
A Study of Socio- Cultural factors and their influence on Rural Women Empowerment in Solar Power Sector in select states of India

A.Padma Yasoda Kumari¹, Dr. A. Udaya Shankar²

¹*Research Assistant (ICSSR – Major Research Project) Research scholar, KLU Business school, KL University, Andhra Pradesh, India*

padmayasoda@gmail.com

²*Project Director (ICSSR Major research Project), Associate Professor, KLU Business school,*

KL University, Andhra Pradesh, India

Abstract

Rural women's participation in the formal economy is small and largely confined to domestic work and less payed low grade jobs in the economy due to social, economic, political and other factors. Therefore, this study is done to assess the socio cultural factors that influence the rural women empowerment in Solar Power Sector in select states of India. Basically, the study is exploratory in nature. Primary as well as secondary data is used for the study while including the Quantitative and qualitative techniques. For this study, 500 rural women respondents who were into solar business were taken from the states of Andhra Pradesh, Bihar, Orissa and Telangana. A structured questionnaire was used for data collection. Descriptive statistics was used to analyze the data collected. Also, SPSS software was used to further analyse the data. The findings of study revealed that the majority of the rural women respondents were interested to start the solar business. From the data it is further observed the socio-cultural attitudes of the rural women like: Social Empowerment- Participation in domestic decision making, Recognition in the society, Access to and visibility in Social spaces, Rural women and Political attitudes- Ability to exercise right to vote, Rural women and Psychological attitudes- Self- esteem. Thus, it is suggested that the government of India and other NGO's should work together to bolster the rural women's socio-cultural development by providing required skills training, diversification sources of women income, guidance with the procedures to procure the loans, creating business networks and so on.

KEYWORDS: *Rural women empowerment, Socio-Cultural Factors, Solar power sector*

1. BACKGROUND OF THE STUDY

In India, a majority of the rural women are working in agricultural sector. The agriculture work is seasonal in nature. As a result, many rural women are looking for alternative sources of employment when no agricultural work exists.

As per the Energy council of India, Solar sector is a labour intensive industry which generates huge opportunities for work. Solar sector is highly labour intensive creating direct as well as indirect jobs. According to the report published by the Jawaharlal Nehru National Solar Mission in 2019, the solar sector at present is providing employment to 1 Lakh people. Another peculiar aspect of the solar sector is that it can accommodate huge female labour force. As per the report given by The International Renewable Energy Agency (IRENA), solar has largely contributed to job creation especially in remote and rural areas of India wherein it is difficult to set up factories like the rural frontiers of Andhra Pradesh, Bihar, Orissa and Telangana.

Solar power sector has the capacity to create nearly seven lakh jobs in India in the next 10 years, as per the Government of India report. The Government of India targets to achieve 100 GW of solar power which requires a host of skilled solar workers by 2022. NRDC (National Renewable Development Council) analysis, 2019 states that India needs 210,800 skilled technicians and 624,600 semi- skilled technicians to carry on the various operations in the solar sector. Another 1,80,000 workers needed by 2022 to carry out installation and maintenance functions for the numerous solar projects. As solar sector is a labour intensive industry thus able to employ huge female labour force, it is essential to investigate as to how solar sector can be an important tool in providing entrepreneurial opportunities for the rural women.

Based on the above observations, the present study is undertaken to better understand the concept of rural women empowerment in solar sector. It also serves the objective of empowering them and giving them economic freedom on one hand while increasing the solar potential in the rural areas on the other hand.

2. LITERATURE REVIEW

While different studies pointed out that rural women are engaged in the entrepreneurial development of our country, but very few literature reviews are available about the collaboration of rural women with solar empowerment and the influence of socio- cultural factors.

Madhavi Gutha undertook the study of the rural women empowerment and the rural women entrepreneurship in the solar power sector correlating it with the incentives provided by the government of India. In her study the author brought out the importance of the rural women empowerment, the ways and means to achieve the empowerment. Various government schemes that are formulated for the women empowerment are also discussed. She specially mentioned about the self-help groups and these self-help groups are contributing to the empowerment of the rural women.

Dr. Ila Jogi brought out how women empowerment can be achieved through women entrepreneurship programmes in solar sector. The author conceptualized the process of women empowerment in terms of personal assertions and confidence ability to protect themselves as women, attaining economic independence, ownership of productive assets provide leadership in women.

Dr.N. Chandrasekhar Reddy discussed about the rural women empowerment and entrepreneurship development in India. In this article, he illustrates how rural women entrepreneurs have contributed for empowerment of rural women. He also states that rural women can improve their financial stability and economic independence through rural entrepreneurship. He brings out the contribution of the self-help groups for the empowerment and the economic development of the rural women.

Tambunan, Tulus (2009) studied the women empowerment with relation to the development of small and medium scale industries. They focussed their study on the developing countries of Asia and found that the women entrepreneurs in the small and medium industries are less in number when compared to their male counter parts. The also discussed the reasons for the lack of women participation in setting up the industries, the problems encountered by the women entrepreneurs and concluded the article by making some suggestions to empower the women entrepreneurs.

Thus, if more rural women are absorbed into the businesses in solar sector, that has a propounding impact on the economic development of our country. Since solar sector is a labour intensive and serviceability driven industry, it has immense potential for local rural women that could eventually lead to the improvement of their lives.

Statement of the Problem

The following problems are faced by rural women who want to start a business:

Lack of Support- the rural women face the problem of lack of support both at home and at work place in the pursuit of business

Lack of capital – the women in villages generally neither lack the capital to start the business nor they know the procedure to procure a loan for their venture.

Lack of confidence and faith – these women tend to start their businesses very timidly due to lack of guidance and confidence.

Lack of Education- Women starting as entrepreneurs do not have the required technical skills due to lack of education

Lack of Experience- the lack of previous experience for the rural women is resulting in running into business losses. Also the rural women are unable to expand their ventures due to the lack of experience.

In addition, the rural women generally have fewer educational opportunities, less health facilities and face a lot of discrimination.

To address these challenges faced by the rural women, there is a need to address the factors that boost the rural women's participation in business leadership, perseverance and decision making. The factors are mainly socio- cultural related.

Thus we can only achieve rural women empowerment in solar power sector through identifying the socio-cultural factors and the possible trajectory of measures that can be taken to improve these elements and challenges. This study therefore, investigated the socio-cultural factors that limit the empowerment of rural women in solar power sector.

Purpose of the Study

The purpose of this paper is to study the socio-cultural factors that influence the rural women empowerment in Solar Power Sector in select states of India.

Objective of the Study

The objective of the study is to assess the contribution of socio-cultural factors for the empowerment of rural women in solar power sector.

Scope of the Study

The study was based on the rural women who are into solar businesses in the states of Andhra Pradesh, Bihar, Orissa and Telangana to gain insight into the concept of rural women empowerment in solar sector

Limitations of the Study

This study focusses only on rural women in solar power sector and discusses mainly about the Socio-cultural factors. Also the study is limited to four states i.e. Andhra Pradesh, Telangana in the south, Bihar, Orissa in the east India.

Conceptual Framework

The basic idea behind this framework is to increase the participation of rural women in solar energy initiatives, including planning and development of solar energy based small enterprises in rural areas of India and thereby developing sustainable rural solar energy systems in India leading towards their empowerment which is the main theme of my research.

Hypotheses Formulation

Based on the conceptual model specified above, the following hypotheses are formulated and are tested using the results obtained from the parameter estimates of the conceptual model.

1. H₁₀: Socio-Cultural Factors has no impact on Status of Women.

H₁₁: Socio-Cultural Factors has significant impact on Status of Women.

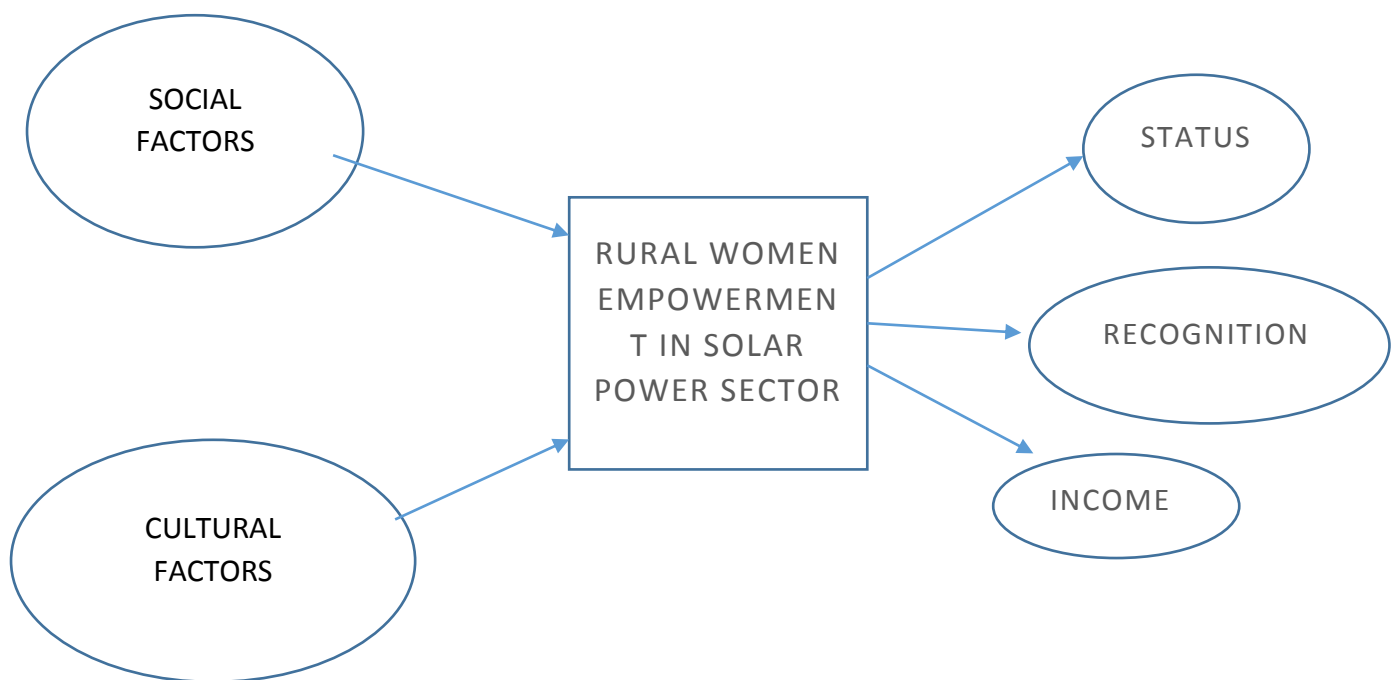
2. H₂₀: Socio-Cultural Factors has no impact on Recognition for Women.

H2₁: Socio-Cultural Factors has significant impact on Recognition for Women

3. H3₀: Socio-Cultural Factors has no impact on Income of women.

H3₁: Socio-Cultural Factors has significant impact on Income of women.

CONCEPTUAL FRAMEWORK



The social and cultural factors influencing the rural women empowerment in Solar Power Sector in select states of India are considered for the study.

Various Socio- Cultural variables considered for the study are

- Rural women and Social Empowerment:

Participation in domestic decision making

Access to and visibility in social spaces

- Rural women and Political attitudes:

Ability to exercise right to vote

- Rural women and Psychological attitudes:

Self- esteem

- Recognition in the society

Social Indicators can help us understand rural women's social networks, their participation in different kinds of community groups.

3. RESEARCH METHODOLOGY

The study is conducted based on the primary data and secondary data. The primary data again was collected through primary survey method. This study includes exploratory research analysis. Primary survey was conducted in the project area using Questionnaires and integrated with the qualitative research methods like interviews with the rural women and field observation. The primary survey is a major source of information. This survey was done through administering questionnaire to all the rural women solar entrepreneurs who were part of the solar projects in Andhra Pradesh, Telangana in the south, Bihar, Orissa in the east India.

Primary survey was done by using a standardized questionnaire, whereas the qualitative study is carried on through field observation and interviews. Maintaining Field notes is also a part of my research work. Various secondary sources of information were used in my research like the Government reports, Government manuals, Internet, published and unpublished reports from different agencies like NREL. The information collected through field observation method and interviews is both supplementary as well as complementary to the information collected through household survey. Information collected through Quantitative data is analysed and interpreted through various statistical tools.

The interviews with the rural women were face to face and in-depth. The interview duration was 2 to 3 hours per session taken both at home and at the work places of the rural women. This gave me a better understanding of their work. These interviews gave me insight not only on the state of affair of their work and businesses, but also into their general state of affairs like the rural infrastructure, the rural environment, the rural houses, the quality and quantity of services offered etc.

As per the purpose of the research, I tried to interview small number of rural women which proved to be effective to obtain in-depth information. Also the personal contact with the rural women has given them confidence to give sincere responses. Thus face to face interview facilitated easier and better communication. Had the questionnaire being sent through post instead of interviews, I would never have had a better understanding of the state of affairs and problems of these rural women.

Further investigations also emerged during the interviews with the rural women based on their views and opinions. These additional investigations helped to explore further the key issues. Also, the triangulation of the data was done with the help of secondary sources of information like the related documents and reports. Areas like the positive environment to start the solar businesses in the rural areas, the role of women entrepreneurs in the rural women empowerment, the legal and administrative support these rural women entrepreneurs

enjoy and the reasons for starting solar businesses, the reasons for becoming entrepreneurs were measured using Likert scale. All these issues were measured using different statements like strongly “disagree, agree, undecided, agree, strongly agree”.

4. RESEARCH TOOLS AND METHODS

Survey Method

The survey is done through structured questionnaire. A questionnaire is developed to understand the working of the rural women in Solar businesses.

Under the primary survey, information related to the various cultural aspects of the rural women, Socio- demographic information, problems and potentials of solar business resources, impact on women’s workload and the level of women’s participation are obtained.

Personal Interviews

Personal interviews were conducted with all the selected rural women in the project area. The interviews were conducted in the language of the local people. The personal interviews helped in getting information which is not covered by the survey method. The survey method combined with the personal interview helped to ascertain the information related to the various aspects of Solar stations of the research area.

Selection of the Respondents

A list of all the women who are engaged in the solar business was obtained from different government agencies like NISE (National Institute of Solar Energy) and NREL (National Renewable Energy Laboratory).

Population of the Study was taken to be all those rural women of Andhra Pradesh, Bihar, Orissa, Telangana who are engaged in solar business. The total population obtained for the study is 500.

Sample Area

The data collection was done in the states of Andhra Pradesh, Bihar, Orissa and Telangana

Sampling Method

Two methods of sampling were used in the research namely the Purposive sampling approach and the stratified random sampling approach.

Firstly, Purposive sampling approach was used to select the villages for research. As the purpose of the research is to explore and analyse the Socio/ Cultural empowerment of the rural women engaged in solar projects, the villages were purposively chosen to accommodate these factors.

Secondly, some women who were engaged in the solar businesses were selected from the total women in the selected villages. The list of women engaged in the solar business was

obtained through the snowball sampling. The other related information about the village was obtained from the mandal revenue office.

Tashakkori and Teddlie, (1998) define Purposive sampling approach as a method of selecting the participants on the basis of the purpose of the research.

The selection of rural women is done through Purposive sampling approach. Since the purpose of the research is to explore and analyse the Socio/ Cultural factors enhancing the empowerment of rural women, the rural women were purposively chosen to accommodate these factors.

Diagnostic Tools

Various diagnostic tools like mean, median, percentage, Variance analysis, standard deviation, SPSS version 20 are used to analyse the data collected.

5. DATA ANALYSIS

The descriptive analysis of the study is done through Frequency analysis and Cross Tabulation.

Reliability Test Scale: All Variables

Case Processing Summary

		N	%
Cases	Valid	500	100.0
	Excluded	0	.0
	Total	500	100.0

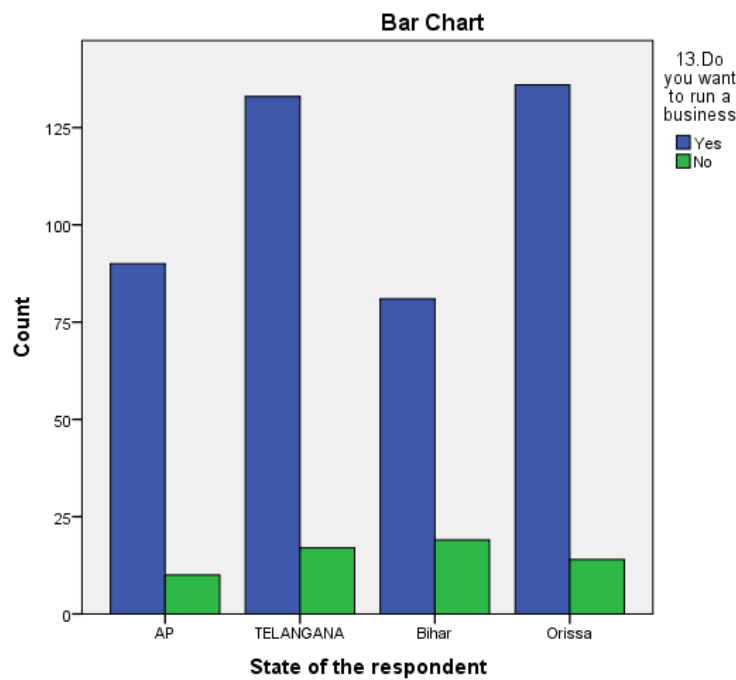
a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.701	85

From the above table reliability test analysis, it was observed that the alpha value obtained for the study is 0.701 which shows that the internal consistency of the tool is good according to Lee Cronbach.

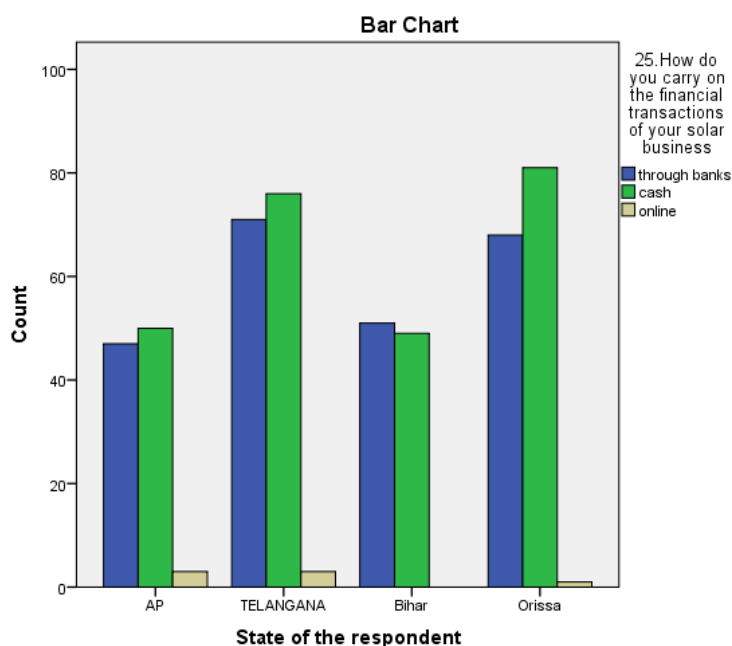
		13.Do you want to run		Total	
		Yes	No		
State of the respondent	AP	Count	90	10	100
		% within	90.00%	10.00%	100.00%
		% within	20.50%	16.70%	20.00%
		% of Total	18.00%	2.00%	20.00%
	TELANGANA	Count	133	17	150
		% within	88.70%	11.30%	100.00%
	NA	% within	30.20%	28.30%	30.00%
		% of Total	26.60%	3.40%	30.00%
	Bihar	Count	81	19	100
	% within	81.00%	19.00%	100.00%	
	% within	18.40%	31.70%	20.00%	
	% of Total	16.20%	3.80%	20.00%	
Orissa	Count	136	14	150	
		% within	90.70%	9.30%	100.00%
		% within	30.90%	23.30%	30.00%
	% of Total	27.20%	2.80%	30.00%	
Total	Count	440	60	500	
		% within	88.00%	12.00%	100.00%
		% within	100.00%	100.00%	100.00%
		% of Total	88.00%	12.00%	100.00%



From the above table, it is inferred that 88% of the rural women are interested in starting the solar business whereas 12% are not willing. These 12% of the rural women are interested to work as solar technicians.

State of the respondent and the financial transactions of the solar business

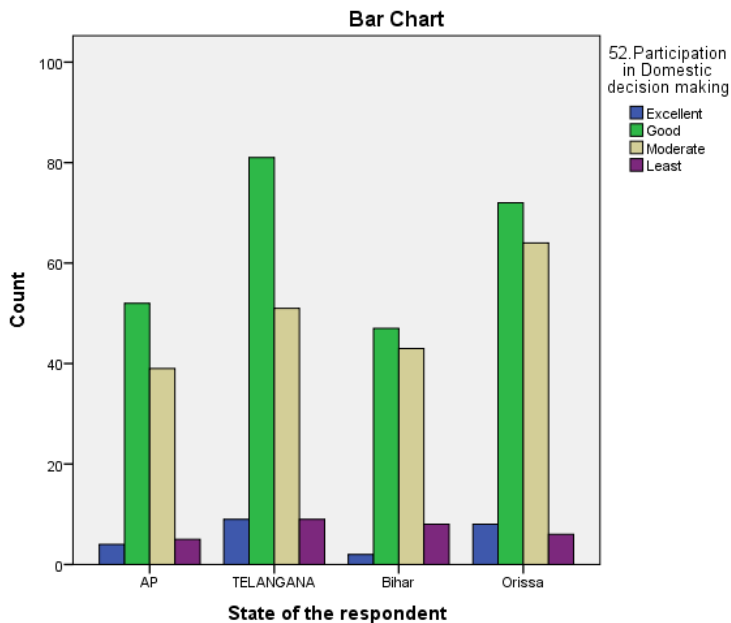
		25.How do you carry on the			Total	
		through	cash	online		
State of the respondent	AP	Count	47	50	3	100
		% within	47.00%	50.00%	3.00%	100.00%
		% within	19.80%	19.50%	42.90%	20.00%
		% of Total	9.40%	10.00%	0.60%	20.00%
	TELANGANA	Count	71	76	3	150
		% within	47.30%	50.70%	2.00%	100.00%
	NA	% within	30.00%	29.70%	42.90%	30.00%
		% of Total	14.20%	15.20%	0.60%	30.00%
	Bihar	Count	51	49	0	100
	% within	51.00%	49.00%	0.00%	100.00%	
	% within	21.50%	19.10%	0.00%	20.00%	
	% of Total	10.20%	9.80%	0.00%	20.00%	
Orissa	Count	68	81	1	150	
		% within	45.30%	54.00%	0.70%	100.00%
		% within	28.70%	31.60%	14.30%	30.00%
		% of Total	13.60%	16.20%	0.20%	30.00%
Total	Count	237	256	7	500	
		% within	47.40%	51.20%	1.40%	100.00%
		% within	100.00%	100.00%	100.00%	100.00%
		% of Total	47.40%	51.20%	1.40%	100.00%



The above table shows that 47.40% of the rural women are carrying on the financial transactions of their business through banks, 51.20% through cash and a mere 1.4% through online. This indicates the rural women’s preference to cash dealings over bank transactions.

State of the respondent and Participation in Domestic decision making Crosstabulation

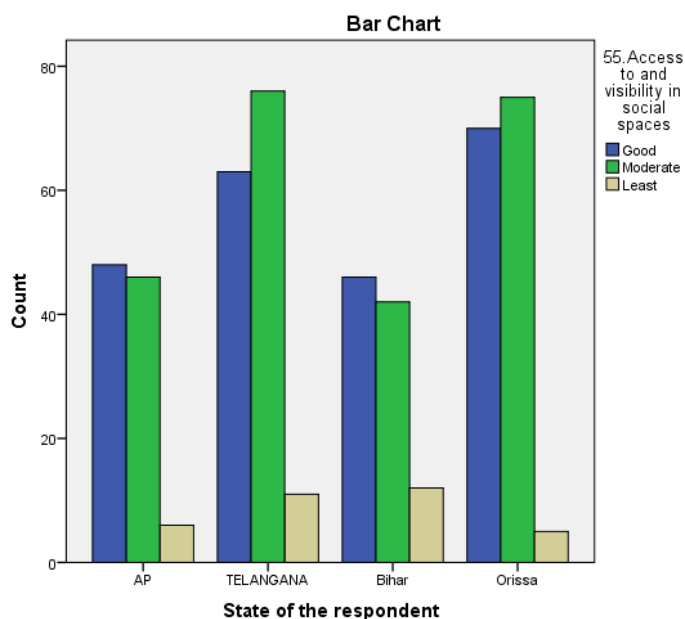
		52. Participation in Domestic decision making				Total	
		Excellent	Good	Moderate	Least		
State of the respondent	AP	Count	4	52	39	5	100
		% within	4.00%	52.00%	39.00%	5.00%	100.00%
		% within	17.40%	20.60%	19.80%	17.90%	20.00%
		% of Total	0.80%	10.40%	7.80%	1.00%	20.00%
	TELANGANA	Count	9	81	51	9	150
		% within	6.00%	54.00%	34.00%	6.00%	100.00%
	NA	% within	39.10%	32.10%	25.90%	32.10%	30.00%
		% of Total	1.80%	16.20%	10.20%	1.80%	30.00%
	Bihar	Count	2	47	43	8	100
		% within	2.00%	47.00%	43.00%	8.00%	100.00%
		% within	8.70%	18.70%	21.80%	28.60%	20.00%
		% of Total	0.40%	9.40%	8.60%	1.60%	20.00%
Orissa	Count	8	72	64	6	150	
	% within	5.30%	48.00%	42.70%	4.00%	100.00%	
	% within	34.80%	28.60%	32.50%	21.40%	30.00%	
	% of Total	1.60%	14.40%	12.80%	1.20%	30.00%	
Total	Count	23	252	197	28	500	
	% within	4.60%	50.40%	39.40%	5.60%	100.00%	
	% within	100.00%	100.00%	100.00%	100.00%	100.00%	
	% of Total	4.60%	50.40%	39.40%	5.60%	100.00%	



From the table it is understood that only 3.6% of the rural women’s participation in domestic decision making is excellent, 50.4% of the rural women’s participation in domestic decision making is good, 39.4% is moderate while 5.6% of the rural women’s participation in domestic decision making is least.

State of the respondent and Access to and visibility in social spaces

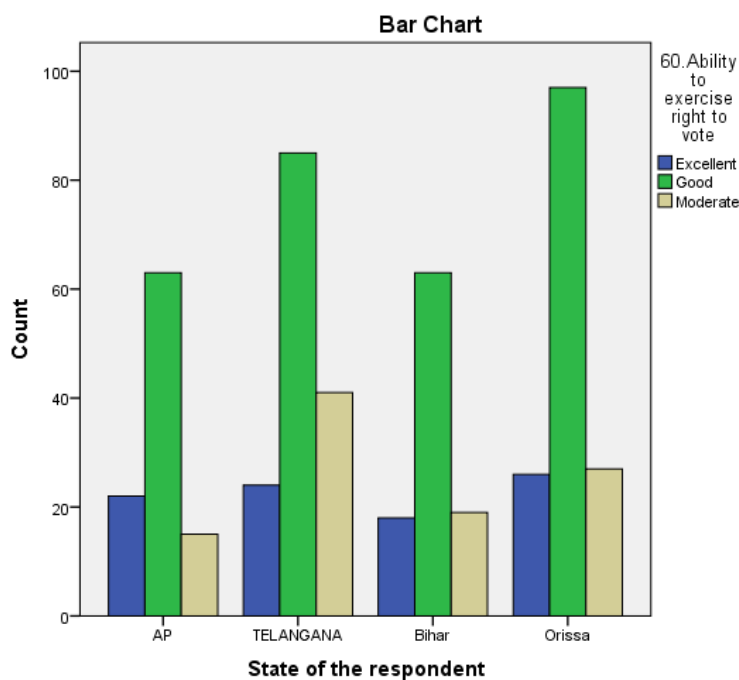
		55.Access to and visibility in			Total	
		Good	Moderate	Least		
State of the respondent	AP	Count	48	46	6	100
		% within	48.00%	46.00%	6.00%	100.00%
		% within	21.10%	19.20%	17.60%	20.00%
		% of Total	9.60%	9.20%	1.20%	20.00%
	TELANGANA	Count	63	76	11	150
		% within	42.00%	50.70%	7.30%	100.00%
	NA	% within	27.80%	31.80%	32.40%	30.00%
		% of Total	12.60%	15.20%	2.20%	30.00%
	Bihar	Count	46	42	12	100
	% within	46.00%	42.00%	12.00%	100.00%	
	% within	20.30%	17.60%	35.30%	20.00%	
	% of Total	9.20%	8.40%	2.40%	20.00%	
Orissa	Count	70	75	5	150	
		% within	46.70%	50.00%	3.30%	100.00%
		% within	30.80%	31.40%	14.70%	30.00%
		% of Total	14.00%	15.00%	1.00%	30.00%
Total	Count	227	239	34	500	
		% within	45.40%	47.80%	6.80%	100.00%
		% within	100.00%	100.00%	100.00%	100.00%
		% of Total	45.40%	47.80%	6.80%	100.00%



The above table states that 93.3% of the rural women are enjoying good and moderate access to and visibility in social spaces. Only 6.8% of the rural women felt that their access to social spaces is least.

State of the respondent and Ability to exercise right to vote Crosstabulation

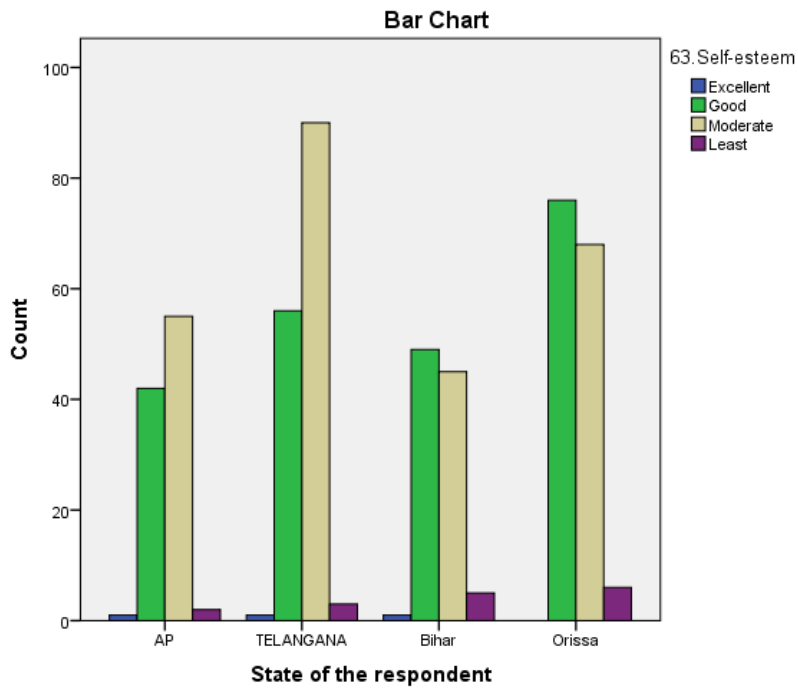
		60.Ability to exercise right to vote			Total	
		Excellent	Good	Moderate		
State of the respondent	AP	Count	22	63	15	100
		% within	22.00%	63.00%	15.00%	100.00%
		% within	24.40%	20.50%	14.70%	20.00%
	TELANGANA	Count	24	85	41	150
		% within	16.00%	56.70%	27.30%	100.00%
		% within	26.70%	27.60%	40.20%	30.00%
	Bihar	Count	18	63	19	100
		% within	18.00%	63.00%	19.00%	100.00%
		% within	20.00%	20.50%	18.60%	20.00%
Orissa	Count	26	97	27	150	
	% within	17.30%	64.70%	18.00%	100.00%	
	% within	28.90%	31.50%	26.50%	30.00%	
Total	Count	90	308	102	500	
	% within	18.00%	61.60%	20.40%	100.00%	
	% within	100.00%	100.00%	100.00%	100.00%	
	% of Total	18.00%	61.60%	20.40%	100.00%	



The rural women felt that their ability to exercise right to vote is excellent with 18%. The majority with 61.60% felt it as good while 20.4% of the rural women's ability to exercise right to vote is moderate.

State of the respondent and Self-esteem Crosstabulation

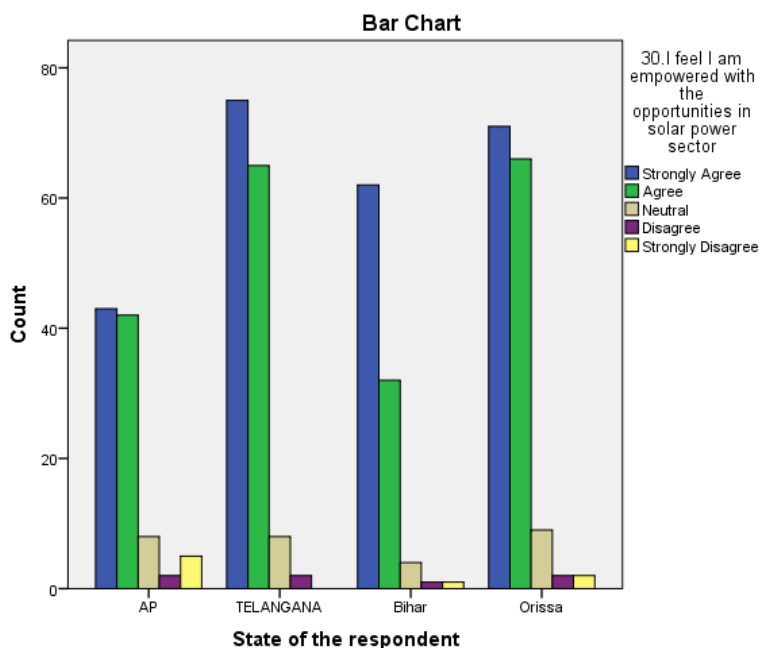
		63.Self-esteem				Total	
		Excellent	Good	Moderate	Least		
State of the respondent	AP	Count	1	42	55	2	100
		% within	1.00%	42.00%	55.00%	2.00%	100.00%
		% within	33.30%	18.80%	21.30%	12.50%	20.00%
	TELANGANA	% of Total	0.20%	8.40%	11.00%	0.40%	20.00%
		Count	1	56	90	3	150
		% within	0.70%	37.30%	60.00%	2.00%	100.00%
	Bihar	% within	33.30%	25.10%	34.90%	18.80%	30.00%
		% of Total	0.20%	11.20%	18.00%	0.60%	30.00%
		Count	1	49	45	5	100
Orissa	% within	1.00%	49.00%	45.00%	5.00%	100.00%	
	% within	33.30%	22.00%	17.40%	31.20%	20.00%	
	% of Total	0.20%	9.80%	9.00%	1.00%	20.00%	
Total	Count	0	76	68	6	150	
	% within	0.00%	50.70%	45.30%	4.00%	100.00%	
	% within	0.00%	34.10%	26.40%	37.50%	30.00%	
	% of Total	0.00%	15.20%	13.60%	1.20%	30.00%	
	Count	3	223	258	16	500	
	% within	0.60%	44.60%	51.60%	3.20%	100.00%	
	% within	100.00%	100.00%	100.00%	100.00%	100.00%	
	% of Total	0.60%	44.60%	51.60%	3.20%	100.00%	



From the above table it is inferred that 95.6% of the rural women who are in the solar business have good and moderate self-esteem levels. A few, 0.6%, are having excellent self-esteem, whereas 3.2% of the rural women felt it as least.

State of the respondent and empowerment with the opportunities in solar power sector

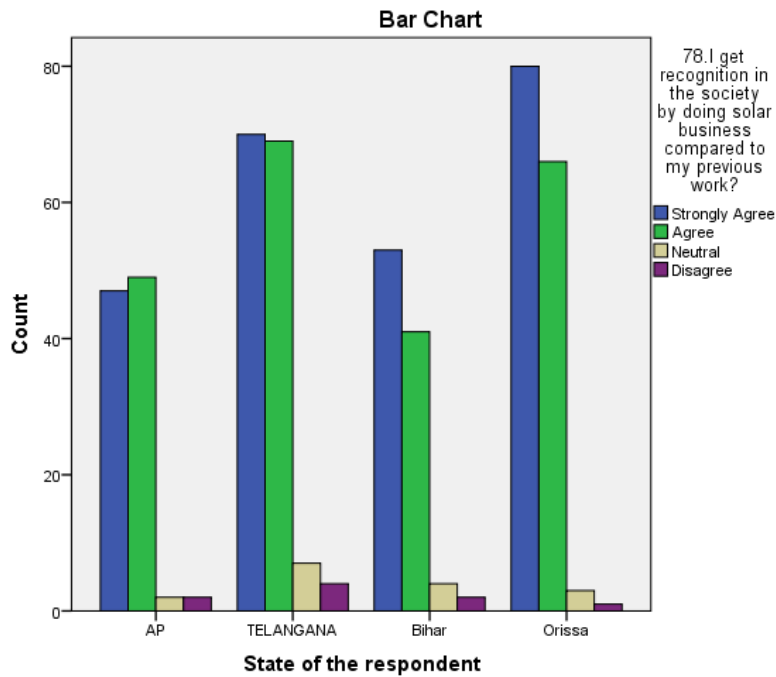
		30.I feel I am empowered with the opportunities in solar					Total	
		Strongly	Agree	Neutral	Disagree	Strongly		
State of the respondent	AP	Count	43	42	8	2	5	100
		% within	43.00%	42.00%	8.00%	2.00%	5.00%	100.00%
		% within	17.10%	20.50%	27.60%	28.60%	62.50%	20.00%
		% of Total	8.60%	8.40%	1.60%	0.40%	1.00%	20.00%
	TELANGANA	Count	75	65	8	2	0	150
		% within	50.00%	43.30%	5.30%	1.30%	0.00%	100.00%
		% within	29.90%	31.70%	27.60%	28.60%	0.00%	30.00%
		% of Total	15.00%	13.00%	1.60%	0.40%	0.00%	30.00%
	Bihar	Count	62	32	4	1	1	100
		% within	62.00%	32.00%	4.00%	1.00%	1.00%	100.00%
		% within	24.70%	15.60%	13.80%	14.30%	12.50%	20.00%
		% of Total	12.40%	6.40%	0.80%	0.20%	0.20%	20.00%
Orissa	Count	71	66	9	2	2	150	
	% within	47.30%	44.00%	6.00%	1.30%	1.30%	100.00%	
	% within	28.30%	32.20%	31.00%	28.60%	25.00%	30.00%	
	% of Total	14.20%	13.20%	1.80%	0.40%	0.40%	30.00%	
Total	Count	251	205	29	7	8	500	
	% within	50.20%	41.00%	5.80%	1.40%	1.60%	100.00%	
	% within	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	
	% of Total	50.20%	41.00%	5.80%	1.40%	1.60%	100.00%	



From the above table, it is understood that 91.2% of the rural women are empowered with the opportunities in the solar power sector. Of the rural women 3% said that they are not empowered with the opportunities in the solar power sector.

State of the respondent and Recognition in the society by doing solar business

		78.I get recognition in the society by doing				Total	
		Strongly	Agree	Neutral	Disagree		
State of the respondent	AP	Count	47	49	2	2	100
		% within	47.00%	49.00%	2.00%	2.00%	100.00%
		% within	18.80%	21.80%	12.50%	22.20%	20.00%
		% of Total	9.40%	9.80%	0.40%	0.40%	20.00%
		Count	70	69	7	4	150
	TELANGANA	% within	46.70%	46.00%	4.70%	2.70%	100.00%
	NA	% within	28.00%	30.70%	43.80%	44.40%	30.00%
		% of Total	14.00%	13.80%	1.40%	0.80%	30.00%
		Count	53	41	4	2	100
	Bihar	% within	53.00%	41.00%	4.00%	2.00%	100.00%
		% within	21.20%	18.20%	25.00%	22.20%	20.00%
		% of Total	10.60%	8.20%	0.80%	0.40%	20.00%
	Count	80	66	3	1	150	
Orissa	% within	53.30%	44.00%	2.00%	0.70%	100.00%	
	% within	32.00%	29.30%	18.80%	11.10%	30.00%	
	% of Total	16.00%	13.20%	0.60%	0.20%	30.00%	
Total	Count	250	225	16	9	500	
	% within	50.00%	45.00%	3.20%	1.80%	100.00%	
	% within	100.00%	100.00%	100.00%	100.00%	100.00%	
	% of Total	50.00%	45.00%	3.20%	1.80%	100.00%	



From the above table it is concluded that 95% of the rural women felt that they got Recognition in the society by doing solar business compared to their previous work. However, a mere 1.8% of the rural women disagreed with this opinion.

Hypotheses Testing

For analyzing the sample data, the following workflow is adopted:

1. Description of the Study Variables
2. Testing the Maintained Hypotheses
3. Summary of Results of Hypothesis Testing

1. Description of the Study Variables

S.NO	Latent Variables	Nature of the Variable	Level of Measurement	Code Description
1	Recognition for Women	Dependent	Nominal (5 categories)	“
2	Income of Women	Dependent	Nominal (5 categories)	“
3	Status of Women	Dependent	Nominal (5 categories)	“
4	Women Empowerment	Mediator/Dependent Variable	Nominal (5 categories)	“
5	Social Factors	Independent Variable	Nominal (5 categories)	“
6	Cultural Factors	Independent Variable	Nominal (5 categories)	“

2. Testing the maintained Hypotheses

Table Direct effects								
							95% Confidence Interval	
			Estimate	Std. Error	z-value	p	Lower	Upper
Soc_Cul_Fact	→	Status	0.414	0.139	2.97	0.000	0.177	0.677

Table Direct effects								
							95% Confidence Interval	
			Estimate	Std. Error	z-value	p	Lower	Upper
Soc_Cul_Fact	→	Recogn	0.297	0.043	6.959	< .001	0.213	0.381
Soc_Cul_Fact	→	Income	0.160	0.038	4.182	< .001	0.085	0.235

Note. Delta method standard errors, normal theory confidence intervals, ML estimator.

Hypothesis Testing

Using the results as outlined in the above Table, we shall the test the hypotheses.

1. H₁₀: Socio-Cultural Factors has no impact on Status of Women.

H₁₁: Socio-Cultural Factors has significant impact on Status of Women.

From the Table above, we find that the effect of Socio-Cultural Factors (0.41) on Status of Women is statistically significant and positive. Thus we may reject the null hypothesis that Socio-Cultural Factors has no significant impact on Status of Women and conclude that Socio-Cultural Factors has a significant impact on Status of Women at 5% level of significance.

2. H₂₀: Socio-Cultural Factors has no impact on Recognition for Women.

H₂₁: Socio-Cultural Factors has significant impact on Recognition for Women.

From the Table above, we find that the effect of Socio Cultural Factors (0.297) on Recognition for Women is statistically significant and positive. Thus we may reject the null hypothesis that Socio Cultural Factors has no significant impact on Recognition for Women and conclude that Socio-Cultural Factors have a significant impact on Recognition for Women at 5% level of significance.

3. H₃₀: Socio-Cultural Factors has no impact on Income of women.

H₃₁: Socio-Cultural Factors has significant impact on Income of women.

From the above Table. we find that the effect of Socio-Cultural Factors (0.16) on Income of Women is statistically significant and positive. Thus we may reject the null hypothesis that Socio Cultural Factors has no significant impact on Income of Women and conclude that Socio-Cultural Factors has significant impact on Income of Women at 5% level of significance.

3. Summary of Results of Hypothesis Testing

Hypothesis	Dependent Variable	Independent Variable	Mediator	Moderator	Null Hypothesis Tested	Decision
H1 ₀	Status of Women	Socio-Cultural Factors			Socio-Cultural Factors has no impact on Status of Women	Reject
H2 ₀	Recognition for Women	Socio-Cultural Factors			Socio-Cultural Factors has no impact on Recognition of Women	Reject
H3 ₀	Income of Women	Socio-Cultural Factors			Socio-Cultural Factors has no impact on Income of Women	Reject

4. FINDINGS

- From the table, it is inferred that 88% of the rural women are interested to start the solar business. Only 12% said ‘No’ and these rural women settled as solar technicians. The majority of the rural women are from Orissa followed by Telangana, Andhra Pradesh and Bihar who are interested to start the solar business.
- The table reveals that 47.4% of the rural women were carrying on the financial transactions of their solar business through banks, 51.2% through cash and a mere 1.4% through online. This shows that the majority of the rural women are preferring cash transactions. Thus, rural women from Orissa are the majority who are interested to do cash transactions, while the rural women from Telangana are the majority who are interested in banking transactions and rural women from Andhra Pradesh are the majority who are interested in online transactions of their solar business
- The table shows the rural women’s participation in domestic decision making. It reveals that 4.6% of the rural women felt that their participation in domestic decision making is excellent. The majority, 50.6% of the rural women felt that their participation in domestic decision making is good. Whereas, 39.4% felt it as moderate and 5.6% of the rural women felt that their participation in domestic decision making is least. Rural women from Telangana are the majority who felt that their participation in domestic decision making is good. Rural women from Orissa are the majority who felt that their participation in domestic decision making is moderate.

- The table reveals that 45.4% of the rural women have good, 47.8% have moderate and 6.8% enjoy least accessibility and visibility in social spaces. The rural women from Orissa are the majority who enjoyed good access and visibility in social spaces, while rural women from Bihar are the majority who enjoyed least access and visibility in social spaces.
- All of the rural women said that they were exercising the right to vote effectively.
- From the table, it is inferred that 96% of the rural women have good and excellent self-esteem levels. The rural women from Orissa are the majority who had good self-esteem levels while rural women from Telangana are the majority who had moderate self-esteem levels.
- The table reveals that 97% of the rural women felt that they are empowered with the opportunities in the solar power sector. Empowerment of the rural women from the solar business is more visible in Telangana followed by Orissa, Bihar and Andhra Pradesh.
- Of the rural women, 95% said that they got Recognition in the society by doing solar business when compared to their previous work. The rural women from Orissa are the majority who said that they got Recognition in the society by doing solar business when compared to their previous work.

Findings based on Status, Recognition

Through the Hypotheses testing it is verified that the Status and Recognition of the rural women improved through their solar business.

- The majority of the rural women, 76.4% felt that their status improved among family, friends, neighbours and close relatives. This has a positive impact on the rural women's interests, opinions and attitudes which in turn directly impacted and improved the sales and revenue earned.
- The rural women were inquired if they got recognition in the society by doing solar business compared to their previous work. The majority of the rural women, 95% have the opinion that they got recognition in the society through their solar business.

Challenges Experienced by Rural Women Entrepreneurs in Solar Sector

The businesses started by the rural women entrepreneurs in solar sector are small, unorganized with no competitive advantage. This is due to the lack of experience and necessary training of the rural women. Rural women are mainly concerned with earning decent profits and fail to understand the long term goals of their businesses. They are not in a position to expand their business due to the non-availability of skilled labour in rural areas. Also the poor infrastructural facilities in the rural areas add to their woes.

Also, the rural women entrepreneurs may be required to deal with difficult tasks as they aim to expand their business enterprise and the track needs to up-scaling themselves with improvisation mechanism like better service, more amount of capital for expansion and good marketing techniques.

The rural women entrepreneurs may have fewer customers in the initial stages. Good business management practices are to be implemented for the success in the long run.

Lack of good communication is a common problem usually faced by these rural women. These rural women may not have the business flourishing especially during the non-agricultural work season. Sometimes they are not able to run their businesses cost effectively ultimately. Beforehand training is a must upon the start of their Solar stations. Incentives offered for the work are low compared to the drudgery. Women entrepreneurs are finding it difficult to provide the incentives while keeping the costs low.

5. SUGGESTIONS

From the above findings, the contribution of socio- cultural factors for the empowerment of rural women in solar power sector is confirmed and the following suggestions are advocated to strengthen the socio- cultural factors for the empowerment of rural women in the solar sector.

Firstly, the rural women should know about the various chances available in the solar sector. Also, the information regarding the emerging opportunities in the solar sector suitable for rural women should be made known to them.

Secondly, required training should be given to these women before the start of their Solar stations. During the training they should understand the hospitality procedure to be adopted towards their customers. They should also be trained in the communication skills.

Thirdly, as these women do not have the required capital to start the business, they should be guided with the procedures to procure the loans. They should be informed of the advantages to form and work in cooperatives to enable the easy procurement of capital.

Fourthly, the rural women should be guided with regard to marketing of their services. They should be made aware of creating business networks in this process.

Lastly, as these women lack the experience and confidence to run the business, they should be supported by the family throughout and by the society in the initial stages.

Thus, it is suggested that the government of India and other NGO's should work together to bolster the rural women's socio-cultural development by providing required skills training, diversification sources of women income, guidance with the procedures to procure the loans, creating business networks and so on.

6. CONCLUSION

Rural women are integral to the solar sector in rural areas since they can play significant role in carrying on the solar businesses and managing the resources. In turn their participation is very crucial in the development of the rural solar sector. They have the prospective to contribute to the promotion of the solar sector in terms of their indigenous knowledge and skills relating to providing efficient services.

Also, this study shows how the rural women in Andhra Pradesh, Bihar, Orissa and Telangana have managed to establish successful solar ventures and how they have managed to increase the opportunity of self-employment, cultural and social capabilities and recognition among rural women.

Thus this study has been an effective tool to gain insight into the concept of rural women empowerment in solar sector focusing on to study the influence of socio- cultural factors for the empowerment of rural women in solar power sector and to suggest measures for rural women empowerment from solar businesses.

7. REFERENCES

- [1] Madhavi, G. (2012). *Empowerment and Entrepreneurship of rural women- Government Initiatives*. International Journal of Advanced Research ISSN 2320-5407 2012. <http://www.journalijar.com/article/5560/empowerment-and-entrepreneurship-of-rural-women-government-initiatives/>
- [2] Dr. Ila Jogi. (2014). “*Women Empowerment through Entrepreneurship Development*”. International Science Congress Association. ISBN: 978-93-84648-47-3 <http://www.kgdmcollegeacs.com/wp-content/uploads/2013/08/Dr.P.V-Rasal.pdf>
- [3] Dr. Chandrasekhar Reddy N. (2014). *Rural Women Empowerment and Entrepreneurship Development in India*. International Journal of Business and Administration Research Review, Vol.3, Issue.5, 2014 ISSN-2348-0653 <http://www.ijbarr.com/downloads/3007201417.pdf>
- [4] Ekesionye E. N and Okolo A. N5 January, 2012, —Women empowerment and participation in economic activities: Indispensable tools for self- reliance and development of Nigerian society| [Department of Educational Foundations, Faculty of Education, University of Nigeria, Nsukka, Nigeria]. Educational Research and Review Vol. 7(1), pp. 10-18.
- [5] Tambunan, Tulus, (2009), Women entrepreneurship in Asian developing countries: Their development and main constraints, Journal of Development and Agricultural Economics Vol. 1(2), Page No. 027-040.the glass ceiling. Thousand Oaks, CA: Sage.
- [6] Syed Shah Alam (Corresponding author), MohdFauziMohdJani, Nor Asiah Omar (May 2011), —An Empirical Study of Success Factors of Women Entrepreneurs in Southern Region in Malaysia|, International Journal of Economics and Finance Vol. 3, No. 2.
- [7] Debra Efroymsen, Buddhadeb Biswas, and Shakila Ruma (September 2007), —The Economic Contribution of Women in Bangladesh Through their Unpaid Labour, Analysis and report writing, WBB Trust –HealthBridge, Dhaka.
- [8] Hackler, Darrene; Harpel, Ellen and Mayer, Heike, (2008), —Human Capital and Women’s Business Ownership|, Arlington, Office of Advocacy U.S. Small Business Administration, August 2006, VA 22201 [74], No. 323
- [9] Women entrepreneurs and sustainable energy.pdf - UN Women ... <https://trainingcentre.unwomen.org/.../Global%20Programme%20Document%20-%20...>
- [10] SurendraNathBhardwaj, Swati Parashar, Dr. BabitaPandey and PuspamitaSahu, —Women Entrepreneurship in India: Opportunities and Challenges|. www.chimc.in/volume2.1/volume2issue1/gurendranathbhardwaj.pdf
- [11] shodhganga.inflibnet.ac.in/bitstream/10603/38356/9/09_chapter%203.pdf Chapter 3 conceptual framework of women empowerment and ...