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Developing a Guttman scale for measuring the degree of empowerment of rural women

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Abstract

Women, the reservoir of productive human resource constitutes almost half per cent of the country's total population. India has been working towards empowering her women ever since independence, and especially since the 1990s. There is no single indicator to measure how far women have come, and how much more women still have yet to go to achieve gender equality. Understanding the different dimensions of women's empowerment is important to develop policies that will enhance gender equality and begin the shifts in cultural norms to promote women's rights. Considering these facts, a scale was developed to measure the level of empowerment of rural women by using Guttman scale method. The present study was conducted in six blocks of two districts in Tamil Nadu state with a sample size of 100 rural women for the purpose of this study, a variable was operationalized to measure the level of empowerment of rural women in varying degrees favourableness or unfavourableness. A total number of 53 indicators were finally selected and arranged randomly under 12 dimensions in the scale. A two point response of agree and disagree were used as response categories. The co-efficient of reproducibility for each dimension was worked and overall co-efficient of reproducibility was found to be 0.981. Hence it can be accepted as very good scalogram.

Keywords: Women Empowerment, Guttman scale, Scalogram

Introduction

Empowerment is a multi-faceted, multidimensional and multi-layered concept. Women's empowerment is a process in which women gain greater share of control over resources - material, human and intellectual [knowledge, information, ideas] and financial resources and control over decision-making in the home, community, society, nation and to gain 'power'. According to a Report of the Government of India, "Empowerment means moving from a position of enforced powerlessness to one of power". In this process, women should be empowered socially, economically, educationally and politically that can help them take Self decision regarding education, mobility, economic independency, political participation, public speaking and awareness to exercise rights. (Arpita, 2011) [2]. India has the largest number of elected women in the world, and there are around 75000 women representatives out of a total 2,60,000 panchayat representatives. (Nupur, 2009) [5] Empowering women is the surest means of strengthening democracy and improving the lives of the rural people. Women are instrumental in shaping the society and play a major role in raising the economic resources for the family, though their contribution is always underemphasized. Empowering the rural women is the talk of the day. United Nations (2001) [6] defines empowerment as the processes by which women take control and ownership of their lives through expansion of their choices. Lots of resources are spent on empowering rural women. Various Government and Non - Government organisations are moving heaven and earth for empowerment of rural women. However, the empowerment of rural women is a mysterious one. Women's empowerment and the movement toward gender equality is a modern phenomenon that continues to develop around the world. Women's empowerment, a major goal of many development projects, formed a basis to foster growth, reduce poverty, and promote better governance (Anju *et al.* 2002) [1].

Numerous government and non-government agencies, including the United Nations, World Bank, Government of India and Government of Tamil Nadu are leaders in women's empowerment projects. These agencies use indicators to assess the status of women, evaluate interventions, and assess policy options for development. As indicators are often not standardized across agencies and each one focusing only on some aspects of empowerment,

there exists a problem of incongruity in the assessment of degree of empowerment of women. Hence it was decided to develop an unidimensional scale which is holistic in nature to study all the aspects of empowerment is attempted in this study in order to develop a standardized methodology for measuring the degree of empowerment of rural women. With the backdrop of these facts, a unidimensional scale was developed for measuring the degree of empowerment of rural women by using Guttman scaling technique.

Materials and Methods

Guttman Scaling Technique

In order to develop a standardized methodology for measuring the degree of empowerment of rural women, a scale is attempted in this study. Though scales are available for this purpose, no one has covered all the aspects of empowerment of rural women. Here a technique called Guttman scale is followed which is specifically used for developing a unidimensional scale.

Guttman scaling was developed by Louis Guttman (1944, 1950) [3]. Guttman scaling is applied to a set of binary questions answered by a set of subjects. This is otherwise called as Scalogram analysis or Cumulative scale. This is the simplest technique and it is used if the variable is unidimensional in nature. When the variable under study has

many dimensions then it is divided in to several unidimensional and scalogram technique can be applied. A set pattern of response is usually employed. Two point response viz., *Yes* or *No* otherwise *Agree* or *Disagree* is expected. When there is variation in the expected pattern in the obtained responses then that is being called as the 'Error'. Cornell Technique was adopted to find out the error by following two rules viz.

Rule 1: Making the cutting point to minimise the error.

Rule 2: No category should have more error than one error.

Development of scale to measure Empowerment of rural women

After carefully referring through various research articles and having consulting with the subject matter specialist, 12 different dimensions had been identified which thought to contribute the empowerment of women. By further analysis, possible indicators, 53 numbers, were developed under each dimension. Thus a data collection tool was prepared incorporating all the 53 indicators under 12 different dimensions and it was pre-tested. Based on the opinions and suggestions of the judges, necessary corrections were made and the final scale was prepared.

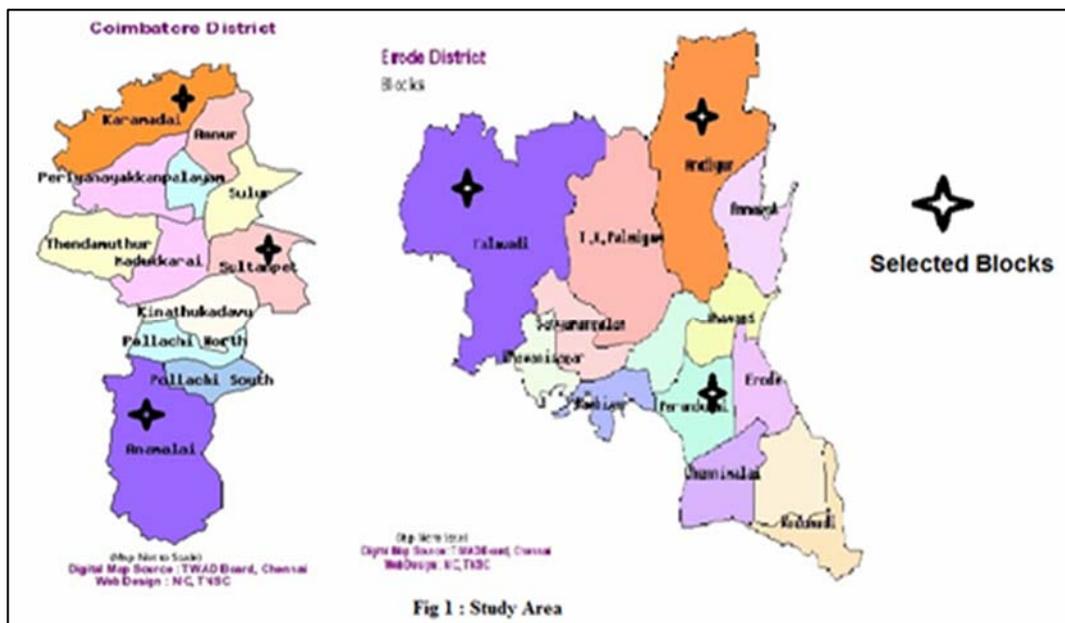


Fig 1 : Study Area

The study was conducted in the Coimbatore and Erode districts of Tamil Nadu. According to the 2011 Census, out of 32 districts in Tamil Nadu state these two districts stood atop with regard to the sex ratio (993 females for 1000 males in Erode district and 1000 females for 1000 males) and with female literacy level of 71.06 per cent and 64.71 per cent in Coimbatore and Erode respectively. Hence these two districts were purposively selected for the present study. Further, three blocks from each district, thus a total of six blocks viz., Karamadai, Sultanpet and Anaimalai blocks from Coimbatore district and Talavadi, Andiyur and Perundurai blocks from Erode district were selected by means of stratified random sampling technique. From these selected blocks a total number of 100 women comprising of all categories such as literate, illiterate, self-employed, daily coolies (NAREGA), office goers, college students, government servants like

school teachers etc., were selected randomly as respondents of the study.

Data were collected through personal interview method. The respondents were asked to indicate their degrees of acceptance about each indicator by indicating either 'Agree' or 'Disagree' to the particular indicator. The Co Efficient of Reproducibility (C_R) for each dimension was worked out by using the following formula and those dimensions having a C_R of more than 0.9 ($C_R > 0.90$) will be included in the final scale.

$$C_R = 1 - \frac{\text{Total numbers of errors}}{\text{Numbers of item} \times \text{Numbers of persons}}$$

The scale was standardized by working out the reliability and validity measures. Test – retest method and split-half techniques were employed to ensure its reliability. The

validity of this scalogram was calculated by finding out through working out Concurrent validity by using Spearman Rank order correlation method by using the formula

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Results and Discussion

Table 1: Indicators for measuring the degree of empowerment of rural women

Sl. No	Indicators	Agree	Disagree
I	Educational and Training Indicators		
1	Literacy level of the women		
2	Participation in adult literacy at rural level		
3	Training attended (Occupational)		
4	Increased understanding about use of latest technologies in rural occupations including home science		
5	Training for adolescent girls in various aspects like taking care of their bodies, interpersonal skills, vocational skills, etc.,		
II	Economical Indicators		
1	Participation in creating resources		
2	Economic self reliance		
3	Loan taking for betterment		
III	Financial Indicators		
1	Linking with market		
2	Getting scholarships by rural girls / women for education		
3	Women receiving pensions under different schemes		
4	Financial assistance for re-marriage of widow		
5	Financial assistance to destitute widows		
IV	Gender Equality		
1	Demographic trend		
2	Access to common resources by women		
3	Female headed households		
V	Health		
1	Health status of women		
2	Pregnant and lactating mothers receiving ration from Anganwadi of the village		
3	Implementation of scheme for safe delivery of pregnant women and care of their infants		
4	Setting up early child care centres		
VI	Occupational		
1	Ability to start rural industries, dairy, petty shops, basket making, pickle making etc.,		
2	Expanding the industries already started		
3	Closing the industry		
VII	Ownership		
1	Land ownership		
2	House ownership		
3	Ownership regarding movable properties		
VIII	Physical stress		
1	Less work load		
2	Leisure time		
3	Safeguard against domestic violence		
4	Use of Anganwadi services (Crèches)		
IX	Social Empowerment		

1	Control over resources		
2	Participation in Self Help Groups		
3	Partnership in NGOs		
4	Village level religious functions		
5	Cultural functions		
X	Participation in Decision making		
1	Children Education		
2	Children Management		
3	Property purchase		
4	Property selling		
5	House management		
6	Family planning		
7	Participation of women in protesting against female foeticide		
8	Technology decision behaviour		
XI	Political		
1	Participation in Gram Sabha		
2	Participation in Panchayat		
3	Participation in Panchayat Samiti		
4	Participation at District level or above		
XII	Personal		
1	Self – esteem		
2	Self confidence		
3	Articulation		
4	Roles		
5	Responsibilities		
6	Self - reliance		

The list of indicators identified is given in the Table 1. These indicators could be considered in estimating the degree of empowerment of rural women. The indicators vary in degree of importance on the basis of opinions of the respondents. They were asked to rate each indicator under each dimension whether you ‘Agree’ or ‘Disagree’ with the statements in terms of their perceptions on various women empowerment aspects.

The Co-efficient of reproducibility for each dimensions were found out and the results were presented in the following tables.

Educational and Training Indicators

The Table 2 showed that all the indicators in the Educational and Training dimension were accepted by all the respondents and thus got a score value of 100. This showed that the respondents might have opined higher education level, more knowledge and improved life skill may help them to become self-reliance in their day to day life. The CR of this dimension was worked out and it was found to be 1.0. Hence, the indicators in these dimensions are considered as a perfect and can be included in the final scale.

Table 2: Educational and Training

n = 100

S.No	I. Educational and Training Indicators	Total Score	CR Value
1	Literacy level of the women	100	1.00
2	Participation in adult literacy at rural level	100	
3	Training attended (Occupational)	100	
4	Increased understanding about use of latest technologies in rural occupations including home science	100	
5	Training for adolescent girls in various aspects like taking care of their bodies, interpersonal skills, vocational skills, etc.,	100	

Economical Indicators

Table 3: Economical Indicators

S. No	II. Economical Indicators	Total Score	CR Value
1	Participation in creating resources	100	0.99
2	Economic self reliance	100	
3	Loan taking for betterment	87	

Table 3 reveals that the two indicators viz., Participation in creating resources and Economic self-reliance under the Economical dimension were considered as indicators to measure the empowerment of rural women by all the respondents and the other indicator in this dimension namely the Loan taking for betterment has got accepted only by 87 respondents and the remaining 13 respondents were not favouring the act of getting loans for betterment. Instead, they considered lending money from someone else would make them submissive and they are under the constant threat of repayment schedule and other problems. The C_R was worked out and it was 0.99. Hence, these three indicators under the economical dimension may be considered as an acceptable scalogram ($C_R > 0.90$) and can be included in to the final scale.

Financial Indicators

Table 4: Financial Indicators

S. No	III. Financial Indicators	Total Score	CR Value
1	Linking with market	100	0.98
2	Getting scholarships by rural girls / women for education	100	
3	Women receiving pensions under different schemes	93	
4	Financial assistance for re-marriage of widow	76	
5	Financial assistance to destitute widows	81	

A quick look in to the Table 4 discloses that all the respondents were accepted the indicators viz., linking with market and receiving scholarships for education. The indicators viz., Women receiving pensions under different schemes, Financial assistance for re-marriage of widow and Financial assistance to destitute widows were accepted by 93, 76 and 81 respondents respectively. This might be due to that majority of the respondents did not wish to think of being a widow or destitute widows. Many respondents were initially neglected to answer these indicators may be due to some psychological reasons. Further, C_R was worked out and it was 0.98. Hence, these five indicators under the financial dimension may be considered as an acceptable scalogram ($C_R > 0.90$) and can be included in to the final scale.

Table 5: Gender Equality Indicators

S. No	IV. Gender Equality Indicators	Total Score	CR Value
1	Demographic trend	100	0.99
2	Access to common resources by women	100	
3	Female headed households	89	

It can be observed from Table 5 that the indicators like Demographic trend and Access to common resources by women have got a score of 100 each and the other indicator namely Female headed households got a score of 89. This

shows that 11 respondents were not accepting the idea of heading the family by women. The C_R was worked out and it was 0.99. Hence, all the three indicators under the Gender Equality dimension may be considered as an acceptable scalogram ($C_R > 0.90$) and can be included in to the final scale.

Table 6: Health Indicators

S.No	V. Health Indicators	Total Score	CR Value
1	Health status of women	100	1.00
2	Pregnant and lactating mothers receiving ration from Anganwadi of the village	100	
3	Implementation of scheme for safe delivery of pregnant women and care of their infants	100	
4	Setting up early child care	100	

Table 6 depicts that all the indicators under the health dimension were accepted by all the respondents and got full score. This may be due to the increased awareness about their health and health of their dependents. The C_R for this dimension is 1.00 hence, it is considered as a perfect scale.

Table 7: Occupational Indicators

S.No	VI. Occupational Indicators	Total Score	CR Value
1	Ability to start rural industries, dairy, petty shops, basket making, pickle making etc.,	100	0.99
2	Expanding the industries already started	100	
3	Closing the industries	95	

On analysis of data pertaining to Occupational indicators, it was found that the indicator namely closing the industries has got approved by 95 respondents and rejected by 5 of them. The C_R was worked out and it was 0.99. Hence, all the three indicators under the Occupational dimension may be considered as an acceptable scalogram ($C_R > 0.90$) and can be included in to the final scale.

Table 8: Ownership Indicators

S.No	VII. Ownership Indicators	Total Score	CR Value
1	Land ownership	100	1.00
2	House ownership	100	
3	Ownership regarding movable properties	100	

Table 8 indicates that all the indicators under the Ownership dimension were accepted by all the respondents and got full score. This may be due to the fact that the respondents believed that having possessing some properties in or assets will give some confidence to do things in their life The C_R for this dimension is 1.00 hence, it is considered as a perfect scale.

Table 9: Physical stress Indicators

S.No	VIII. Physical stress Indicators	Total Score	CR Value
1	Less work load	100	1.00
2	Leisure time	100	
3	Safeguard against domestic violence	100	
4	Use of Anganwadi services	100	

The data in Table 9 indicates all the indicators under the Physical stress dimension considered as appropriate by all

the respondents and the C_R for this dimension is 1.00 hence, it is considered as a perfect scale.

Table 10: Social Empowerment Indicators

S.No	IX. Social Empowerment	Total Score	C_R Value
1	Control over resources	100	0.99
2	Participation in Self Help Groups	100	
3	Partnership in NGOs	90	
4	Village level religious functions	100	
5	Cultural functions	100	

As evident from Table 10, all the indicators in the Social empowerment dimension except partnership in NGOs was accepted by all the respondents. About 10 respondents may be considered that having some contact or partnership with NGOs came from out-side their social set up will lead to many problems. The C_R for this dimension is 0.99 hence, it is considered as an acceptable scale.

Table 11: Participation in Decision making Indicators

S.No	X. Participation in Decision making	Total Score	C_R
1	Children Education	100	0.98
2	Children Management	100	
3	Property purchase	100	
4	Property selling	100	
5	House management	100	
6	Family planning	87	
7	Participation of women in female foeticide	94	
8	Technology decision behaviour	100	

It can be observed from Table 11 that the indicators like Children Education, Children Management, Property purchase, Property selling, House management and Technology decision behaviour have got a score of 100 each and the other indicators namely Participation of women in female foeticide and Family planning has got the score of 94 and 87 respectively. The C_R was worked out and it was 0.98. Hence, all the eight indicators under the participation in decision making dimension may be considered as an acceptable scalogram ($C_R > 0.90$) and can be included in to the final scale.

Table 12: Political Indicators

S.No	XI. Political Indicators	Total Score	C_R Value
1	Participation in Gram Sabha	100	0.99
2	Participation in Panchayat	100	
3	Participation in Panchayat Samiti	100	
4	Participation at District level or above	95	

The data in Table 12 reveals that the all respondents considered the indicators viz., Participation in Gram Sabha, Participation in Panchayat and Participation in Panchayat Samiti as precise which represents the empowerment of women. On the other hand, five respondents were not accepting the indicator namely Participation at District level or above may be due to the fact that they don't want to participate outside their locality. The C_R for this dimension is 0.99 hence, it is considered as an acceptable scale.

Table 13: Personal Indicators

S.No	XII. Personal Indicators	Total Score	C_R Value
1	Self – esteem	100	1.00
2	Self confidence	100	
3	Articulation	100	
4	Roles	100	
5	Responsibilities	100	
6	Self - reliance	100	

It was found from the Table 13 that all the indicators under the Personal dimension considered as pertinent to measure the women empowerment by all the respondents and the C_R for this dimension is 1.00 hence, it is considered as a perfect scale.

Testing the Validity of the scale

The validity of this scalogram was found out by finding out the Concurrent validity by using Spearman Rank order method. For these purpose 20 Women development officials who are working in the line departments, NGOs etc. were randomly selected from the study area and their opinions with regard to the indicators were obtained. It was correlated with the responses of 20 randomly selected respondents from the sample pool of 100 respondents. Spearman rank correlation was found out by using the following formula.

$$r_s \text{ (or) } Rho = 1 - (6\sum D^2) / N(N^2-1)$$

Table 14: Concurrent validity of the test using Spearman Rank order method

S.No	Indicators	Respondents Score	Rank score	Judges score	Rank score based on the judges	D (colm 4 - colm 6)	D2	P (rho)
1	2	3	4	5	6	7	8	9
I	Educational and Training Indicators							
1	Literacy level of the women	20	3	20	3	0	0	1.00*
2	Participation in adult literacy at rural level	20	3	20	3	0	0	
3	Training attended (Occupational)	20	3	20	3	0	0	
4	Increased understanding about use of latest technologies in rural occupations including home science	20	3	20	3	0	0	
5	Training for adolescent girls in various aspects like taking care of their bodies, interpersonal skills, vocational skills, etc.,	20	3	20	3	0	0	
II	Economical Indicators							
1	Participation in creating resources	20	1.5	20	1.5	0	0	1.00*
2	Economic self reliance	20	1.5	20	1.5	0	0	
3	Loan taking for betterment	16	3	18	3	0	0	
III	Financial Indicators							
1	Linking with market	20	1.5	20	2	-0.5	0.25	

2	Getting scholarships by rural girls / women for education	20	1.5	20	2	-0.5	0.25	0.995*
3	Women receiving pensions under different schemes	17	3	19	4	-1	1	
4	Financial assistance for re-marriage of widow	13	5	18	5	0	0	
5	Financial assistance to destitute widows	16	4	20	2	2	4	
IV	Gender Equality							
1	Demographic trend	20	1.5	19	2	-0.5	0.25	0.875*
2	Access to common resources by women	17	3	18	3	0	0	
3	Female headed households	20	1.5	20	1	0.5	0.25	
V	Health							
1	Health status of women	20	2.5	20	2.5	0	0	1.00*
2	Pregnant and lactating mothers receiving ration from Anganwadi of the village	20	2.5	20	2.5	0	0	
3	Implementation of scheme for safe delivery of pregnant women and care of their infants	20	2.5	20	2.5	0	0	
4	Setting up early child care	20	2.5	20	2.5	0	0	
VI	Occupational							
1	Ability to start rural industries, dairy, petty shops, basket making, pickle making etc.,	20	1.5	20	1.5	0	0	1.00*
2	Expanding the industries already started	19	3	19	3	0	0	
3	Closing the industries	20	1.5	20	1.5	0	0	
VII	Ownership							
1	Land ownership	20	2	20	2	0	0	1.00*
2	House ownership	20	2	20	2	0	0	
3	Ownership regarding movable properties	20	2	20	2	0	0	
VIII	Physical stress							
1	Less work load	20	2.5	20	2.5	0	0	1.00*
2	Leisure time	20	2.5	20	2.5	0	0	
3	Safeguard against domestic violence	20	2.5	20	2.5	0	0	
4	Use of Anganwadi services	20	2.5	20	2.5	0	0	
IX	Social Empowerment							
1	Control over resources	20	3	20	3	0	0	1.00*
2	Participation in Self Help Groups	20	3	20	3	0	0	
3	Partnership in NGOs	20	3	20	3	0	0	
4	Village level religious functions	20	3	20	3	0	0	
5	Cultural functions	20	3	20	3	0	0	
X	Participation in Decision making							
1	Children Education	20	3	20	3.5	-0.5	0.25	0.91*
2	Children Management	20	3	20	3.5	-0.5	0.25	
3	Property purchase	19	6	20	3.5	2.5	6.25	
4	Property selling	20	3	20	3.5	-0.5	0.25	
5	House management	16	8	18	8	0	0	
6	Family planning	18	7	19	7	0	0	
7	Participation of women in female foeticide	20	3	20	3.5	-0.5	0.25	
8	Technology decision behaviour	20	3	20	3.5	-0.5	0.25	
XI	Political							
1	Participation in Gram Sabha	20	2	20	2	0	0	1.00*
2	Participation in Panchayat	20	2	20	2	0	0	
3	Participation in Panchayat Samiti	19	4	19	4	0	0	
4	Participation at District level or above	20	2	20	2	0	0	
XII	Personal							
1	Self – esteem	20	3	20	3	0	0	1.00*
2	Self confidence	20	3	20	3	0	0	
3	Articulation	20	3	20	3	0	0	
4	Roles	20	3	20	3	0	0	
5	Responsibilities	20	3	20	3	0	0	
6	Self - reliance	20	3	20	3	0	0	

* Significant at 1% level.

The Validity of the test was found to be significant at 1% level for all the indicators. This may indicate that the indicators were carefully selected by considering all the dimensions of women empowerment. Therefore it can be concluded that both the groups have considered all the indicators as a positive indicators for measuring the empowerment of rural women.

Conclusion

A comprehensive analysis of finding out indicators for different dimensions (XII) to measure the level of empowerment of rural women was done by critical reviewing of literature, discussion with the experts and line department officials and personal interviews. The results showed that there could be 12 dimensions with a total number of 53 indicators (3- 8 indicators under each dimension). The

approach of considering all the possible issues related to empowerment of women from a holistic and macro-point of view to measure the level of empowerment of rural women could be possible by using the scalogram developed in this study.

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