



# **Relationship between Extension Worker Availability and Self-help Groups (SHG) Member Empowerment: Does Gender Moderate the Relationship?**

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## **Authors' contributions**

*This work was carried out in collaboration between all authors. Author SYG designed the study, wrote the protocol, collected the data and carried out the analysis. Authors TBS and IAI scrutinized the manuscript layout and edited the work. Author ZO authenticated the analysis and managed the literature. Author SYG wrote the first draft of the manuscript. All authors read and approved the final manuscript.*

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## **ABSTRACT**

Availability of extension workers is very vital in economic, social and psychological empowerment of Self-help groups (SHG) members. This paper discusses the moderating effect of gender in the relationship between extension worker availability and SHG members' economic, social and psychological empowerment in North-Eastern Nigeria. Proliferation and heterogeneity of the SHGs implies the basic assumption of increase in empowerment level of SHG members if there is interaction between the gender and availability of the extension worker and vice versa. The overriding objective of the paper is to analyze the moderating effect of gender in the relationship between holistic empowerment of SHG member and the availability of extension worker. A sample of 373 SHG members were selected through a multi-stage random sampling from a total of 11,021 determined as the accessible population in 476 SHGs that worked or are currently working with extension workers in the 3 sample states. Data were collected through administration of

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questionnaire to the respondents during a quarterly consultative meeting between development partners and SHG representatives. Structural equation Modeling (SEM) using Amos was employed for analyzing the data. The findings indicated that gender is not a moderator in the relationship between extension worker availability and SHG members' economic, social and psychological empowerment in North-Eastern Nigeria. The paper concludes that gender of SHG member or extension worker does not increase or decrease level of economic, social and psychological empowerment.

*Keywords: Extension worker; empowerment; gender; members; self-help.*

## 1. INTRODUCTION

Extension workers and other baseline development agents' role in ensuring Self-help group (SHG) member are fully empowered to take charge of their affairs economically, socially and psychologically are very paramount and have also gained recognition among scholars in the development studies. The presence and accessibility of extension worker to their clients facilitates active participation, enhance understanding and also create avenue for social interaction among SHGs and their members to achieve higher economic status and psychological stability. Studies has shown that in ability of group members to access the facilitators assigned to work with them, reduce the ability of the SHGs towards self-dependence and good decision making [1,2], and in some cases leads to the group collapse at the early stage of formation called forming stage [3]. According to [4] inadequacy, unbalanced ratio and poor communication facilities are among the major impediments of high performance by the extension workers in terms of facilitating economic, social and psychological empowerment of group members they are working with.

Accordingly, SHG members were found to be associating with extension workers in order to acquire more information and guide them on how best to use a particular innovation for holistic empowerment [5]. Moreover, competencies acquired during preparing the extension worker for optimum performance both at pre-service training or re-training while in the service, especially those associated with group dynamics, human relations, conflicts resolution, group management and evaluation helps in making the SHGs very viable and eases the members' empowerment economically, socially and psychologically. However, the individual demographic characteristics are also important factors that facilitate empowerment of group members in addition to availability of the change

agent [6], in this case the extension worker, the heterogeneity of the SHG brings in different ideas, norms and values that other members may appreciate and find it useful in increasing their living condition.

Furthermore, the inherent characteristic (gender) of the SHG members is another factor that was also observed as a facilitating tool towards empowerment of the SHG members, this was asserted based on the fact that their needs, interest and desire is always linked to community development and home keeping [7], however, women empowerment through SHGs approach in North-Eastern Nigeria was unintentionally neglected, the geographical one has suffered neglect in terms of security from the previous government based on the perceived marginalization during political elections [2], which as results leads to incessant killings of innocent lives and destruction of infrastructures. In addition, many children and women are left without support and moral care, however the intervention and support received by international donor agencies is channeled to groups. As such studies SHGs members' empowerment and gender interaction on possible antecedents' can lead to enhance understanding coming up with additional policy framework towards enhancing the abilities and capabilities of participants.

## 2. OBJECTIVES AND HYPOTHESIS

- a. To determine socio-demographic factors of the SHG members in North-Eastern Nigeria.
- b. To determine the relationship between extension worker availability and SHG members economic, social and psychological empowerment in North-Eastern Nigeria.
- c. To determine the moderating effect of gender in the relationship between socio-demographic factors, extension worker availability and SHG members economic, social and psychological empowerment in North-Eastern Nigeria.

## 2.1 Hypothesis

- H1:** *There is significant relationship between extension worker availability and SHG members' economic empowerment in North-Eastern Nigeria.*
- H2:** *There is significant relationship between extension worker availability and SHG members' social empowerment in North-Eastern Nigeria.*
- H3:** *There is significant relationship between extension worker availability and SHG members' psychological empowerment in North-Eastern Nigeria.*
- H4:** *Gender moderates the relationship between socio-demographic factors, extension worker availability and SHG members' economic, social and psychological empowerment in North-Eastern Nigeria.*

## 3. LITERATURE REVIEW

### 3.1 Extension Worker Availability

Availability of extension worker to clients, participants or end users as the case may be is an important aspect towards increasing output of the available resources especially in the rural communities where their services are more demanded. Global increase in population, discovery of new innovations and technological advancement has made adequate and standard use of facilitators, teachers, managers and other development partners very necessary [8]. According to [9] extension worker availability is directly related to the ratio balance, though it was defined as the conventional and acceptable disposition of extension worker to a farmer, number of farmers or group of participants. Moreover, the relationship between numbers of extension worker to farmer is very significant in the linkages that exist and strengthen the system.

Furthermore, the empowerment theory of [10] suggested availability of adequate facilitators for effective empowerment of group members, in this it is clearly shown that, inadequate number of facilitators may affect their availability directly or indirectly, which also affect the empowerment of the SHG members. The roles between primary (SHG member) and secondary (extension worker) stakeholders towards empowerment are re-defined and become more relevant through active participation and the level of end result. The function or guidance of the external agent

(facilitator/extension worker) has been traditionally perceived as one of the 'expert' or 'professional' or as an evaluator, who ascertain worthiness of the empowerment, which has been changed in SHG approach to one who facilitates, enables, coordinate, teaches or coaches the primary stakeholders (SHG members) [11]. The justification of using an extension worker in SHG member empowerment is directly associated with his/her expertise in theory and practice of group dynamics, and can be able to assist SHG members seize or acquire more power through their own power-from-within.

However, the contact between the primary and secondary stakeholders could be scheduled in hours, days or sessions based on the needs; and the competency of the extension worker in conflict resolution and group management, assist in strengthening the group activities, hence, meeting can be arrange on face-to-face basis or through any communication circumstance [12]. Moreover, good linkages between the giver (extension agent) and the end user (farmer/SHG member) are highly strengthened when five factors are considered which are: size of extension service; knowledge, and skill level of the adult; structure of the organization; and the rules of engagement attached to extension service. The above five factors [12] suggest that can be measured by using the following five indicators (a) available research centers; (b) ration of extension workers to farm families; (c) percentages of participants with elementary knowledge; (d) extension management; and (e) available funds for extension work. For example in China and Vietnam, on average there is one extension is made available and accessible to worker per 280 farm households, and in Indonesia, it is estimated that each extension worker covers about 2.8 villages [13].

In Gambia, the disposition between extension worker is made available and farm operators is 1: 3,500, is grossly inadequate and has affected the crop and animal production drastically in the recent years [14]. Similarly, in Uganda the story is the same as the records available shows that, only 1,600 public extension workers to serve 4,000,000 farming households, the ratio 1: 2500, even though reports shows that the private extension outlets have played a great role in bridging the gap through reaching the farmers by using ICT, still the negative effect is highly felt, because the farmers capacity and ability to perform is very low (Morrison, 2012), the report ends with a need to evaluate whether, the use of

private extension service will reduce the expansive gap that is in existence and reduce the information gap that exist as a result of low availability of farmer to extension worker.

In addition, General News of Ghana reported that only one extension worker is readily available for up to 1500 farmers and Ministry of Foods and Agriculture (MOFA) in 2010 introduces automatic placement of graduates to bridge the gap and shortages, however, the impact is yet to be felt by the farmers and the Ghana economy at large, but the impact is targeted towards sustainable supply of advisory services to local farmers, which will also boost their production capacity and enhance their adoption of new technology.

According to [15] the distribution of extension workers in Zimbabwe is one of the best in Africa compared to global standard, he noted that the ratio between extension worker to farmer until now stands at 1:1000 or below. However, he indicates that in some African countries the allocation of extension worker stands at 1:4,000 while in developed countries like US the one extension worker is readily available to 200 farmers or below, the above shows a large gap between the developed and developing which in the long run affect the advisory services quality given to the farmers, hence production capacity is reduced.

In Kenya, [16] highlighted the need for the agricultural sector to improve the advisory services division by ensuring that each farming household has direct access to information at the appropriate time. The reliance of over 5 million subsistence farmers relying on only 5,500 is grossly inadequate though falling within the range of global standard that recommends 1:800-1000. The interaction between extension worker and the clients face-to-face should be encouraged instead of using sophisticated IT gadgets that may fail at any time even though they have bridge a huge gap and increases farmers capacity in resource management that existed before that leads to availability increased to 1:909 between extension worker and farmers in Kenya [16].

In Nigeria, the available records did not differ much with the above reports, though the distribution differ from state to state, on a general note the [17] clearly shows that on average that one extension worker is made available 2,854, this is far below the global standard. In Gombe State for example, the available records stands

at 1:2,717 [18], in Kaduna state is 1:3,240, Taraba 1:3,614, Yobe 1:2,412 and Bauchi 1:2,111 [4]. Moreover, out of this in balance that is in existence for quite a long time, there is no any effort by the governments in the above states to bridge the gap for positive holistic agricultural boost and rural development [19]. Similarly, another issue worthy to note is the low participation of women in the extension work, which is perceived as another drawback towards qualitative home management services.

Furthermore, culture, religion and values in some communities are behind gender in balance SHGs towards in service delivery and participation in development activities, many communities' still perceived women SHGs for only home keeping and rearing children. With women comprising about 43% farmers in developing countries the number of extension workers should be above the present 15%, this can also increase the number of the women farmers gaining access to advisory services and technical orientation [20]. In communities where women SHGs are given equal opportunities with men in terms of access to information, participation, resource control and decision, there empowerment level was found to be very high and the children form such women were also found to contribute higher in socio-economic development [21,22,23,7,24]. The assumption here is the higher the women participate, the higher their involvement, the higher their contribution and the higher they are empowered economically, socially and psychologically.

### **3.2 Influence of Extension Worker Availability to the Farmer**

Effects of extension worker availability in empowerment studies is directly associated to how well the development partner agent (extension worker) can be able to reach, influence and ensure high level of qualitative decision making that leads to improve quality of life of group members. Some scholars raised sensitive questions as to whether the quantity is related to their availability and whether it has any negative or positive effect. Does the availability or otherwise affect the contact hours or period? How significance will high number of contacts between the group member and the extension worker increase the empowerment of the group member? [25], these and many more were some of the concerns of the previous scholars.

However, despite many observations such as availability of ICT has taken over the inadequacy of face-to-face contact [26], corporate mechanized farm operations, rural development initiatives and proliferation of ADPs [27], it was found out that, the level at which these improvisation functions is far below what the face-to-face contact provides [28,23,29,30]. Hence, countries and states at different times conduct internal evaluation to ascertain the worthiness and adequacy of the staff strength in catering for the ever growing needs of the SHG members, also performance appraisals are conducted to see how effective training and re-training given to the extension workers is translated to group members in terms of their needs as individuals and as a group [2].

Conclusively, [31] summarizes the effect of in balance or poor and low extension worker availability to farmer as follows: 1) leads to low quality and quantity of production output; 2) create communication barriers and leads to poor information dissemination; 3) allow farmers to make wrong decisions; 4) low empowerment; 5) creates social crisis like hunger, unemployment and diseases; and 6) stagnation of community development. Moreover, the instrument developed by [32] was adopted to obtain primary data from the SHG members (both farmers & non-farmers), it deals with measuring extension worker availability using number of contacts, availability always, punctuality and accessibility as some of the indicators of adequacy or otherwise.

### **3.3 Self-Help Groups (SHGs) and Extension Worker**

SHGs through their linkages with the community development partners work hand in hand with village community extension workers. Extension worker is a person trained and equipped with technical knowledge, skills and attitudes on handling human issues [29,33], they identify problem with the community members, define the problem together with them and proffer solution using the available local resources [34,13], not undermining the community culture, norms, values and aspirations. Moreover, the SHGs and extension workers join efforts towards creating symbiotic relationship, by which the two work together and succeed together. It is on this note, that World Bank and other international donor agencies (IDA) working on poverty reduction, increasing health among citizens, reducing food shortage and holistic community development

created conducive environment for formation and management of informal groups [35], because they reduces professional isolation and also create synergy among existing groups to achieve a common goal [36].

In essence, the donor agencies had maintained the partnership and training of both extension workers and SHGs leaders, at pre-service and in-service giving room for incorporating the aspects of self-help group formation and networking [37], perhaps, it increases the chances of success towards SHG activities in their local communities [24], thereby increasing the capacity of the members [38]. In addition, membership in SHGs is voluntary, but requires absolute respect to the rules of engagement as agreed by the members.

Moreover, activities of both extension worker and the available SHGs in a given community is to empower community members, which can be observed physically and mentally by raising their purchasing power, increase in their farming output, increase in their level of literacy, increase in their home management skills, good decisions taken, ability to overcome treason, reduced child abuse, low disease outbreak, high youth engagement, self-dependence and readiness to sacrifice resources for the benefit of the community [39,2,34].

Extension work nowadays require extensive involvement of community members through voluntary participation, not minding their age, gender, qualification or experience for it to achieve the desired goal of poverty reduction through self-help initiatives. However, increase in population, food insecurity [40] and climate change due to the activities of household heads has made collaboration between SHGs and extension workers stronger, also the Nigerian government encourage rural communities to work together to protect their resources and if possible harness them for local utilization which is simpler, easier and cheaper if conducted in a group than at individual capacity.

Moreover, the roles extension worker plays in technology transfer and adoption; conducting educational programs; teaching women home management; forming young farmers club and other related functions, are directly linked with the aim of helping the rural people to solve their problems by themselves, using their local available resources [41,34,40]. The SHGs link up with the agent in their domain for consultations

on variety of issues including those that are economic, social and psychological. SHGs partner with extension workers as resource center; they engage the agents in the principles of empowerment of the members which they believe has direct bearing on his functions as trained personnel [42].

The extension worker especially in the rural area sometimes performs the function of forming the SHGs, through creating awareness and enlightening the community members on the need, this mainly happens when the worker find himself in communities where there is no groups and if they are available but lacking in some areas, he/she uses group dynamics knowledge, skills and attitudes (KSA) to correct the anomalies in them. Moreover, forming synergy with the existing groups in the communities leads to reduced workloads and saves time of operations, it reduces cost of operations, it increases wider coverage, facilitates quick adoption of innovation and leadership recognition [43,40]. Available reports shows that, established SHGs by professional extension workers in many communities possessed resources for conducting their activities such as meeting, market sheds, public address system and already pattern of development; these resources can help in allowing the extension worker get easy access, through their leaders, especially when there is cultural or language differences [44,45,46].

However, SHGs found in the urban areas such as NGOs, political groups or associations, clubs and other social groups sometimes prefer associating with high profile extension outfits, neglecting the baseline extension workers in their domain [23], this is because of large number of educated people or professionals in the group, the networking, group formation and management is above the capacity of the personnel used as baseline extension workers in the areas, but even at that level, since their leadership is indigenious, when they adopt a technology, the diffusion is easy among them and also the baseline extension workers evaluates the outcome without much task [2].

#### 4. METHODOLOGY

The study was conducted in North-Eastern Nigeria using descriptive correlational design. A sample of 373 SHG members was selected through a multi-stage random sampling procedure. The data was collected through the

use of structured questionnaires adopted for measuring SHG members economic, social and psychological empowerment consisting of twenty items (20). 7 items measuring the availability of the extension worker, the validity of the instrument was reported valid and the reliability was determined using Cronbach's Alpha .86 showing the instrument is reliable. Structural Equation Modeling (SEM) using AMOS graphics was employed for the data analysis. In the first instance the constructs were subjected to Confirmatory Factor Analysis (CFA) to ascertain the fitness of the model to the data.

#### 4.1 Structural Equation Modeling (SEM)

To determine the relationships between independent variables and dependent variables in the study, structural equation modeling (SEM) using AMOS was employed for the analysis. Three (3) different models were estimated for clarity and authenticity, thus: the confirmatory factor analysis, measurement model and the structural model. For all the models assumptions of normality and fitness indexes (RMSEA, Chisqr/df, TLI, GFI, IFI, CFI and NFI) were estimated as preliminaries before the actual structural analysis on the structural model. Figs. 1-4 shows the original and re-specified CFA models of the constructs. Additionally, the Average Variance Extracted (AVE) and the Construct Reliability (CR) for all the constructs was determine to ensure the reliability of the instruments and also ascertain the confidence on the items for measuring the construct.

Fig. 1 shows the 1<sup>st</sup> order CFA for the construct economic empowerment, the model fit indexes does not meet the requirement as such the modification indices suggested deletion of redundant items 1, 2 and set free parameter for items 6 and 7, which after the re-specification the factor loading for each item increases and the fit indexes meet the requirement as shown in Figs. 2 & 4. This indicates that the re-specified model fits the data very well, as such can be used for subsequent analysis.

Accordingly, Fig. 3 represents the original CFA model for social empowerment construct with seven (7) items, although the factor loading for all the items are good but the fit indexes has not been achieved as required Relative Chi-sq = 31.38, RMSEA = .286 and CFI, TLI, GFI, IFI, NFI all are at .7. However, after deleting item 6 and setting free redundant items 4 and 7 as suggested by the modification index summary,

the factor loading increase and the fit indexes also rises to .9 for GFI, IFI, NFI, TLI, RMSEA = .079 which shows all the requirements are achieved as depicted in Fig. 4.

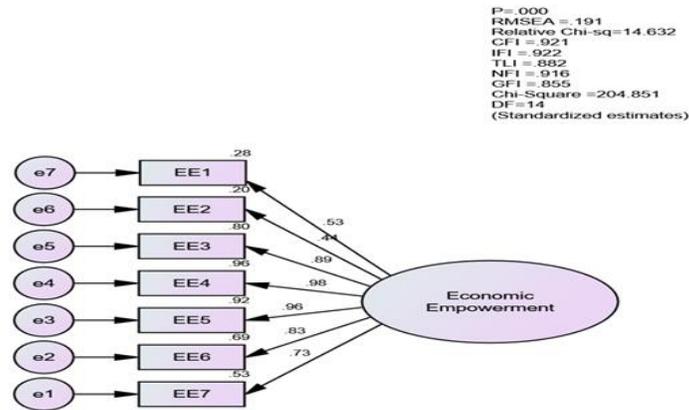


Fig. 1. Original 1<sup>st</sup> order CFA model of Economic Empowerment (EE)

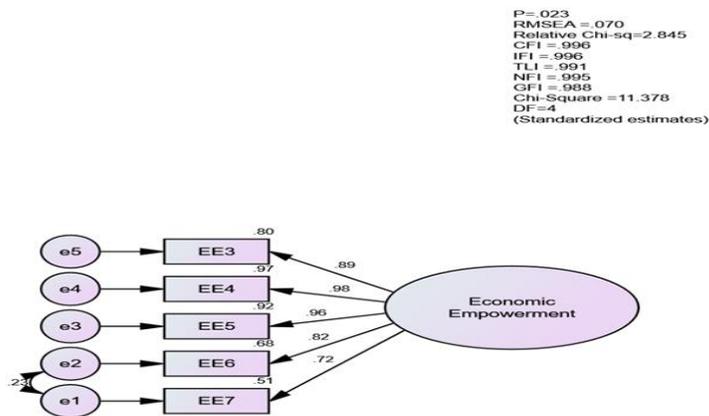


Fig. 2 Re-specified CFA model of Economic Empowerment (EE)

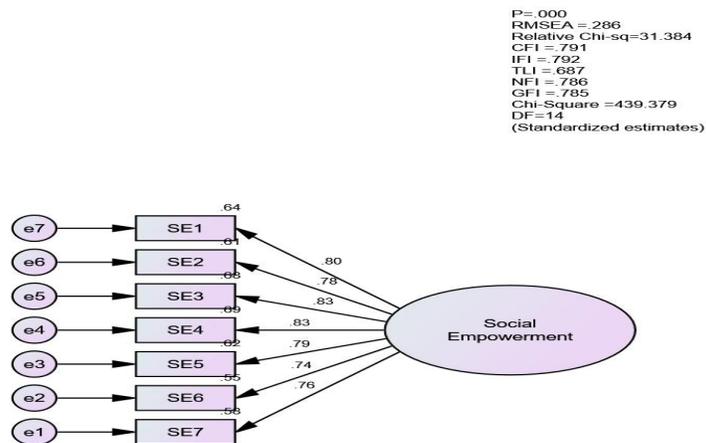


Fig. 3. Original 1<sup>st</sup> order CFA model for Social Empowerment (SE)

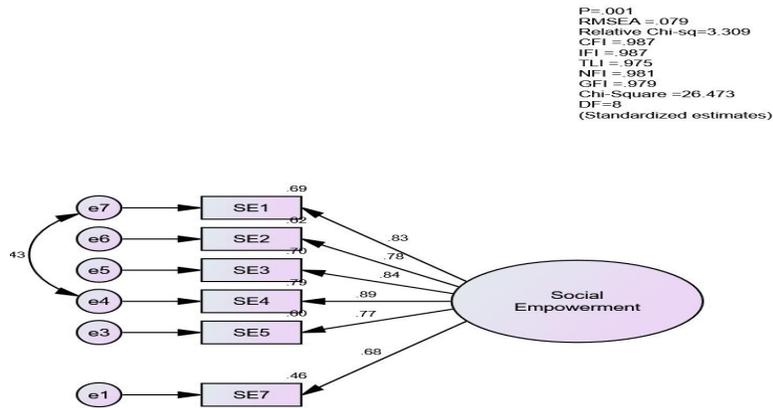


Fig. 4. Re-specified CFA model of Social Empowerment (SE)

Psychological empowerment construct originally has six (6) items as shown in Fig. 5, the 1<sup>st</sup> order CFA show poor indexes even as the factor loading is within the acceptable limit. However, when the model was re-specified and suggested modifications were effected, the re-specified model fits the data very well and as such the remaining 4 items on the re-specified model were used for further analysis as depicted in Fig.6. Looking at the values obtained in Fig.6 RMSEA = .000, Relative Chi-sq = .454 they can be seen as extraneous, but according to Awang (2015) such incidences may not create any problem in the final analysis, but suggested that the items to measure the constructs must have at least factor loading value of > .7 and the number of items to measure the construct must not be less than four (4).

Additionally, Fig: 7 depicts the initial 1<sup>st</sup> order CFA of extension worker availability (EWA) construct to be measured with six (6) items, the values obtain shows RMSEA = .433 while Relative Chi-sq = 7.541, although the other assumptions are met of CFI, GFI, NFI, TLI, IFI and even the factor loading are within the acceptable limit, failure to achieve the aforementioned two will affect the subsequent analysis, as such the model was re-specified using the modification indices suggestions. When 2 items were deleted, the remaining 4 resulted to obtaining RMSEA = .076 while Relative Chi sq = 3.10 and the other fitness indexes are also within the acceptable limit, as such the 4 items were considered as measures for extension worker availability as depicted in Fig. 8.

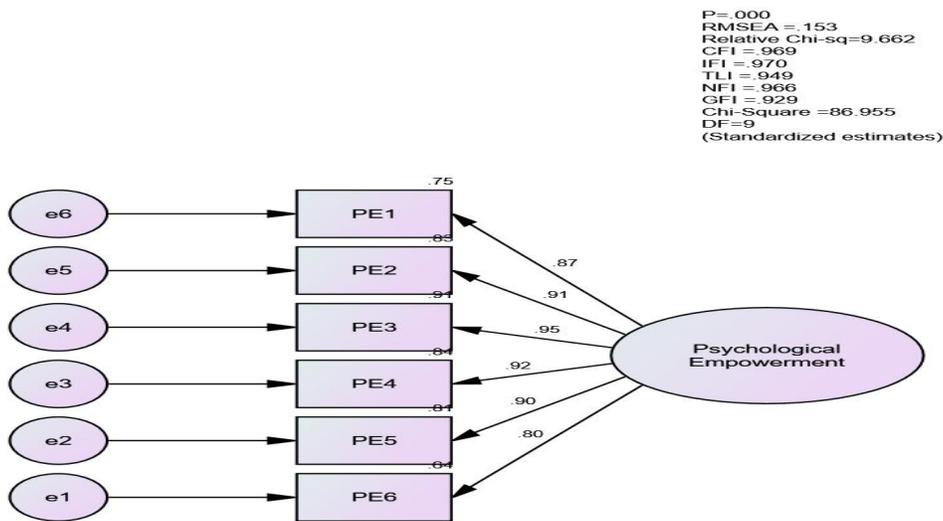
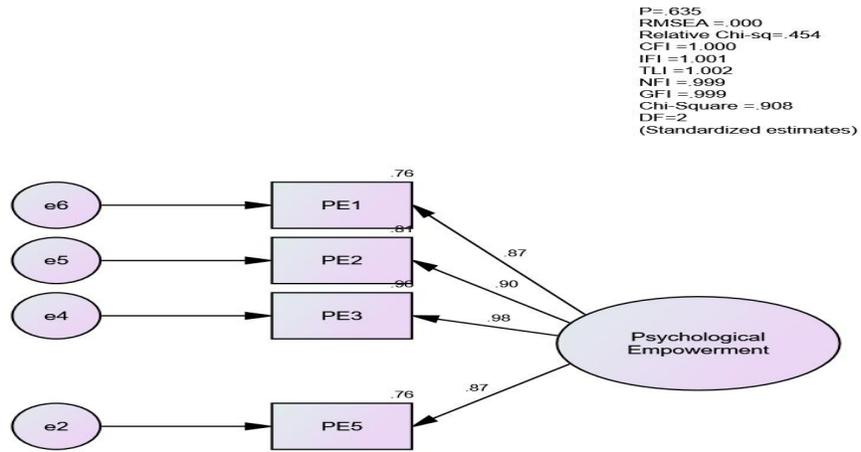
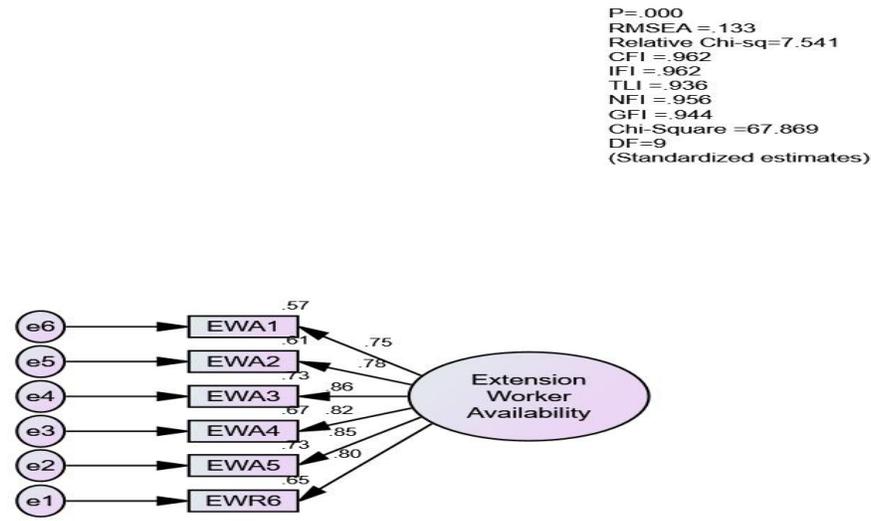


Fig. 5. Original 1<sup>st</sup> order CFA model for Psychological Empowerment (PE)



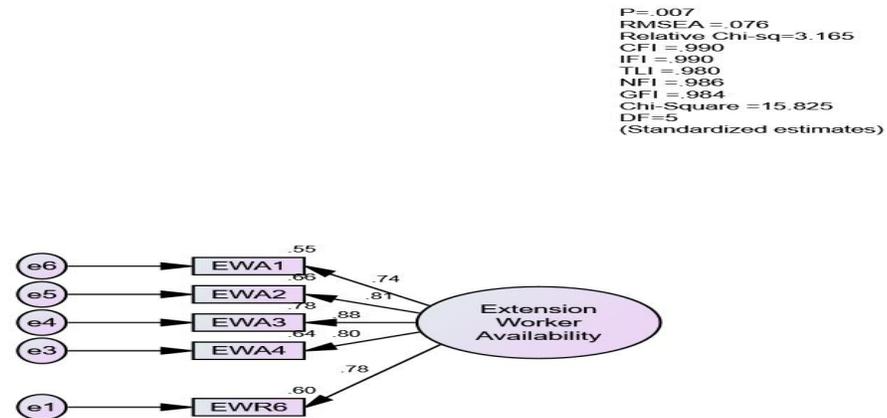
P= .635  
 RMSEA = .000  
 Relative Chi-sq=.454  
 CFI =1.000  
 IFI =1.001  
 TLI =1.002  
 NFI = .999  
 GFI =.999  
 Chi-Square =.908  
 DF=2  
 (Standardized estimates)

Fig. 6. Re-specified model for Psychological Empowerment (PE)



P= .000  
 RMSEA = .133  
 Relative Chi-sq=7.541  
 CFI = .962  
 IFI = .962  
 TLI = .936  
 NFI = .956  
 GFI = .944  
 Chi-Square =67.869  
 DF=9  
 (Standardized estimates)

Fig. 7. Original for Extension Worker Availability (EWA)



P= .007  
 RMSEA = .076  
 Relative Chi-sq=3.165  
 CFI = .990  
 IFI = .990  
 TLI = .980  
 NFI = .986  
 GFI = .984  
 Chi-Square =15.825  
 DF=5  
 (Standardized estimates)

Fig. 8. Re-specified model for Extension Worker Availability (EWA)

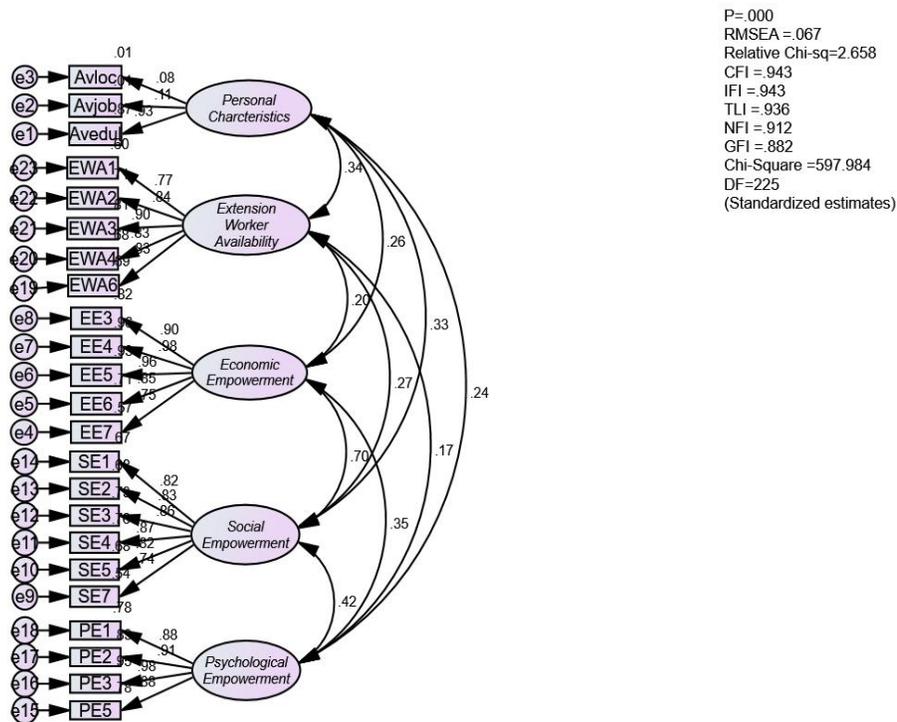
**Table 1. Summary of Average Variance Extracted (AVE) and Construct Reliability (CR) for all constructs**

Construct	No items	Average Variance Extracted (AVE)	Construct Reliability (CR)
Extension Worker Availability (EWA)	5	.65	.83
Economic Empowerment (EE)	5	.79	.82
Social Empowerment (SE)	6	.64	.76
Psychological Empowerment (PE)	4	.82	.78

**4.2 The Measurement Model**

The focus of CFA is on the relationship between the individual constructs and their measured variables; the measurement model defines the relationships between the observed and the latent variable. Byrne, Measurement model offers the link between scores on a measuring instrument and the underlying constructs they are designed to measure. In essence, it

represents the CFA model thereby specifies the pattern by which each measure loads on a particular factor (Byrne, 2010). Measurement Model of the study was also estimated according to basic assumptions provided by Hair et al. and Awang (2015), the relationships and unidimensionality of the constructs involved in the study are depicted in Fig. 9 while the Table 2 shows the fit indexes values obtained as required.



**Fig. 9. The measurement model**

**Table 2. Summary of the goodness-of-fit indices of the measurement model**

CMIN	DF	CMIN/DF	RMSEA	GFI	CFI	NFI	TLI
597.98	225	2.658	0.067	.882	.943	.912	.936

**Note:** CMIN = minimum discrepancy (or  $\chi^2$ ); DF = degree of freedom; RMSEA = root mean square error of approximation;

GFI = goodness-of-fit index; CFI = comparative fit index; NFI = Normed fit index; TLI Tucker-Lewis index.

## 5. RESULTS

The results of the study are presented based on the objectives of the study earlier stated and also the hypotheses formulated. Objective one was to determine socio-demographic factors of the SHG members in North-Eastern Nigeria; Descriptive statistics was employed to conduct analysis of the socio-demographic factors (age, gender, location, occupation, marital status and educational level) of the respondents. Socio-demographic factors (age, location, occupation and marital status) were categorized into three groups for clarity, educational level was categorized in to two (2) namely (Literate and Semi-literate) in this study, while gender is left into Male and Female. Table 3 shows that in terms of gender, out of the 373 respondents for this study, 189 (or 50.79%) were males, while respondents constituting 49.3% were females. The age of the respondents ranges from 15 to 60 years with a mean of 2.12 and standard deviation (SD) of .591, the categorization indicates that 89 respondents' falls in the higher age group of (45-60 years), 238 moderate age group (30-45 years) and 46 respondents are in the lower group (15-29 years) with (12.3%).

In addition, analysis of respondents' occupation shows that 180 are self-employed, 142 i.e., (48.3%) are farmers and only 5 i.e., (13.7%) are civil/public servants as depicted in Table 3. Respondents' level education analysis shows

that out of the total 373, 203 i.e., (54.4%) respondents have attended secondary and tertiary institutions (literate) and only 170 (45.6%) attended religious and primary schools only. Moreover, analysis of the respondents' location indicates that, only 84 or (22.5%) respondents live in the urban areas, 226 (60.6%) live in semi-urban while 63 or (16.9%) live in the rural communities. Accordingly, respondents' marital status shows that 165 or (44.2%) are married, 142 or (38.1%) were divorced/widowed and only 66 (17.7%) are single as shown in Table 3.

Furthermore, from the above analysis the findings clearly indicated that all the selected socio-demographic factors are presence among all the SHGs in North-Eastern Nigeria even though they belong to one group; as such SHGs in North-Eastern Nigeria are heterogeneous both internally and externally. This has supported the earlier study by Safiya (2011) who found that, members of same SHG group pursuing economic and social empowerment are highly distinguished internally based on their age, gender, marital status, occupation and educational level. She also concluded that SHG formed towards empowerment, admit whoever is willing to join and abide by the rules not minding his age, gender or other social factors and the SHGs include both men and women, but there are specialized SHGs for women only like Association for the Rights of Divorced Women (ARDW).

**Table 3. Summaries of the demographic factors of the respondents**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean</b>	<b>SD</b>
<b>Age</b>				
High (45-60 years)	89	23.9	2.12	.591
Moderate (30-44 years)	238	63.8		
Low (15-29years)	46	12.3		
<b>Gender</b>				
Male	189	50.7	1.49	.501
Female	184	49.3		
<b>Location</b>				
Urban	84	22.5	1.76	.68
Semi-urban	226	60.6		
Rural	63	16.9		
<b>Marital status</b>				
Single	66	17.7	2.20	.719
Married	165	44.2		
Divorce/Widow	142	38.1		
<b>Educational level</b>				
Literate (sec. & tertiary)	203	54.4	2.51	.926
Semi-literate (religious & primary)	170	45.6		
<b>Total</b>	<b>373</b>	<b>100</b>		

The second and third objective was to determine the relationship between extension worker availability and SHG members' economic, social and psychological empowerment and also to determine the moderating effect of gender in the relationships between the predictors and outcome variables in North-Eastern Nigeria. Inferential statistics (structural equation modeling) was employed using Amos graphics. Table 4 depicts the fitness indexes of the structural model; from the values obtained the model fits the data very well, as such used for further analysis.

Thus, the presentation of the results was based on the final output of the structural model as depicted in Fig. 10 and summarized in Table.

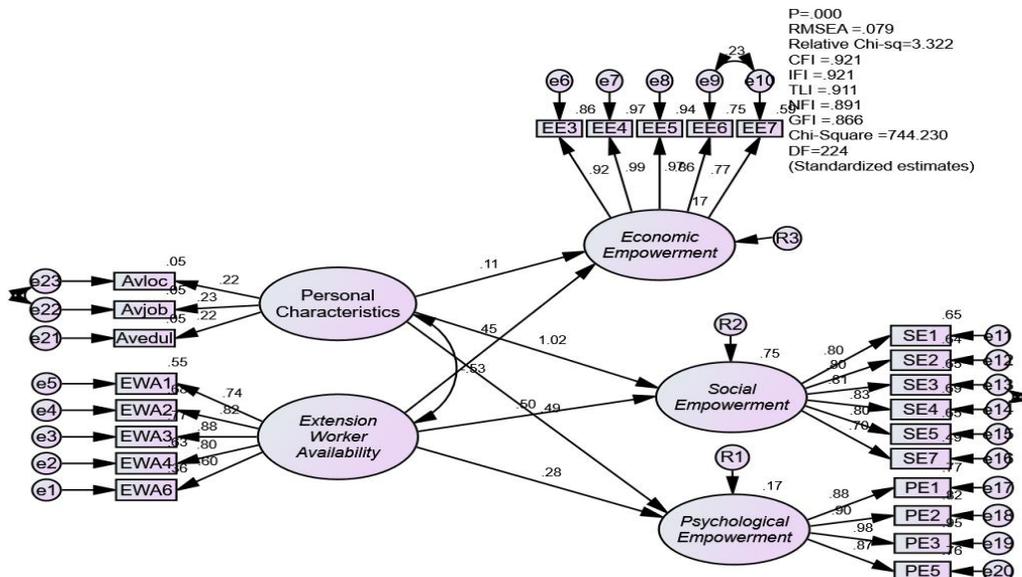
For the attainment of objective 2 and 3, four hypotheses were formulated to ascertain the prediction of extension worker availability on economic, social and psychological empowerment of SHG members in North-Eastern Nigeria. According to Table 5, the hypothesized relationship between extension worker availability and SHG member economic

empowerment was not significant ( $\beta = .343, p = .264$ ). This shows there is no significant relationship between extension worker availability and self-help group member empowerment, which also means that extension worker availability, is not significant predictor of self-help group members' economic empowerment as such the hypothesis is rejected. There is significant relationship between extension worker availability and social empowerment was supported ( $\beta = .169, p = .000$ ) as depicted in Table 5. This indicates that extension worker availability is a predictor of social empowerment of SHG members in North-Eastern Nigeria. The hypothesized relationship between extension worker availability and psychological empowerment of SHG members in North-Eastern Nigeria was supported ( $\beta = .270, p = .001$ ) as shown in Table 5. This indicates that there is significant relationship between extension worker availability and psychological empowerment of SHG members, and also extension worker availability is a predictor of psychological empowerment of SHG members in North-Eastern Nigeria, as such the researcher fail to reject the hypothesis.

**Table 4. Goodness-of-fit indices of the output structural model**

Model	CMIN	DF	P	CMIN/DF	IFI	CFI	TLI	GFI	RAMSEA
Default Model	744.23	224	.000	3.32	.921	.921	.911	.866	.79

*Note:* CMIN= minimum discrepancy (or  $X^2$ ); DF= degrees of freedom; RAMSEA= root of mean square error of approximation; GFI= goodness-of-fit index; NFI = normed fit index; TLI = Tucker-Lewis index



**Fig. 10. The structural alternative model**

**Table 5. Correlation coefficients between the constructs**

Causal Path	Estimate	S.E	C.R	P-value
Extension Worker Availability <--> Economic Empowerment	.343	.074	5.421	.264
Extension Worker Availability <--> Social Empowerment	.169	.054	.6742	.000
Extension Worker Availability <--> Psychological Empowerment	.270	.43	.6810	.001

To determine the moderation effect of gender on the relationship between extension worker availability and economic, social and psychological empowerment of SHG members in North-Eastern Nigeria the three hypotheses formulated were tested using multi-group structural output coefficients from the SEM using AMOS.

**Table 6. Moderation test of gender on the relationships between extension Worker availability and Self-help Group (SHG) members economic, social and psychological empowerment**

Model	CMIN ( $\chi^2$ )	DF	P
Unconstrained	1234.515	634	.000
Measurement Residuals Change	1349.899	692	.000
	115.384	58	.000

From the comparison output between unconstrained  $\chi^2$  (CMIN) and Measurement residuals as depicted in Table, based on the  $\Delta\chi^2$  (CMIN) = 115.384;  $\Delta df$  = 58;  $P$  = .000, therefore there is a form of moderation effect of gender in the relationships between extension worker availability and SHG members economic, social and psychological empowerment, hence, fail to reject H4 at this level.

Table 7 shows the summary of structural output results of the two groups (male and female) which can be used to ascertain whether moderation effect of gender exist in all the six specific path using beta ( $\beta$ ) coefficients and significance value as recommended by Hair et al.

**Table 7. Moderation test for gender on the relationships between extension worker availability, individual factors and self-help group member empowerment**

Path	B	$\beta$	P
<b>Male</b>			
Economic Empowerment <---Extension worker Availability	.033	-.021	.629
Social Empowerment <--- Extension worker Availability	-.061	-.090	.346
Psychological Empowerment <--- Extension Worker Availability	.075	.030	.216
<b>Female</b>			
Economic Empowerment <---Extension worker Availability	-.522	-.055	.148
Social Empowerment <--- Extension worker Availability	-.342	-.186	.088
Psychological Empowerment <--- Extension Worker Availability	-.039	-.062	.656

According to Hair (2010) specific path is moderated by Moderator if:

- (i) Beta ( $\beta$ ) for Group 1 is significant while beta for Group 2 is non-significant or
- (ii) (ii) Beta ( $\beta$ ) BOTH groups are significant. However one is positive while the other negative.

Specifically the path coefficient values are analyzed below:-

**Path1:** Gender to moderate the relationship between extension worker availability and economic empowerment of SHG members, male group ( $\beta$  = -.021,  $P$  = .629) and female ( $\beta$  = -.055,  $P$  = .148), (No Moderation).

**Path2:** Gender to moderate relationship between economic empowerment of SHG member and extension worker availability, male group ( $\beta$  = -.090,  $p$  = .346) and female group ( $\beta$  = -.186,  $p$  = .088), (No Moderation).

**Parth3:** Gender to moderate in the relationship between SHG member psychological empowerment and individual factors male group ( $\beta$  = .030,  $P$  = .216) and female group ( $\beta$  = .646,  $P$  = .000), (No Moderation).

Summarily, from the above structural output results, gender is not a moderator in the relationships between extension worker availability and SHG members economic, social and psychological empowerment in North-Eastern Nigeria. As such, the earlier decision on hypothesis H4 was tentative and by confirmation it was rejected.

## 6. DISCUSSION

Previous studies reported conflicting results regarding relationships between baseline development partners' agents (extension workers) and SHG members' economic, social and psychological empowerment. However, the results from this study clearly shows that the composition of SHGs is heterogeneous, that is despite being a harmonious and cohesive groups, the age, gender, location, marital status and educational level of the SHG members varies significantly, this results is in line with earlier findings from [18] and [23] were they reported SHG members of the same group has different personal, social and demographic characteristics' and some SHG members join a group that has more of its age mate or gender class. Similarly, [7] and [47] found that SHGs that are in rural communities lack access to bank facilities such as loans, however they noted it has no any significant effect on the level of their empowerment. In essence, this study argues that most SHGs members that participated in this study are heterogeneous; hence their socio-demographic characteristics are good different even though they come together to achieve same goal and objective.

Moreover, the findings of this study that there is significant and positive relationship between extension worker availability and SHG members' social and psychological empowerment supported the earlier findings of [48,18,21] and [7] where they unanimously reported significant relationship between development partners agent (extension worker) to the ability of SHG members develop their social skills and become more confidence in making good decisions without external influence. Some of the major roles of extension worker to the SHGs is educating, enlightening and facilitating adoption of innovation that may change the living standard of the poor through increasing farming and non-farming business outputs; improve confidence of SHG members; improve SHG members health status; reduce community social vices; increase participation and volunteerism for societal development. Accordingly, in the process of ensuring SHG members objectives are achieved, they eventually manifest additional knowledge, skills and positive attitudinal changes towards acceptance or rejection of innovation. Although, in the process of interaction with the extension worker, sometimes vocational skills such as knitting, weaving, soap making, hair-dressing and sewing are taught informally to assist SHG

members generate more income that will help to increase their savings, SHG members that participated in this study, indicated that their economic empowerment has not increased as a result of extension worker availability ( $\beta = .343$ ,  $p = .264$ ). This is in line with [29] reported poor economic status of rural farmers despite the training they receive for 6months in income generating skills from baseline extension workers. However, this scenario could be attributed to many factors in North-Eastern Nigeria such as the frequent and re-occurring ethno-religious crisis that make businesses very poor to yield profit; culture of the predominant society members that prevent them from active participation in any development initiatives and the level of literacy which is very high because of inadequate infrastructure and political will from the government.

Furthermore, the findings from this study reveal that gender is not a moderator in the relationship between availability of extension worker and SHG members' economic, social and psychological empowerment. This clearly shows that interaction between extension worker and his/her gender has not increased nor decrease the level of SHG members' empowerment in North-Eastern Nigeria, however, [7] and [47] found significant increase in women empowerment as a result of joining SHG and fully participating in the group activities. The non-moderation effect may be attributed to the composition and domination of the SHG leadership by men in the groups and also the culture that perceived women as second class citizen in terms of empowerment schedules and responsibilities in the North-Eastern Nigeria.

## 7. CONCLUSION

Extension worker availability and SHG members' social and psychological empowerment are significantly related while economic empowerment of SHG members is not significantly related to availability of extension workers in North-Eastern Nigeria. Accordingly, this paper concludes that gender of SHG member or extension worker does not increase or decrease level of economic, social and psychological empowerment. However, the availability of extension worker in communities where SHGs perform their activities, socialization will be high, level of confidence and self-expression coupled with making good decisions that will improve the living standard of the common members and the society at large will

manifest as the outcome of the processes. Therefore, holistic empowerment of SHG members would be achieved significantly without considering gender as a factor even though the group members has different socio-demographic characteristics.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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