/Republic Day etc. This was a positive step in creating community "awareness" among SHGs members. A few SHGs had gone a step further and taken up larger village level issues – alcoholism, street lighting, cleanliness of the village, sanitation, participation in Pulse Polio/Immunisation/AIDS awareness /other health campaigns etc. The positive impact achieved through these initiatives reinforced their self-confidence and also provided them a sense of worth.

SHGs members undertook a lot of community activities which they earlier could not have imagined in themselves to have done. They distributed school uniforms to poor students; they undertook a plantation drive, distributed pen and notebook sets to poor students and donated some money to a charity during a national calamity. They participated in several social initiatives like the "Clean Village Drive" and other such social upliftment programmes since their involvement in the SHGs. They organized a small function on India's Republic Day. Perspective of the Social Worker Women who have participated in this have benefited economically. They are now able to buy household goods like televisions, furniture, telephones, jewellery and most importantly can save for the future. "Now they are much more confident in their dealings with government officials, bank officials, electricity board officials, medical officers, the revenue officer, health scheme officials etc. They also participate in elections. Moreover, they make use of the various government welfare schemes available".

How over the years, women who have barely completed their schooling, who could earlier barely step out of their houses to talk to government officials or other village men, are today stepping out and caring for themselves and their communities with confidence. An interesting development is that the men, unlike earlier, are now encouraging women to step out of their houses to work and participate in these social and community events. Whether this is a welcome change or not needs to be understood. It has to be also understood why they are doing so.

One reason they could be doing so is because of the increased household incomes and ready access to credit that the SHGs participation of the women is resulting into. Sometimes this situation can be exploited if the men are alcoholic, so that the credit is wasted away. In this regard, however, the women are alert and aware and the SHGs participation has given them the collective strength to stand up to it. They collectively stop any man from abusing his wife under the influence of alcohol. Now they can meet each other and discuss their problems. They understand each other's viewpoints and problems. Interaction with other women has resulted in building congenial relationships and has ensured fewer conflicts. It has also had the multiplier effect of spreading the SHGs movement. Awareness of health-related issues, personal hygiene, communicable diseases; effects of malnutrition, environmental issues, and sanitation have also increased as a result of training programs and their participation in the related projects.

They find positive impacts on empowerment and nutritional intake. Female social and economic empowerment in program areas increased

irrespective of participation status. Evidence of higher consumption is not income or asset formation. The program's main economic impact had been through consumption smoothing and diversification of income sources rather than exploitation of new income sources.

SHGS AND ENVIRONMENTAL MANAGEMENT

Research and policy has tended to focus on the relationship between poverty and environmental degradation in terms of pointing out that the poor are both victims and agents of environmental degradation. They are victims in that they are more likely to live in ecologically vulnerable areas, agents in that they may have no option but deplete environmental resources thus contributing to environmental degradation. As a result of increasing awareness, social conditions and poverty alleviation, are necessary to support environmental sustainability. Today SHGs have a role to play in poverty alleviation through empowerment of women in India. Moreover, women tend a greater involvement in environmentally sustainable activities and environmental management than men. Therefore, involvement of women in development programmes through SHGs can effectively increase awareness of society to ward environmental sustainability.

The performance assessment of this parameter indicates that "SHGs were performing a meaningful role in delivering their 'core' services – savings and thrift. However, there is scope for improving efficiency. While good credit linkages exist in quite a few cases, the same needed to be made uniform across districts. However, significant improvement is needed in creating awareness on the importance of external linkages and establishing them too. Further, extensive capacity building is essential for venturing into group economic activity.

STRATEGIC ECONOMIC PLANNING FOR IMPROVING SELF HELP GROUPS

The figure 19 explains that the stronger and sustainable of SHGs will be declined rural poverty in India. Where is development of SHGs in rural & urban India; there will be prosperous and progress in economic and social development. Through SHGs, community development programme will implement with effective and efficiency without any malpractices. The social development is very important factor for the future generation of India. Education is very key role in promoting social capital for the nation. Below said figure that there is

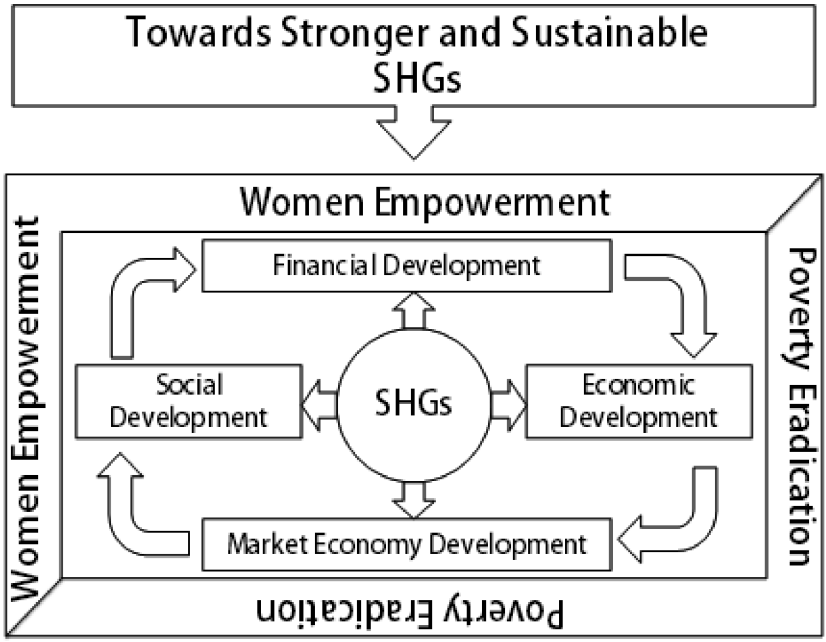

Figure 19: Strategic Economic Planning for Self Help Groups

four ways development: Economic development, financial development, and Social development and market economy development. The researcher could be stated that stronger and sustainable of SHGs, the poverty could be reduced in rural India.

DIRECTIONS FOR FUTURE RESEARCH

The present research empirically examined the physical growth and sustainability of SHGs. Many research studies are women empowerment, women development and socio-economic development. But there are more areas to strength SHGs activities for sustainability of SHGs. More academic research will be focused on women empowerment. Many research institutions will study on funding agencies objectives and goals. There is needed to study development federations, social structure.

LIMITATIONS

It is important that the findings of this empirical research be evaluated in the background of certain limitations carried along, since acknowledgement of these limitations could suggest new directions for future research. Data on both dependent and independent variables were collected from the published

documents and from public domain. Findings, therefore, will represent a casual approach. The study is limited to women entrepreneurs associated with Women Self Help Groups.

CONCLUSION

Nowadays, Government of India and other state governments of India are more interested to implement various community development programmes through SHGs. Lastly, the researcher could be stated that SHGs are playing a vital role in shaping rural economy as well as social development. Government of Tamil Nadu helps SHGs for promoting in market economy in urban and rural areas. It could be continued for years, there will be no poverty in Tamil Nadu. The Economic Service Quality is a key element for poverty reduction and social development a village.

References

Abiad V 1995, Grassroots Financial System Development in Vietnam. Bangkok: APRACA Consulting Services.

Arbuckle. J. L. & Wothke. W. (2006), Amos 7.0 user's Guide, Chicago: Small Waters Corporation.

Bagozzi. R.P. (1994), Structural equation models in marketing research: basic principles, In R.P. Bagozzi (Ed.): Principles of Marketing Research. Cambridge: Basil Blackwell, 317-385.

Boomsma, A. (1983) On the robustness of LISREL (maximum likelihood estimation against small sample size and non-normality. Amsterdam: Socio-metric Research Foundation, (Doctoral dissertation, University of Groningen, The Netherlands).

Batista-Foguet. J.M. & Coenders. G. (2000), "Modelos de Ecuaciones Estructurales" [Structural Equation Models], Madrid, Spain: La Muralla.

Baron. R. M. & Kenny. D. A. (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical.

Bailey, D. & Kaney, K.M., (1996) Inter Organizational Collaborative: A Strategic Response to Shape the Social Work Agenda, Journal Of Social Work, Vol. 41 (6).

Bentler, P. M. (1995). EQS: Structural equations program manual. Encino, CA: Multivariate Software, Inc.

Bing. M. N., Davison. H. K. LeBreton, D. L. & LeBreton. J. M. (2002), Issues and improvements in tests of mediation, Poster presented at the annual meeting of the Society for Industrial and Organizational Psychology, Toronto, Canada.

Bollen. K.A. (1989), Structural Equations with Latent Variables, New York: Wiley

Browne, M.W. and Cudeck, R. (1993): Alternative ways of assessing model fit. In K.A. Bollen and J.S. Long (Eds.): Testing Structural Equation Models. Thousand Oaks: Sage, 136-162.

Cohen N 2001. What Works: Grameen Telecom's Village Phones, Dhaka: World Resource Institute.

Conroy, D., J. (2003) The challenges of micro financing in Southeast Asia. In Financing Southeast Asia's economic development, Singapore: Institute of Southeast Asian studies.

Cronin, J.J. Jr and Taylor, S.A. (1992), "Measuring service quality: a re-examination and extension", *Journal of Marketing*, Vol. 56, pp. 55-68.

Diamantopoulos, A. and Siguaw, J.A. (2000), Introducing LISREL, Sage, London.

Gelman, A, Carlin J.B, Stern H.S, and Rubin D.B (2004) "Bayesian Data Analysis", 2nd ed, Boca Raton: Chapman and Hall/CRC.

Fernandes, A.P. (1992), The MYRADA Experience – Alternate Management System for savings and credit of the rural poor, MYRADA, Bangalore.

Francis, G. (2003), Multiple Regression: Swinburne University Press. Frankel, F.R. India's Political Economy, 1947-77, OUP, Delhi, 1977.

Joreskog, K. G. (1971), Simultaneous factor analysis in several populations. Psychometrika, 36, 409–426.

Gaonkar R 2004, Role of Self-help Groups in Empowerment of Women. Paper presented at the ISTR Sixth International Conference, Toronto, Canada, July 11 to 14, 2004.

Geertz C 1962, The rotating credit association: A middle rung in development. Economic Development and Cultural Change, 10(3): 241-263.

Graham, J.R. & Barter, K., A (1999), Social Work Practice Method -Families in Society, Vol. 80 (1).

Gurumoorthy TR 2000. Self-help groups empower rural women. *International Journal of Applied Management*, Tissl Publication, Belgium.

Hord,S.M.,A (1986) Synthesis Of Research On Organizational Collaborations ,*Journal of Educational Leadership,* Vol. 43 (5).

Harper, A. &. Harper, M., (1995) The Management Of Community Credit And Savings Group, Enterprise Development Centre, Cranfield, University, U.K.

Holmbeck, G. N. (1997), Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology,* 4, 599-610.

Hair. J. F., R. E. Anderson. R. L. Tatham & W. C. Black (1998), Multivariate Date Analysis International Edition, 5th ed., N. J.: Prentice-Hall, New Jersey.

Hill, W.F. & Gruner. L. (1973), A study development in open and closed groups, Small groups behavious, *International Journal of Applied Management Research*, Tissl Publications, Belgium.

Holvoet N 2005, The impact of microfinance on decision making agency: Evidence from South India, *Development and Change,* 36(1): 75–102.

Islam T 2007. Microcredit and Poverty Alleviation, Aldersho, UK: Ashgate Publishing Ltd.

James. L. R. & Brett. J. M. (1984), "Mediators, Moderators and Tests of Mediation", *Journal of Applied Psychology,* 69:pp. 307-321.

Lawson, R. & Anderson, D., (1996) Community Based Schools Collaborations Bety-Jeen Human Services & Schools As Radical Educational Reforms in H.S. Harris & D.C. Maloney (Ed.) Human Services: Contemporary Issues And Trends, Ally Bacon, Toronto.

Lassar. W.M., Manolis. C. & Winsor, R.D. (2000), "Service quality perspective and satisfaction in private banking", *Journal of Services Marketing,* Vol. 14 No. 3, pp. 244-71.

Johnson, D.W. &. Johnson, F.P. (1994), Joining Together, VI (Ed.) Alley &.Bacon, Boston.

Kerlinger. F.N. & Lee. H.B. (2000), Foundations of behavioral research, 4th Ed., New York: Harcourt Publishers.

Kessler, R. C., Mickelson, K. D., & Zhoa, S. (1997). Patterns and correlates of self-help group membership in the United States. Social Policy, 27, 3, 27-47.

Kruger, R.A., & King, J.A., (1998) Involving Community Members InFocus Groups, Focus Group Kit, 5,Sage Pub., New Delhi.

Krishnan, S. (2006), Reaching the other 100 million poor in India: Case studies in urban microfinance. Accessed on 6 November 2007.

Mehta, S.C., Lalwani, A.K. and Han, S.L. (2000), "Service quality in retailing: relative efficiency of alternative measurement scales for different product-service environments", International Journal of Retail & Distribution Management, Vol. 28 No. 2, pp. 62-72

Moreland, R. L., & Levine, J. M. (1982), Socialization in small groups: Temporal changes in individual group relations. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol.15, pp.137–192). New York: Academic Press.

Moreland, R.L., & Levine, J.M. (1988), Group dynamics over time: Development and socialization in small groups. In J. McGrath (Ed.), The social psychology of time: New perspectives (pp. 151–181). Newbury Park, CA: Sage.

Nanda, Y.C., (1995), Significance of Establishing Linkages of SHG's with Banks – Birds Eye View, Vol. 1 (3), BIRD, Lucknow.

NABARD (1995) Linking Self Help Groups with banks - An Indian Experience, Development Policy Department -Non-farm sector, Bombay.

Neeta Tapan 2013, 'Micro credit, self-help groups (SHGs)', *International Journal of Applied Management Research*, Tissl Publication, Belgium.

O'Sullivan. E. & Rassel. G.R. (1999), Research methods for Public Administrators, New York, NY: Longman.

Rao, K.D. & Dasgupta, R. (1999) A Study of SHG's And Linkage Programme, NIBM, Pune.

Rena, R. (2006) *A Handbook on the Eritrean Economy: Problems and Prospects for Development,* Dar es Salaam *(*Tanzania): New Africa Press. Pages: 280

Robledo. M.A. (2001), "Measuring and managing service quality: integrating customer expectations", Managing Service Quality, Vol. 11 No. 1, pp. 22-31.

Srinivasan, G. & Rao, D.S.K., Financing Of SHG's By Banks -Some Issues, Working Paper, 8,BIRD, Lucknow, 1996.

Thomas B 1985. Politics, Participation, and Poverty: Development through Self-help in Kenya. Boulder, USA: West view Press.

Tuckman, 1965, "Developmental sequence of small groups", Psychological Bulletin, Volume 63, Number 6, p384-399.

Tuckman, B. & Jenson, M., (1977) Stages of Small Groups Revisited, Group And Organizational Studies, Vol. 2.

Worchel, S., Coutant Developmental (1992)Approach To Sasic, D. et. al. Group Dynamics: A Model And Illustrative Research, In S.Worchel, W. et.al. (Ed.) Group Process And Productivity, Sage, Newbury Park, USA.

Teas, K.R. (1993): "Expectations, performance evaluation, and consumers' perceptions of quality", *Journal of Marketing,* Vol. 57: pp. 18-34.

Tate. R. (1998), An introduction to modeling outcomes in the behavioral and social sciences, Boston, MA: Pearson Custom Publishing.

Schumacker Randall. E. & Richard. G. Lomax, (1996), A Beginner's Guide to Structural Equation Modeling, Mahwah, NJ: Earlbaum Associates.

Senthilkumar, N. & Arulraj, A. (2011), SQM-HEI determination of service quality measurement of higher education in India, Journal of Modelling in Management, 6(1), 60-78.

Sheokand, S.M. (2008), Re-orienting Banking With The Poor - The SHG - The Bank Linkage Way, Paper Presented At Workshop On Kick starting Micro-Finance: A Challenge For Indian Banks, BIRD, Lucknow.

Shammugam, E., (1998) Micro-Finance Delivery Innovations In India And NABARD, Paper Presented At Workshop On Kick starting Micro-Finance: A Challenge for Indian Banks, BIRD, Lucknow.

Sunildro L.S. Akoijam, (2013),"Rural credit: a source of sustainable livelihood of rural India", *International Journal of Social Economics,* Vol. 40 Iss: 1 pp. 83 – 97.