Chapter – 5

Data Analysis & Interpretation

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Data Analysis & Interpretation

5.1 Introduction

This chapter of data analysis and interpretation concerned with the analysis of the data collected through survey of structured questionnaire. Researcher had administered questionnaire to about 550 numbers of respondents of the eminent companies among the fields of utility scale renewable energy projects. However, researcher receives considerably good response through personnel follow up from top management authorities of the renewable energy projects companies duly filled in questionnaire responses of about 252, which seems to be quite good responses being a senior as well as middle and junior management category of personnel.

5.2 Statistical Analysis:

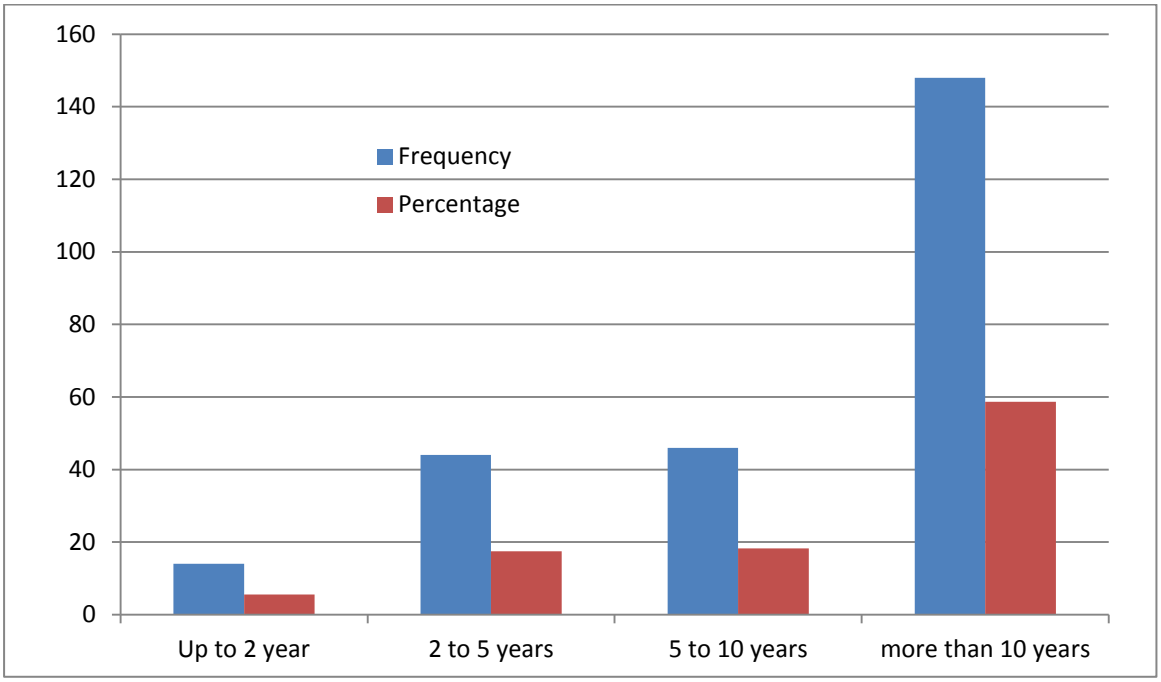
The analyses of responses obtained from various respondents based on years of experience against the questionnaire are presented as under:

Table 5.1: Break up of respondents with reference to `Years of Experience.

Years of experience of respondents	Frequency	Percentage
Up to 2 years	14	5.6
2 to 5 Years	44	17.5
5 to 10 Years	46	18.3
More than 10 Years	148	58.7
Total	252	100

Source: Computed from Primary Data

Fig : 5.1 Graphical presentation of breakup of respondents with reference to `Years of Experience`.



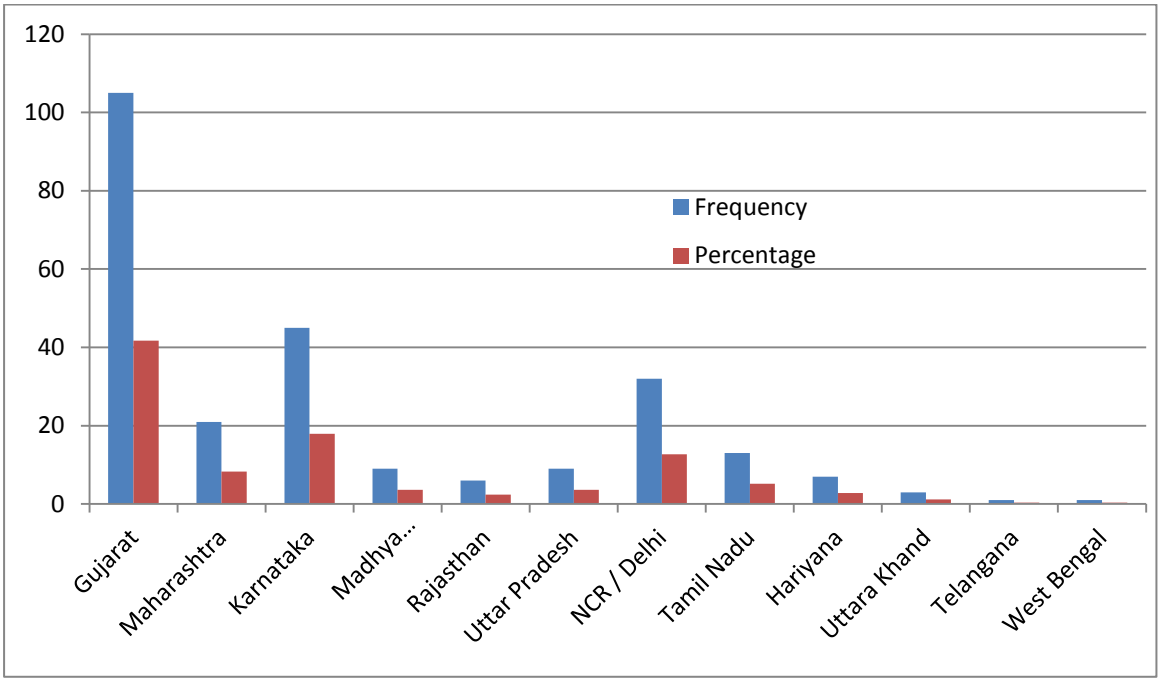
From the above, it is evident that the classes of respondents are highly reach in terms of experience of utility scale renewable energy projects as such 58.7 %age respondents are having more than 10 years of experience in the field.

Table 5.2: Break up of respondents companies presence in various state of India

State	Frequency	Percentage
Gujarat	105	41.7
Maharashtra	21	8.3
Karnataka	45	17.9
Madhya Pradesh	9	3.6
Rajasthan	6	2.4
Uttar Pradesh	9	3.6
NCR / Delhi	32	12.7
Tamil Nadu	13	5.2
Hariyana	7	2.8
Uttara Khand	3	1.2
Telangana	1	0.4
West Bengal	1	0.4
Total	252	100.0

Source: Computed from Primary Data

Fig : 5.2 Graphical presentation of Breakup of respondents companies presence in various state of India



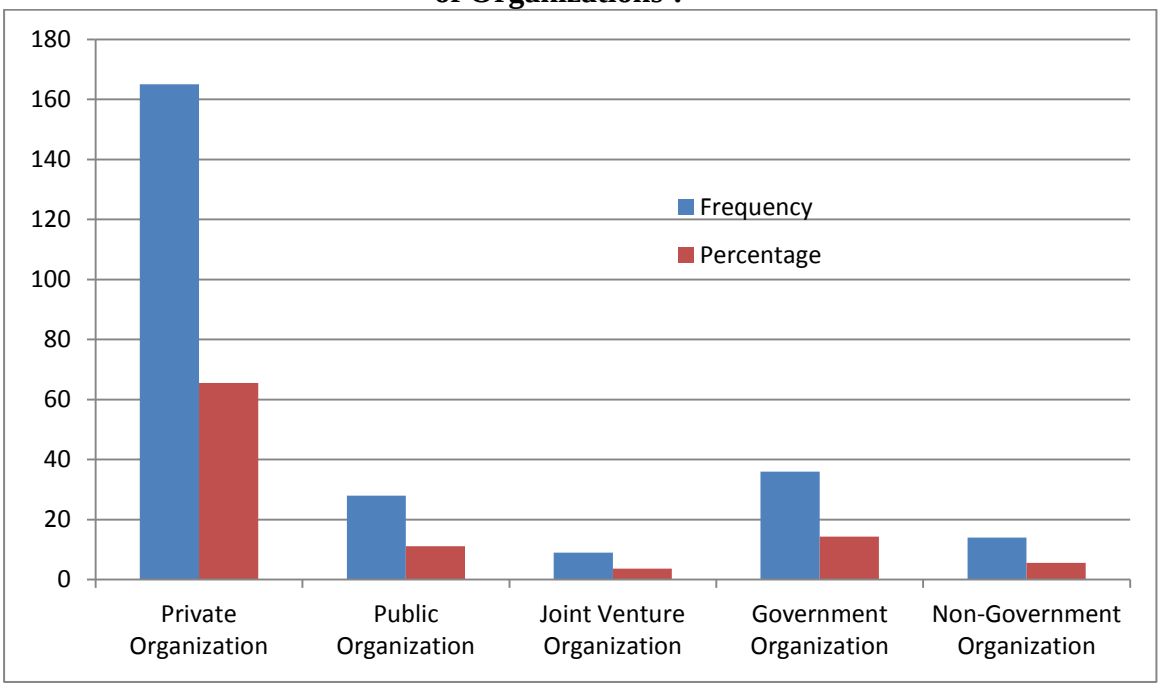
As far as state wise respondents are concerned, the majority of respondents are from Gujarat containing 41.7 percentages next to which falls Karnataka contains 17.9 percentages and NCR/Delhi having 12.7 percentages of respondents.

Table 5.3: Break up of respondents companies by `Types of Organizations`.

Types of Organizations	Frequency	Percentage
Private Organization	165	65.5
Public Organization	28	11.1
Joint Venture Organization	9	3.6
Government Organization	36	14.3
Non-Government Organization	14	5.6
Total	252	100.0

Source: Computed from Primary Data

Fig : 5.3 Graphical presentation of Breakup of respondents companies by `Types of Organizations`.



The researchers have analyze the data collected for respondents companies by types of organizations which reveal that majority of respondents i.e. 65.5 percentages are from Private companies, followed by government companies respondent to the tune of 14.3 percentages.

Table 5.4: Break up of stake holders/ contributor respondents.

Stakeholders	**Frequency**	**Percentage**
Manufacturers	70	9.37
Supplier	72	9.64
EPC Contractor	159	21.29
Project Developer	135	18.07
Investor	33	4.42
Financier	16	2.14
Policy maker	15	2.01
Consultant	101	13.52
Power Purchaser	8	1.07
Independent power producer	30	4.02
Captive Users	6	0.80
Research Institution	17	2.28
Promoters of renewable energy	36	4.82

Renewable Energy power traders	7	0.94
Other stake holders	42	5.62
Total	747	100.0

The researchers have analyzed the data collected for stake holders / Contributors respondents which reveal that majority of stakeholders respondents i.e. 159 (21.29%) are from EPC contractor, followed by Project developer 135 (18.07%) and consultant 101 (13.52%).

Further, Researcher has attempted to assess the perception of various stakeholders for their responsibility / contribution for the development of renewable energy projects (solar & wind) in five point scale.

Table No 5.5 : Perception of various stakeholders for their responsibility / contribution for the development of renewable energy projects

Sr No	Stakeholders	Strongly Agree		Agree		Don`t Know		Disagree		Strongly Disagree		Mean	Standard deviation
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
1	Manufacturers	105	41.7	114	45.2	15	6	18	7.1	0	0	1.7857	0.8478
2	Supplier	64	25.4	155	61.5	16	6.3	17	6.7	0	0	1.9444	0.7659
3	EPC Contractor	151	59.9	94	37.3	4	1.6	3	1.2	0	0	1.4405	0.5925
4	Project Developer	186	73.8	65	25.8	1	0.4	0	0	0	0	1.2659	0.4516
5	Investor	97	38.5	77	30.6	35	13.9	42	16.7	1	0.4	2.0992	1.1051
6	Financier	77	30.6	97	38.5	33	13.1	44	17.5	1	0.4	2.1865	1.0679
7	Policy maker	148	58.7	90	35.7	9	3.6	4	1.6	1	0.4	1.4921	0.6827
8	Consultant	41	16.3	123	48.8	38	15.1	49	19.4	1	0.4	2.3889	0.9898
9	Power Purchaser	159	63.1	73	29.0	13	5.2	6	2.4	1	0.4	1.4802	0.7386
10	Independent power producer	157	62.3	79	31.3	13	5.2	3	1.2	0	0	1.4524	0.6512
11	Captive Users	133	52.8	94	37.3	16	6.3	8	3.2	1	0.4	1.6111	0.7779
12	Research Institution	27	10.7	110	43.7	56	22.2	56	22.2	3	1.2	2.5952	0.9874
13	Promoters of Renewable Energy	162	64.3	75	29.8	11	4.4	3	1.2	1	0.4	1.4365	0.6739

14	Renewable Energy Power Trader	134	53.2	81	32.1	20	7.9	16	6.3	1	0.4	1.6865	0.8976
15	Other stake holders	13	5.2	101	40.1	113	44.8	20	7.9	5	2.0	2.6151	0.7875

Source: Computed from Primary Data

Fig : 5.4 Graphical presentation of Perception of various stakeholders for their contribution

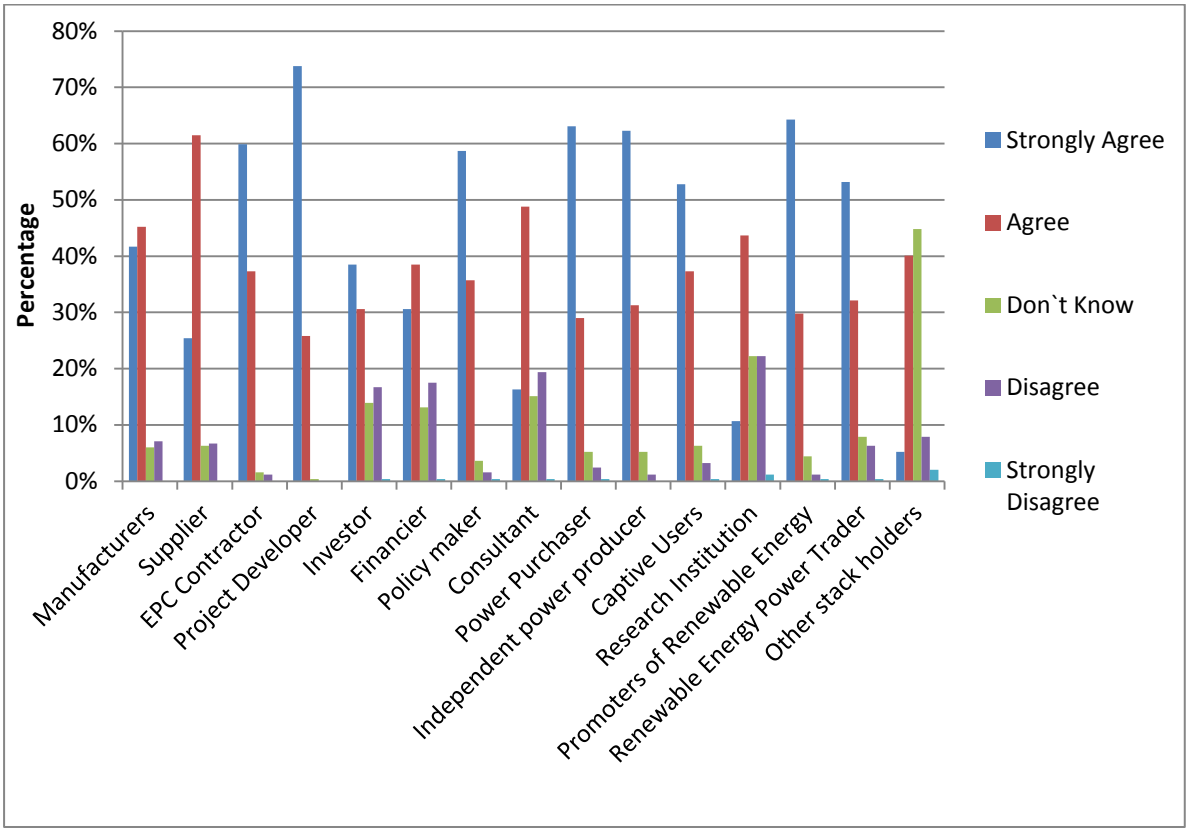


Fig No: perception of various stakeholders for their responsibility / contribution for the development of renewable energy projects

Interpretation:

The perception of various stakeholders for their contribution for the development of renewable energy projects narrated as under:

Manufacturers: – Majority of respondents i.e. 45.2 % agrees and 41.7 % respondents strongly agree for manufacturer contribution for the development of renewable energy projects. Where, 7.1% respondents are disagree and none of the respondents are strongly disagree for manufacturer contribution for the development of renewable energy projects. The mean is 1.7857 and standard deviation is 0.8478.

Supplier: – Majority of respondents i.e. 61.5 % agrees and 25.4 % respondents strongly agree for suppliers contribution for the development of renewable energy projects. Where, 6.7% respondents are disagree and none of the respondents are strongly disagree for suppliers contribution for the development of renewable energy projects. The mean is 1.9444 and standard deviation is 0.7659.

EPC contractor: – Majority of respondents i.e. 59.9 % strongly agrees and 37.3 % respondents agree for EPC contractor`s contribution for the development of renewable energy projects. Where, 1.2% respondents are disagree and none of the respondents are strongly disagree for EPC contractor`s contribution for the development of renewable energy projects. The mean is 1.440 and standard deviation is 0.5925.

Project Developers: – Majority of respondents i.e. 73.8 % strongly agrees and 25.8 % respondents agree for Project Developer `s contribution for the development of renewable energy projects. Where, none of the respondents are agree or strongly disagree for EPC contractor`s contribution for the development of renewable energy projects. The mean is 1.2659 and standard deviation is 0.4516.

Investors: – Majority of respondents i.e. 38.5 % strongly agrees and 30.6 % respondents agree for Investor `s contribution for the development of renewable energy projects. Where, 16.7% respondents are disagree and 0.4% of respondents are strongly disagreeing for Investor `s contribution for the development of renewable energy projects. The mean is 2.0992 and standard deviation is1.1051.

Financier: – Majority of respondents i.e. 38.5 % agrees and 30.6 % respondents strongly agree for Financier`s contribution for the development of renewable energy projects. Where, 17.5% respondents are disagree and 0.4% of respondents are strongly disagree for Financier`s contribution for the development of renewable energy projects. The mean is 2.1865 and standard deviation is 1.0679.

Policy maker: – Majority of respondents i.e. 58.7 % strongly agrees and 35.7 % respondents agree for Policy maker `s contribution for the development of renewable energy projects. Where, 1.6% respondents are disagree and 0.4% of respondents are

strongly disagree for Policy maker `s contribution for the development of renewable energy projects. The mean is 1.4921 and standard deviation is 0.6827.

Consultant: – Majority of respondents i.e. 48.8 % agrees and 16.3 % respondents strongly agree for Consultant `s contribution for the development of renewable energy projects. Where, 19.4% respondents are disagree and 0.4% of respondents are strongly disagree for Consultant `s contribution for the development of renewable energy projects. The mean is 2.3889 and standard deviation is 0.9898.

Power Purchaser: – Majority of respondents i.e. 63.1 % strongly agrees and 29.0 % respondents agree for Power Purchaser`s contribution for the development of renewable energy projects. Where, 2.4% respondents are disagree and 0.4% of respondents are strongly disagree for Power Purchaser`s contribution for the development of renewable energy projects. The mean is 1.4802 and standard deviation is 0.7386.

Independent power producer: – Majority of respondents i.e. 62.3 % strongly agrees and 31.3 % respondents agree for Independent power producer `s contribution for the development of renewable energy projects. Where, 1.2% respondents are disagree and none of the respondents are strongly disagree for Independent power producer `s contribution for the development of renewable energy projects. The mean is 1.4524 and standard deviation is 0.6512.

Captive Users: – Majority of respondents i.e. 51.8 % strongly agrees and 37.3 % respondents agree for Captive Users `s contribution for the development of renewable energy projects. Where, 1.2% respondents are disagree and 0.4% of the respondents are strongly disagree for Captive Users `s contribution for the development of renewable energy projects. The mean is 1.6111 and standard deviation is 0.7779.

Research Institution: – Majority of respondents i.e. 43.7% agrees and only 10.7 % respondents agree for Research Institution`s contribution for the development of renewable energy projects. Where, 22.2% respondents are disagree and 1.2% of the respondents are strongly disagree for Research Institution`s contribution for the

development of renewable energy projects. The mean is 2.5952 and standard deviation is 0.9874.

Promoters of Renewable Energy: – Majority of respondents i.e. 64.3% strongly agrees and 29.8 % respondents agree for Promoters of Renewable Energy`s contribution for the development of renewable energy projects. Where, 1.20% respondents are disagree and 0.4% of the respondents are strongly disagree for Promoters of Renewable Energy`s contribution for the development of renewable energy projects. The mean is 1.4365 and standard deviation is 0.6739.

Renewable Energy Power Trader: – Majority of respondents i.e. 53.2% strongly agrees and 29.8 % respondents agree for Renewable Energy Power Trader`s contribution for the development of renewable energy projects. Where, 1.20% respondents are disagree and 0.4% of the respondents are strongly disagree for Renewable Energy Power Trader`s contribution for the development of renewable energy projects. The mean is 1.6865 and standard deviation is 0.8976.

Other stake holders: – Majority of respondents i.e. 40.1% agrees and only 5.2 % respondents agree for other stake holder's contribution for the development of renewable energy projects. Where, 44.8% respondents don't know, 7.90% respondents are disagree and 2.0% of the respondents are strongly disagree for Other stake holder's contribution for the development of renewable energy projects. The mean is 2.6151 and standard deviation is 0.7875.

Descriptive statistics on the perception of stake holders regarding "potential of Solar Renewable Energy in India":

Table 5.6: Descriptive statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
11.1) India has a tremendous potential of solar radiation	252	3.00	1.00	4.00	1.8175	.73502
11.2) Different state/area have different solar energy potential	252	2.00	1.00	3.00	1.8135	.60619
11.3) There is tremendous scope of solar Power project development	252	3.00	1.00	4.00	1.9246	.80231
11.4) The target of 100 GW of Solar power project will be achieved up to 2022	252	4.00	1.00	5.00	2.7817	.95932
11.5) Installation of solar power projects are growing at a speed as desired which may fully utilized the available solar energy resource	252	4.00	1.00	5.00	3.2143	.91562
Valid N (list wise)	252					

Note: Likert scale: 1-Strongly Agree, 2- Agree, 3- Don`t Know, 4- Disagree and Strongly Disagree (1 being the highest scale)

Source: Computed from Primary Data

The five point likert scale is considered an interval scale. The mean is very significant. Here the mean from range 1 to 1.8 means strongly agree, the mean from range 1.81 to 2.60 means agree, 2.61 to 3.40 means don`t know, from 3.41 to 4.20 means dis agree and from 4.21 to 5 means strongly disagree.

In the first statement, the mean is 1.82 which revealed that most of the stake holders are agree that `India has a tremendous potential of solar radiation`. The mean of the second statement is also 1.81 which revealed that the majority of stake holders are agree that `Different state/area have different solar energy potential`. The third statement about `There is tremendous scope of solar Power project development`, the majority of stake holders are again agree as the mean is of 1.92. The mean of the fourth statement is 2.78 revealed that the majority of stake holders perceived that they

don`t know whether `The target of 100 GW of Solar power project will be achieved up to 2022 or not`. Again it is revealed that majority of the stake holders don`t know that `Installation of solar power projects are growing at a speed as desired which may fully utilized the available solar resource` as seen from the mean of 3.21.

Descriptive statistics on the perception of stake holders regarding "potential of wind Renewable Energy in India":

Table 5.7: Descriptive statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
12.1) India has a tremendous potential of Wind radiation	252	1.00	1.00	2.00	1.2302	.42177
12.2) Different state/area have different Wind energy potential	252	3.00	1.00	4.00	1.6310	.54546
12.3) There is tremendous scope of Wind Power project development	252	2.00	1.00	3.00	1.4008	.56639
12.4) The target of 60 GW of Wind power project will be achieved up to 2022	252	4.00	1.00	5.00	3.6667	1.01777
12.5) Installation of Wind power projects are growing at a speed as desired which may fully utilized the available Wind energy resource	252	4.00	1.00	5.00	4.1349	.95603
Valid N (list wise)	252					

Note: Likert scale: 1-Strongly Agree, 2- Agree, 3- Don`t Know, 4- Disagree and Strongly Disagree (1 being the highest scale)

Source: Computed from Primary Data

Again, the five point likert scale is considered in the range of means similarly as taken in earlier statistics. In the first statement, the mean is 1.23 which revealed that most of the stake holders are strongly agree that `India has a tremendous potential of Wind resources`. The mean of the second statement is 1.63 which revealed that again the majority of stake holders are strongly agree that `Different state/area have different wind energy potential`. The third statement about `There is tremendous scope of wind Power project development`, the majority of stake holders are again strongly agree as

the mean is of 1.40. The mean of the fourth statement is 3.67 revealed that the majority of stake holders disagree that `The target of 60 GW of wind power project will be achieved up to 2022`. Again it is revealed that majority of the stake holders dis agree that `Installation of wind power projects are growing at a speed as desired which may fully utilized the available wind energy resource` as seen from the mean of 4.13.

Further, Researcher has attempted to assess the evaluation of perception of various respondent/stockholders regarding various policies identified to help to promote the government target for development of renewable energy projects in five point scale.

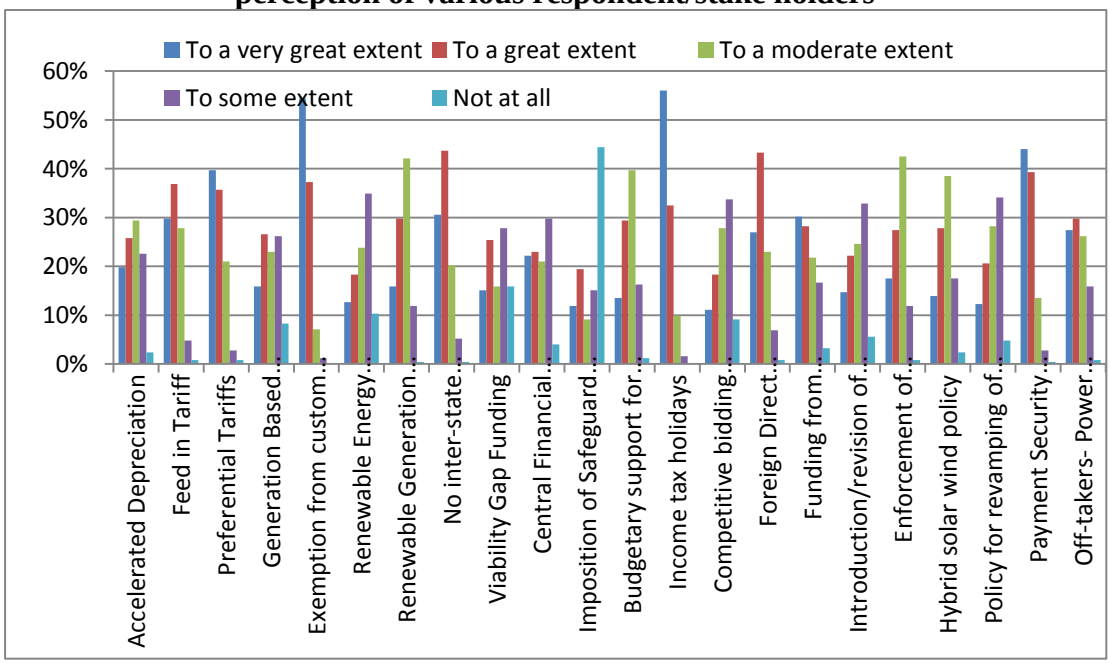
Table No 5.8: Frequency Distribution and descriptive statistic with respect to the perception of various respondent/stake holders regarding various policies identified to help to promote the government target for development of renewable energy projects:

Sr No	Policies	To a very great extent		To a great extent		To a moderate extent		To some extent		Not at all		Mean	Standard deviation
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
1	Accelerated Depreciation	50	19.8	65	25.8	74	29.4	57	22.6	6	2.4	2.6190	1.1103
2	Feed in Tariff	75	29.8	93	36.9	70	27.8	12	4.8	2	0.8	2.0992	0.9115
3	Preferential Tariffs	100	39.7	90	35.7	53	21.0	7	2.8	2	0.8	1.8929	0.8839
4	Generation Based Incentives (GBI)	40	15.9	67	26.6	58	23.0	66	26.2	21	8.3	2.8452	1.2157
5	Exemption from custom duty	137	54.4	94	37.3	18	7.1	3	1.2	0	0	1.5516	0.6808
6	Renewable Energy Certificates	32	12.7	46	18.3	60	23.8	88	34.9	26	10.3	3.1190	1.2016
7	Renewable Generation Obligation	40	15.9	75	29.8	106	42.1	30	11.9	1	0.4	2.5119	0.9124
8	No inter-state transmission charges	77	30.6	110	43.7	51	20.2	13	5.2	1	0.4	2.0119	0.8677
9	Viability Gap Funding	38	15.1	64	25.4	40	15.9	70	27.8	40	15.9	3.0397	1.3324
10	Central Financial Assistance	56	22.2	58	23.0	53	21.0	75	29.8	10	4.0	2.7024	1.2218

11	Imposition of Safeguard duty	30	11.9	49	19.4	23	9.1	38	15.1	112	44.4	3.6071	1.4965
12	Budgetary support for R&D and demonstration of technology	34	13.5	74	29.4	100	39.7	41	16.3	3	1.2	2.6230	0.9514
13	Income tax holidays	141	56.0	82	32.5	25	9.9	4	1.6	0	0	1.5714	0.7353
14	Competitive bidding process	28	11.1	46	18.3	70	27.8	85	33.7	23	9.1	3.1151	1.1495
15	Foreign Direct Investment	68	27.0	109	43.3	58	23.0	15	6.9	2	0.8	2.1032	0.8956
16	Funding from government institutions for financing term loan	76	30.2	71	28.2	55	21.8	42	16.7	8	3.2	2.3452	1.1655
17	Introduction/revision of solar policy	37	14.7	56	22.2	62	24.6	83	32.9	14	5.6	2.9246	1.1665
18	Enforcement of renewable purchase Obligation	44	17.5	69	27.4	107	42.5	30	11.9	2	0.8	2.5119	0.9425
19	Hybrid solar wind policy	35	13.9	70	27.8	97	38.5	44	17.5	6	2.4	2.6667	0.9980
20	Policy for revamping of existing solar-wind	31	12.3	52	20.6	71	28.2	86	34.1	12	4.8	2.9841	1.1112
21	Payment Security mechanism	111	44.0	99	39.3	34	13.5	7	2.8	1	0.4	1.7619	0.8174
22	Off-takers- Power Purchase Agreement	69	27.4	75	29.8	66	26.2	40	15.9	2	0.8	2.3294	1.0668

(Source: Computed from Primary Data)

Fig : 5.5 Graphical presentation of descriptive statistic with respect to the perception of various respondent/stake holders



Interpretation for the perception of various respondent/stake holders regarding various policies identified to help to promote the government target for development of renewable energy projects:

Policy 1: Accelerated Depreciation – Majority of respondents i.e. 75.00% show positive response for the policy of acceleration depreciation that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 50 (19.8%) respondent are agree that the given policy supports to a very great extent, 65 (25.8%) agree to a great extent, 74 (29.4%) to a moderate extent, 57 (22.6%) to some extent and 6 (2.6%) respondent not at all agree, the mean of this variable is 2.6190 and standard deviation is 1.1103.

Policy 2: Feed in Tariff – Majority of respondents i.e. 94.5% show positive response for the policy of Feed in Tariff that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 75 (29.8%) respondent are strongly agree that the given policy supports to a very great extent, 93 (36.9%) agree to a great extent, 70 (27.8%) to a moderate extent. However, 12 (4.8%) to some extent and 2 (0.8%) respondent not at all agree, the mean of this variable is 2.0992 and standard deviation is 0.9115.

Policy 3: Preferential Tariffs – Majority of respondents i.e. 96.4% show positive response for the policy of Preferential Tariffs that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 100 (39.7%) respondent are strongly agree that the given policy supports to a very great extent, 90 (35.7%) agree to a great extent, 53 (21.0%) to a moderate extent. However, 7 (2.8%) to some extent and 2 (0.8%) respondent not at all agree, the mean of this variable is 1.8929 and standard deviation is 0.8839.

Policy 4: Generation Based Incentives (GBI)– Majority of respondents i.e. 65.5% show positive response for the policy of GBI that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 40 (15.9%) respondent are strongly agree that

the given policy supports to a very great extent, 67 (26.6%) agree to a great extent, 58 (23.0%) to a moderate extent. However, 66 (26.2%) to some extent and 21 (8.3%) respondent not at all agree, the mean of this variable is 2.8452 and standard deviation is 1.2157.

Policy 5: Exemption from custom duty– Majority of respondents i.e. 98.8% show positive response for the policy of Exemption from custom duty that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 137 (54.4%) respondent are strongly agree that the given policy supports to a very great extent, 94 (37.3%) agree to a great extent. However, only 18 (7.10%) to a moderate extent, 3 (1.20%) to some extent and none of the respondent not at all agree, the mean of this variable is 1.5516 and standard deviation is 0.6808.

Policy 6: Renewable Energy Certificates (REC) – Majority of respondents i.e. 54.8% show positive response for the policy of REC that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 32 (12.7%) respondent are strongly agree that the given policy supports to a very great extent, 46 (18.3%) agree to a great extent, 60 (23.8%) to a moderate extent. However, 88 (34.9%) to some extent and 26 (10.3%) respondent not at all agree, the mean of this variable is 3.1190 and standard deviation is 1.2016.

Policy 7: Renewable Generation Obligation (RGO) – Majority of respondents i.e. 87.8% show positive response for the policy of RGO that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 40 (15.9%) respondent are strongly agree that the given policy supports to a very great extent, 75 (28.8%) agree to a great extent, 106 (42.1%) to a moderate extent. However, 30 (11.9%) to some extent and 1 (0.4%) respondent not at all agree, the mean of this variable is 2.5119 and standard deviation is 0.9124.

Policy 8: No inter-state transmission charges – Majority of respondents i.e. 94.50% show positive response for the policy of No inter-state transmission charges that helps

to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 77 (30.6%) respondent are strongly agree that the given policy supports to a very great extent, 110 (43.7%) agree to a great extent, 51 (20.2%) to a moderate extent. However, 13 (5.2%) to some extent and 1 (0.4%) respondent not at all agree, the mean of this variable is 2.0119 and standard deviation is 0.8677.

Policy 9: Viability Gap Funding (VGF) – Majority of respondents i.e. 56.4% show positive response for the policy of VGF that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 38 (15.1%) respondent are strongly agree that the given policy supports to a very great extent, 64 (25.4%) agree to a great extent, 40 (15.9%) to a moderate extent. However, 70 (27.8%) to some extent and 40 (15.9%) respondent not at all agree, the mean of this variable is 3.0397 and standard deviation is 1.3324.

Policy 10: Central Financial Assistance (CFA) – Majority of respondents i.e. 66.2% show positive response for the policy of CFA that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 56 (22.2%) respondent are strongly agree that the given policy supports to a very great extent, 58 (23.0%) agree to a great extent, 53 (21.0%) to a moderate extent. However, 75 (29.8%) to some extent and 10 (4.0%) respondent not at all agree, the mean of this variable is 2.7024 and standard deviation is 1.2218.

Policy 11: Imposition of Safeguard duty (SGD) – lesser nos. of respondents i.e. only 40.4% show positive response for the policy of SGD that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 30 (11.9%) respondent are strongly agree that the given policy supports to a very great extent, 49 (19.4%) agree to a great extent, 23 (9.1%) to a moderate extent. However, 38 (15.1%) to some extent and more of the respondent 112 (44.4%) not at all agree, the mean of this variable is 3.6071 and standard deviation is 1.4965.

Policy 12: Budgetary support for R&D and demonstration of technology – Majority of respondents i.e. 82.6% show positive response for this policy of support that helps to

promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 34 (13.5%) respondent are strongly agree that the given policy supports to a very great extent, 74 (20.4%) agree to a great extent, 100 (39.7%) to a moderate extent. However, 41 (16.3%) to some extent and 3 (1.2%) respondent not at all agree, the mean of this variable is 2.6230 and standard deviation is 0.9514.

Policy 13: Income tax holidays – Majority of respondents i.e. 90.4% show positive response for the policy of Income tax holidays that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 141 (56.0%) respondent are strongly agree that the given policy supports to a very great extent, 82 (32.5%) agree to a great extent, 25 (9.9%) to a moderate extent. However, 4 (16.0%) to some extent and none of the respondent not at all agree, the mean of this variable is 1.5714 and standard deviation is 0.7353.

Policy 14: Competitive bidding process – Majority of respondents i.e. 57.2% show positive response for the policy of Competitive bidding process that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 28 (11.1%) respondent are strongly agree that the given policy supports to a very great extent, 46 (183%) agree to a great extent, 70 (27.8%) to a moderate extent. However, more of the respondents i.e. 85 (33.7%) to some extent and 23 (9.1%) respondent not at all agree, the mean of this variable is 3.1151 and standard deviation is 1.1495.

Policy 15: Foreign Direct Investment (FDI) – Majority of respondents i.e. 93.3% show positive response for the policy of FDI that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 68 (27.0%) respondent are strongly agree that the given policy supports to a very great extent, 109 (43.3%) agree to a great extent, 58 (23.0%) to a moderate extent. However, 15 (6.9%) to some extent and 2 (0.8%) respondent not at all agree, the mean of this variable is 2.1032 and standard deviation is 0.8956.

Policy 16: Foreign Direct Investment (FDI) – Majority of respondents i.e. 80.2% show positive response for the policy of FDI that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 76 (30.2%) respondent are strongly agree that the given policy supports to a very great extent, 71 (28.2%) agree to a great extent, 55 (21.8%) to a moderate extent. However, 42 (16.7%) to some extent and 8 (3.2%) respondent not at all agree, the mean of this variable is 2.3452 and standard deviation is 1.1655.

Policy 17: Introduction/revision of solar policy – Majority of respondents i.e. 70.5% show positive response for the policy of Introduction/revision of solar policy that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 37 (14.7%) respondent are strongly agree that the given policy supports to a very great extent, 56 (22.2%) agree to a great extent, 62 (24.6%) to a moderate extent. However, 83 (32.9%) to some extent and 14 (5.6%) respondent not at all agree, the mean of this variable is 2.9246 and standard deviation is 1.1665.

Policy 18: Enforcement of renewable purchase Obligation (RPO) – Majority of respondents i.e. 87.4% show positive response for the policy of RPO that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 44 (17.5%) respondent are strongly agree that the given policy supports to a very great extent, 68 (27.4%) agree to a great extent, 107 (42.5%) to a moderate extent. However, 30 (11.9%) to some extent and 2 (0.8%) respondent not at all agree, the mean of this variable is 2.5119 and standard deviation is 0.9425.

Policy 19: Hybrid solar wind policy – Majority of respondents i.e. 80.2% show positive response for the policy of Hybrid solar wind policy that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 35 (13.9%) respondent are strongly agree that the given policy supports to a very great extent, 70 (27.8%) agree to a great extent, 97 (38.5%) to a moderate extent. However, 44 (17.5%) to some extent and 6

(2.4%) respondent not at all agree, the mean of this variable is 2.6667 and standard deviation is 0.9980.

Policy 20: Policy for revamping of existing solar-wind – Majority of respondents i.e. 61.1% show positive response for the policy of Hybrid solar wind policy that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 31 (12.3%) respondent are strongly agree that the given policy supports to a very great extent, 52 (20.6%) agree to a great extent, 71 (28.2%) to a moderate extent. However, 86 (34.1%) to some extent and 12 (4.8%) respondent not at all agree, the mean of this variable is 2.9841 and standard deviation is 1.1112.

Policy 21: Payment Security mechanism – Majority of respondents i.e. 96.8% show positive response for the policy of Payment Security mechanism that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 111 (44.0%) respondent are strongly agree that the given policy supports to a very great extent, 99 (39.3%) agree to a great extent, 34 (13.5%) to a moderate extent. However, 7 (2.8%) to some extent and 1 (0.4%) respondent not at all agree, the mean of this variable is 1.7619 and standard deviation is 0.8174.

Policy 22: Off-takers- Power Purchase Agreement – Majority of respondents i.e. 83.4% show positive response for the policy of Off-takers- Power Purchase Agreement that helps to promote the government target for development of renewable energy projects, which motivates for renewable energy project developments, Where, 69 (27.4%) respondent are strongly agree that the given policy supports to a very great extent, 75 (29.8%) agree to a great extent, 6 (26.2%) to a moderate extent. However, 40 (15.9%) to some extent and 2 (0.8%) respondent not at all agree, the mean of this variable is 2.3294 and standard deviation is 1.0668.

Table 5.9: Frequency Distribution and Descriptive Statistics with respect to factors influencing the decision of installation of renewable energy projects:

Sr No.	Factors influencing the decision of RE projects	To a Very great extent		To a Great Extent		To a Moderate Extent		To Some Extent		Not at all		Mean	Standard deviation
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
1	Payment security mechanism	127	50.4	98	38.9	23	9.1	4	1.6	4	1.6	1.6190	0.7181
2	Centre level policy supports	69	27.4	65	25.8	78	31.0	37	14.7	3	1.2	2.3651	1.0719
3	State level policy support	64	25.4	90	35.70	71	28.2	27	10.7	0	0	2.2421	0.9536
4	Easy of procedure for RE project	50	19.8	89	35.3	64	25.4	46	18.3	3	1.2	2.4563	1.0420
5	Land policies	164	65.1	66	26.2	17	6.7	5	2.0	0	0	1.4563	0.7100
6	Low cost funding from Government institutions	75	29.8	73	29.0	62	24.6	37	14.7	5	2.0	2.3016	1.1061
7	Low cost funding from Private Banks and Institutions	70	27.8	72	28.6	61	24.2	44	17.5	5	2.0	2.3730	1.1237
8	Policy for disposal of solar panels	22	8.7	43	17.1	50	19.8	81	32.1	56	22.2	3.4206	1.2488
9	Availability of facility for disposal of solar panel	25	9.9	41	16.3	47	18.7	79	31.3	60	23.8	3.4286	1.2839
10	Development of Solar Parks at different states	91	36.1	88	34.9	48	19.0	19	7.5	6	2.4	2.0516	1.0340
11	Waiver of transmission & wheeling charges	116	46.0	98	38.9	31	12.3	6	2.4	1	0.4	1.7222	0.7998
12	Renewable Purchase Obligation (RPO)	61	24.2	85	33.7	73	29.0	32	12.7	1	0.4	2.3135	0.9905
13	Exemption of custom duties	166	65.6	66	26.2	15	6.9	5	2.0	0	0	1.4405	0.6975
14	Imposition of safeguard duty	93	36.9	73	29.0	39	15.5	17	6.7	30	11.9	2.2778	1.3398
15	Availability of renewable energy resources	184	73.0	58	23.0	9	3.6	0	0	1	0.4	1.3175	0.5806
16	Availability of off takers	95	37.7	76	30.2	67	26.6	14	5.6	0	0	2.0000	0.9320

17	Availability of evacuation facility	139	55.2	91	36.1	18	7.1	3	1.2	1	0.4	1.5556	0.7147
18	Market competition	66	26.2	102	40.5	69	27.4	15	6.0	0	0	2.1310	0.8716
19	Government target for RE capacity	149	59.1	71.28.2	26	10.3	4	1.6	2	0.8		1.5675	0.8030
20	Supply chain network	51	20.2	79	31.3	87	34.5	35	13.9	0	0	2.4206	0.9643

Interpretation:

Variable 1: Payment security mechanism – Majority of respondents i.e. 98.40 % show positive response to variable of payment security mechanism under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 127 (50.4%) respondent are strongly agree that the given variable influence to a very great extent, 98 (38.9%) agree to a great extent, 23 (9.1%) to a moderate extent, 4 (1.6%) to some extent and not a single respondent not agree, the mean of this variable i.e. payment security mechanism is 1.6190 and standard deviation is 0.7181.

Variable 2: Central level policy support – Majority of respondents i.e. 84.10 % show positive response to variable of central level policy support under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 69 (27.4%) respondent are strongly agree that the given variable influence to a very great extent, 65 (25.8%) agree to a great extent, 78 (31.0%) to a moderate extent, 37 (14.7%) to some extent and 3 (1.2%) not at all, the mean of this variable i.e. Central level policy support is 2.3651 and standard deviation is 1.0719

Variable 3: State level policy support – Majority of respondents i.e. 89.30 % show positive response to variable of state level policy support under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 64 (25.4%) respondent are strongly agree that the given variable influence to a very great extent, 90 (35.7%) agree to a great extent, 71 (28.2%) to a moderate extent, 27 (10.7%) to some extent and not a single respondent not agree, the mean of this variable i.e. State level policy support is 2.2421 and standard deviation is 0.9536.

Variable 4: Easy of procedure for RE projects – Majority of respondents i.e. 80.60 % show positive response to variable of Easy of procedure for RE projects under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 50 (19.8%) respondent are strongly agree that the given variable influence to a very great extent, 89 (35.3%) agree to a great extent, 64 (25.4%) to a moderate extent, 46 (18.3%) to some extent and 3 (1.2%) not at all, the mean of this variable i.e. Easy of procedure for RE projects is 2.4563 and standard deviation is 1.0420.

Variable 5: Land policies – Majority of respondents i.e. 98.00 % show positive response to variable of land policies under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 164 (65.1%) respondent are strongly agree that the given variable influence to a very great extent, 66 (26.2%) agree to a great extent, 17 (6.7%) to a moderate extent, 5 (2.0%) to some extent and not a single respondent not agree, the mean of this variable i.e. Land policies is 1.4563 and standard deviation is 0.71.

Variable 6: Low cost funding from Government institutions – Majority of respondents i.e. 83.30 % show positive response to variable oflow cost funding from Government institutions under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 75 (29.8%) respondent are strongly agree that the given variable influence to a very great extent, 73 (23.0%) agree to a great extent, 62 (24.60%) to a moderate extent, 37 (14.7%) to some extent and 5 (2.0%) not at all, the mean of this variable i.e. Low cost funding from Government institutions is 2.3016 and standard deviation is 1.1061.

Variable 7: Low cost funding from Private Banks and Institutions – Majority of respondents i.e. 80.60 % show positive response to variable of Low cost funding from Private Banks and Institutions under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 70 (27.8%) respondent are strongly agree that the given variable influence to a very great extent, 72 (28.6%) agree to a great extent, 61

(24.2%) to a moderate extent, 44 (17.5%) to some extent and 5 (2.0%) not at all, the mean of this variable i.e. Low cost funding from Private Banks and Institutions is 2.3730 and standard deviation is 1.1237.

Variable 8: Policy for disposal of solar panels – As far as the variable is concern, at present situation the policy for disposal of solar panel is not influencing the development of the renewable energy projects hence 45.60 % of the respondents response is very positive to this variable under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 22 (8.7%) respondent are strongly agree that the given variable influence to a very great extent, 43 (17.1%) agree to a great extent, 50 (19.8%) to a moderate extent, 81 (32.1%) to some extent and 56 (22.2%) not at all, the mean of this variable i.e. policy for disposal of solar panels is 3.4206 and standard deviation is 1.2488.

Variable 9: Availability of facility for disposal of solar panel – As far as the variable is concern, at present situation the Availability of facility for disposal of solar panel is not influencing the development of the renewable energy projects hence 44.80 % of the respondents response is very positive to this variable under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 25 (9.9%) respondent are strongly agree that the given variable influence to a very great extent, 41 (16.3%) agree to a great extent, 47 (18.7%) to a moderate extent, 79 (31.3%) to some extent and 60 (23.8%) not at all, the mean of this variable i.e. Availability of facility for disposal of solar panel is 3.4286 and standard deviation is 1.2839.

Variable 10: Development of Solar Parks at different states – Majority of respondents i.e. 90.10 % show positive response to variable of Development of Solar Parks at different states under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 91 (36.1%) respondent are strongly agree that the given variable influence to a very great extent, 88 (34.9%) agree to a great extent, 48 (19.0%) to a moderate extent, 19 (7.5%) to some extent and 6 (2.4%) not at all, the

mean of this variable i.e. Development of Solar Parks at different states is 2.0516 and standard deviation is 1.0340.

Variable 11: Waiver of transmission & wheeling charges – Majority of respondents i.e. 97.20 % show positive response to variable of Waiver of transmission & wheeling charges support under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 116 (46.0%) respondent are strongly agree that the given variable influence to a very great extent, 98 (38.9%) agree to a great extent, 31 (12.3%) to a moderate extent, 6 (2.4%) to some extent and 1 (0.40%) not at all, the mean of this variable i.e. Waiver of transmission & wheeling charges is 1.7222 and standard deviation is 0.7998.

Variable 12: Renewable Purchase Obligation (RPO) – Majority of respondents i.e. 86.90 % show positive response to variable of Renewable Purchase Obligation (RPO) under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 61 (24.2%) respondent are strongly agree that the given variable influence to a very great extent, 85 (33.7%) agree to a great extent, 73 (29.0%) to a moderate extent, 32 (12.7%) to some extent and 1 (0.40%) not at all, the mean of this variable i.e. Renewable Purchase Obligation (RPO) is 2.3135 and standard deviation is 0.9905.

Variable 13: Exemption of custom duties – Majority of respondents i.e. 98.00 % show positive response to variable of exemption of custom duties under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 166 (65.9%) respondent are strongly agree that the given variable influence to a very great extent, 66 (26.2%) agree to a great extent, 15 (6.0%) to a moderate extent, 5 (2.0 %) to some extent, the mean of this variable i.e. exemption of custom duties is 1.4405 and standard deviation is 0.6975.

Variable 14: Imposition of safeguard duty – Majority of respondents i.e. 81.30 % show positive response to variable of Imposition of safeguard duty under the factors that influence the decision of installation of renewable energy projects, which

motivates for renewable energy project developments. Where, 93 (36.9%) respondent are strongly agree that the given variable influence to a very great extent, 73 (29.0%) agree to a great extent, 39 (15.5%) to a moderate extent, 17 (6.7%) to some extent and 30 (11.90%) not at all, the mean of this variable i.e. Imposition of safeguard duty is 2.2778 and standard deviation is 1.3398.

Variable 15: Availability of renewable energy resources – Majority of respondents i.e. 99.60 % show positive response to variable of Availability of renewable energy resources under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 184 (73.0%) respondent are strongly agree that the given variable influence to a very great extent, 58 (23.0%) agree to a great extent, 9 (3.6%) to a moderate extent and 1 (0.40%) not at all, the mean of this variable i.e. Availability of renewable energy resources is 1.3175 and standard deviation is 0.5806.

Variable 16: Availability of off takers – Majority of respondents i.e. 94.40 % show positive response to variable of availability of off takers under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 95 (37.7%) respondent are strongly agree that the given variable influence to a very great extent, 76 (30.2%) agree to a great extent, 67 (26.6%) to a moderate extent and 14 (5.6%) to some extent, the mean of this variable i.e. Availability of off takers is 2.0000 and standard deviation is 0.9320.

Variable 17: Availability of evacuation facility – Majority of respondents i.e. 86.90 % show positive response to variable of Availability of evacuation facility under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 139 (55.2%) respondent are strongly agree that the given variable influence to a very great extent, 91 (36.1%) agree to a great extent, 18 (7.1%) to a moderate extent, 3 (1.2%) to some extent and 1 (0.40%) not at all, the mean of this variable i.e. Availability of evacuation facility is 1.5556 and standard deviation is 0.7147.

Variable 18: Market competition – Majority of respondents i.e. 94.00 % show positive response to variable of Market competition under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 66 (26.2%) respondent are strongly agree that the given variable influence to a very great extent, 102 (40.5%) agree to a great extent, 69 (27.4%) to a moderate extent and 15 (6.0%) to some extent, the mean of this variable i.e. Market competition is 2.1310 and standard deviation is 0.8716.

Variable 19: Government target for RE capacity – Majority of respondents i.e. 97.60 % show positive response to variable of Government target for RE capacity under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 149 (59.1%) respondent are strongly agree that the given variable influence to a very great extent, 71 (28.3%) agree to a great extent, 26 (10.3%) to a moderate extent, 4 (1.6%) to some extent and 2 (0.80%) not at all, the mean of this variable i.e. Government target for RE capacity is 1.5675 and standard deviation is 0.8030.

Variable 20: Supply chain network – Majority of respondents i.e. 86.90 % show positive response to variable of Supply chain network under the factors that influence the decision of installation of renewable energy projects, which motivates for renewable energy project developments. Where, 51 (20.2%) respondent are strongly agree that the given variable influence to a very great extent, 79 (31.3%) agree to a great extent, 87 (34.5%) to a moderate extent and 35 (13.9%) to some extent, the mean of this variable i.e. Supply chain network is 2.4206 and standard deviation is 0.9643.

Table 5.10 : Frequency Distribution and Descriptive Statistics with respect to adequacy of manufacturing capacity in India for major/main component of the utility scale renewable power projects to meet the increasing demand/ target set by government of India.

Sr No	Statistics	More than sufficient		Sufficient		Less sufficient		Very less sufficient		Not sufficient		Mean	Standard deviation
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
1	**Manufacturing Capacity**	10	4.0	53	21.0	47	18.7	51	20.2	91	36.1	3.6349	1.2725

Very less percentage of respondents i.e. 25.00 % show positive response to adequacy of manufacturing facility in India for major/main component of the utility scale renewable power projects to meet the increasing demand/ target set by government of India which de-motivates for renewable energy project developments. Where, 91 (36.1%) respondent perceived that the manufacturing capacity is not sufficient, 51 (20.2%) agree to a very less sufficient manufacturing capacity and 47 (18.7%) to a less sufficient manufacturing capacity while only 10 (4.0%) respondent perceived that the manufacturing capacity is more than sufficient and 53 (21.0%) opine sufficient capacity. The mean value being 3.6349 and standard deviation is 1.2725.

Descriptive statistics on the perception of stake holders regarding "motivation support behind the decision on investing in utility scale renewable energy projects":

Table 5.11 : Descriptive statistics

Sr No	Motivation supports	N	Range	Minimum	Maximum	Mean	Std. Deviation
1	Renewable power are the future	252	3.00	1.00	4.00	1.2460	0.52334
2	Returns on generations	252	4.00	1.00	5.00	2.6230	0.98835
3	Congenial policies in renewable energy at state level	252	4.00	1.00	5.00	2.5437	1.01094
4	High tariff rates	252	4.00	1.00	5.00	3.0119	1.21571
5	Provision of Renewable Energy Certification	252	4.00	1.00	5.00	3.2262	1.20442

6	Government targets for renewable energy development	252	3.00	1.00	4.00	1.4921	0.75476
7	Lower operating cost	252	4.00	1.00	5.00	2.7579	0.99847
8	Secured payment mechanism	252	4.00	1.00	5.00	1.9484	0.98662
9	Availability of renewable energy resources	252	3.00	1.00	4.00	1.3651	0.66324
10	Open access / third party sale of power	252	3.00	1.00	4.00	2.3770	0.98026
	Valid N (list wise)	252					

Note: Likert scale: 1-To a very great extent, 2- To a great extent, 3- To a moderate extent, 4- To some extent and 5 – Not at all (1 being the highest scale)

Source: Computed from Primary Data

The five point likert scale is considered an interval scale. The mean is very significant. Here the mean from range 1 to 1.8 means strongly agree/To a very great extent, the mean from range 1.81 to 2.60 means agree/ to a great extent , 2.61 to 3.40 means agree /to a moderate extent, from 3.41 to 4.20 means to some extent and from 4.21 to 5 means strongly disagree/ not at all.

In the first statement, the mean is 1.2460 which revealed that most of the stake holders are strongly agree to a very great extent that ` Renewable power are the future `. The mean of the second statement is 2.6230 which revealed that again the majority of stake holders are agree to moderate extent for the motivation support that ` Returns on generations `. The third statement about ` Congenial policies in renewable energy at state level `, the majority of stake holders are agree to a great extent as the mean is of 2.5437. The mean of the fourth statement is 3.0119 revealed that the majority of stake holders agree to a moderate extent that ` High tariff rates `. The mean of the fifth statement is 3.2262 revealed that the majority of stake holders agree to a moderate extent that `Provision of renewable energy certificates `. The mean of the sixth statement is 1.4921 revealed that the majority of stake holders are strongly agree to a very great extent that ` Government targets for renewable energy development `. The mean of the seventh statement is 2.7579 revealed that the majority of stake holders agree to a moderate extent that ` Lower operating cost `. The mean of the eighth statement is 1.9484 revealed that the majority of stake holders agree to a great extent that ` Secured payment mechanism `. The mean of the ninth statement is 1.3651 revealed that the majority of stake holders strongly agree to a very great extent that `

Availability of renewable energy resources `. The tenth last statement revealed that majority of the stake holders agree to a great extent for the motivation support that ` Open access / third party sale of power ` as seen from the mean of 2.3770.

Here, the Researcher has attempted to assess the evaluation of perception of various respondent/stockholders regarding various "motivation support behind the decision on investing in utility scale renewable energy projects" in five point scale.

Descriptive statistics on the perception of stake holders regarding "points contribute to make utility scale renewable energy project more affordable and viable":

Table 5.12 : Descriptive statistics

Sr No	Points contributed for viability	N	Range	Minimum	Maximum	Mean	Std. Deviation
1	Government should provide more subsidy	252	4.00	1.00	5.00	1.9762	0.96937
2	Invest more in R&D for technology development	252	3.00	1.00	4.00	2.3611	0.89740
3	Promote domestic manufacturing capacity	252	4.00	1.00	5.00	1.6032	0.83336
4	Implementation of policies	252	3.00	1.00	4.00	2.2460	0.97936
5	Secured payment mechanism	252	3.00	1.00	4.00	1.5000	0.70570
6	Power Purchase Agreement with Off takers/DISCOM	252	3.00	1.00	4.00	2.0397	1.05544
7	Waival of inter-state transmission charges	252	3.00	1.00	4.00	1.5952	0.69921
8	Facilitate international trade	252	4.00	1.00	5.00	1.8165	0.95643
9	Facilitate supply chain management	252	4.00	1.00	5.00	2.1865	0.98643
10	Must Run status to RE power	252	4.00	1.00	5.00	1.3889	0.63084
11	Waival of taxes & duties	252	4.00	1.00	5.00	1.4206	0.70120
12	Awareness and capacity building	252	4.00	1.00	5.00	2.8532	1.11056
	Valid N (list wise)	252					

Note: Likert scale: 1-To a very great extent, 2- To a great extent, 3- To a moderate extent, 4- To some extent and 5 – Not at all (1 being the highest scale)

Source: Computed from Primary Data

The five point likert scale is considered an interval scale. The mean is very significant. Here the mean from range 1 to 1.8 means strongly agree/To a very great extent, the mean from range 1.81 to 2.60 means agree/ to a great extent , 2.61 to 3.40 means agree /to a moderate extent, from 3.41 to 4.20 means to some extent and from 4.21 to 5 means strongly disagree/ not at all.

In the first statement, the mean is 1.9762 which revealed that most of the stake holders are strongly agree to a very great extent that ` Government should provide more subsidy `. The mean of the second statement is 2.3611 which revealed that again the majority of stake holders are agree to moderate extent for the motivation support that ` Invest more in R&D for technology development `. The third statement about ` Promote domestic manufacturing capacity `, the majority of stake holders are strongly agree to a very great extent as the mean is of 1.6032. The mean of the fourth statement is 2.2460 revealed that the majority of stake holders agree to a moderate extent that ` Implementation of policies `. The mean of the fifth statement is 1.5000 revealed that the majority of stake holders strongly agree to a very great extent that ` Secured payment mechanism `. The mean of the sixth statement is 2.0397 revealed that the majority of stake holders are agree to a great extent that ` Power Purchase Agreement with Off takers/DISCOM `. The mean of the seventh statement is 1.5957 revealed that the majority of stake holders strongly agree to a very great extent that ` Waival of inter-state transmission charges `. The mean of the eighth statement is 1.8165 revealed that the majority of stake holders agree to a great extent that ` Facilitate international trade `. The mean of the ninth statement is 2.1865 revealed that the majority of stake holders agree to a great extent that ` Facilitate supply chain management `. The tenth statement revealed that majority of the stake holders strongly agree to a very great extent for the motivation support that ` Must Run status to RE power ` as seen from the mean of 1.3889. The eleventh statement revealed that majority of the stake holders again strongly agree to a very great extent for the motivation support that ` Waival of taxes & duties ` as seen from the mean of 1.4206. The last twelfth statement revealed that majority of the stake holders agree to a moderate extent for the motivation support that ` Awareness and capacity building ` as seen from the mean of 2.8532

Here, the Researcher has attempted to assess the evaluation of perception of various respondent/stockholders regarding various "contribute to make utility scale renewable energy project more affordable and viable" in five point scale.

5.3 Reliability and Validity of questionnaire:

This research study is ground on questionnaire, hence it is highly essential to test the reliability as well as validity of the surveyed questionnaire. In order to test the validity of the questionnaire, factor analysis method is to be utilized.

Reliability Analysis of questionnaire for the study on ``SWOT Analysis of renewable energy projects``:

The reliability of questionnaire that were utilized for collection of data as primary source of data collection is formulated suitably in order to understand the perception of various stake holders in the field of renewable energy projects. Moreover, the questionnaire formed for research study shall be reliable in order to provide effective and clear information which needs to be ascertain by respondents so that effective conclusion can be derived from the research study. The reliability of questionnaire is ascertained by the way that if the same particular questionnaire is utilized for collection of information from other respondent from different states or region it could have furnish credible information which are consistent from one respondent to other for different states or region. The researcher here, uses the Statistical Package for Social Science (SPSS) for reliability statistical analysis with the help of Cronbach Alpha also well known as Coeffienct Alfa and is well known method of measurement of reliability, which normally varies between 0 to 1.

The **Cronbach`s Alfa** of 268 no's of items is 0.975 which is between 0 to 1 and nearer to almost 1, which indicates that all the 268 items of the questionnaires were **97.5%** which concludes that **overall information is credible** and have best **internal consistency** of reliability between the variables, as per the thumb rules for research that is greater than 0.9 – excellent and a value higher than 0.5 is sufficient. In this research it is 97.5% which considered being the excellent reliability. Even researcher analyzed Cronbach Alfa if item deleted and the conclusion is that by deleting only one item the Cronbach Alfa increases only by 0.1 % i.e. 97.6% over 97.5%

Table No 5.13: Reliability Statistics

Cronbach's Alpha	N of Items
.975	268

Source: Computed from Primary Data

5.4 Factor Analysis:

Factor analysis is a statistical tool that applied mainly for the purpose of reducing large number of variable data into a small set of summarized variables referred to as factors mainly to interpret the results. In the present research study the analysis is to be done to summarize various factors related to the utility scale renewable energy projects, both solar and wind energy projects. The factor analysis helps us to identify the factor which explains the relationship among set of variables. Hence, the factor analysis is used for checking the validity of the questionnaire. The validity comprises of convergent and discriminant validity, which has been checked by means of Principal Component Analysis (PCA). The statistical analysis is being carried out on each of the question as narrated here under consisting of various factors through the PCA statistical analysis. The principal component factor analysis had been carried out to verify the validity of the questionnaire.

The factor analysis is categorized into two main categories namely Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). The exploratory factor analysis is generally utilized to identify the underlying factor structure of a set of identified variables and is used for scales that have not been tested earlier for their reliability or validity, While Confirmatory factor analysis is a statistical technique that have been used to verify the factor structure for scales that have been tested earlier for their validity or reliability.

5.4.1 Exploratory Factor Analysis:

This research study consists of effect of different factors related to the development of renewable energy projects in various states of India. The different factors effecting the development of renewable energy projects are considered in various questions of the questionnaires like question no. 17 related to the factors influencing the decision of installation of renewable energy (Solar & Wind) projects. While, question no.19 focuses on constraints for Renewable Energy project capacity development with

respect to available RE potential. Whereas question no. 26 related to the challenges / barriers affect for the developments of utility scale renewable energy projects. Moreover, question no. 28 focuses on the government policies that are supportive for the investment in the utility scale renewable energy projects. Further, question no. 42 focuses on the factors that contribute to make utility scale renewable energy (solar & wind power) project more affordable and viable. All these questions focuses on the various variable factors are the subject matter of research study identified by the researcher. Hence the entire above individual factor analysis is to be studied by the researcher. The factors effecting to a very great extent to not at all to each of the given statement. Hence in order to analyze such statements exploratory factor analysis method of statistical technique seems to be more appropriate and suitable because it considered every variable as interdependent as well as independent variables.

In order to conduct above study, the selected respondents from various stakeholders group were pursued for filling the questionnaire containing said questions which are formed on the ground of five point likert scale that is `to a very great extent` to some extent and `not at all` to every questions.

- **Exploratory Factor Analysis (EFA) for statement related to the factors influencing the decision of installation of renewable energy projects:**

In this research study, the statistical analysis technique of exploratory factor analysis has been adopted for question no. 17 related to the factors influencing the decision of installation of renewable energy projects. The statement consists of 20 factors and analysis is to be carried out through the `PCA` technique, in which the total variance of the collected data is to be considered. For which `Varimax` option in SPSS was utilized. The respondent i.e. various stake holders related to the field of renewable energy projects were pursue to obtain valuable responses towards the different variables related to the factors influencing the decision of installation of renewable energy projects. Accordingly all the 252 nos of stake holders had responded for the said statements.

5.4.2 Appropriateness in Factor Analysis (EFA):

The appropriateness of factor analysis is identified by examining the correlations that exists between all the pairs of variables which are included in the in the factor analysis study. If the correlation between the variables seems to be smaller, which conclude that the factor analysis is not appropriate. Hence in order to apply factor analysis techniques most of the variable under analysis is to be correlated with each other. The sphericity test under the Bartlett`s is a statistical technique that is being used for examining whether the variables are correlated with each other or not. The interpretation of assumed null hypothesis indicates that the variables among the population are uncorrelated or correlated with each other in the given population.

The other statistical technique which is used for factor analysis calculation is Kaiser-Meyer – Olkin well known as KMO technique which is measure of sampling adequacy. In KMO statistics, the index is used to conclude the appropriateness of factor analysis. The researcher concludes that the factor analysis is appropriate if the value of index should be between 0.5 to 1. If the value of index is below the 0.5 than factor analysis is in appropriate statistical technique for this research study.

Table No 5.14: KMO and Bartlett`s test of Sphericity

(Question No: 17 - related to the factors influencing the decision of installation of renewable energy projects)

Kaiser Meyer Olkin Measure and Bartlett`s Test			
Sampling Adequacy as per **Kaiser Meyer Olkin Measure**	Bartlett`s test of Sphericity		
0.772	Approx. Chi-Square	df	Sig
	2383.191	190	0.000

Source: Computed from Primary Data

The above data revealed that the approximate Chi-square value of 2383.191 at degree of freedom 190 under the Bartlett`s test of Sphericity, the significance value (p-value) is 0.000. The researcher analyzes the Bartlett`s test of Sphericity, considering significance level (P-value) of 0.05. In case if significance value is less than 0.05, Researcher will reject the $H_{0.}$ On the contrary, if the significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject.

In this case, the significance value (p-value) is 0.000 of test which is less than p value of 0.05, hence null hypothesis is rejected, which indicates that the selected variables in the population are also not correlated. Hence it indicates that the given data`s are suitable for Factor Analysis testing.

The KMO measure was 0.772, this is adequately larger than 0.5. Hence, in view of data analysis such factor analysis is seems to be appropriate.

Table No.5.15 KMO ranges Communalities

KMO ranges Communalities		
	Initial	Extraction
Payment security mechanism	1.000	.542
Centre level policy supports	1.000	.730
State level policy support	1.000	.638
Easy of procedure for RE project	1.000	.558
Land policies	1.000	.495
Low cost funding from Government institutions	1.000	.809
Low cost funding from 1 Banks and Institutions	1.000	.779
Policy for disposal of solar panels	1.000	.807
Development of Solar Parks at different states	1.000	.511
Waiver of transmission & wheeling charges	1.000	.554
Renewable Purchase Obligation (RPO)	1.000	.603
Exemption of custom duties	1.000	.638
Availability of facility for disposal of solar panel	1.000	.788
Imposition of safeguard duty	1.000	.527
Availability of renewable energy resources	1.000	.558
Availability of off takers	1.000	.671
Availability of evacuation facility	1.000	.614
Market competition	1.000	.439
Government target for RE capacity	1.000	.668
Supply chain network	1.000	.509
Extraction Method: Principal Component Analysis		

All the statements are fall under the communalities ranges almost more than 0.500, hence all statements are taken into consideration for these factor analyses as these statements contributing for the factor analysis except the statement market competition.

5.4.3 Identifying the method of Factor Analysis (EFA):

Once the appropriateness of factor analysis is finalized with the testing of given relevant data through appropriate method of KMO as well as Bartlett`s test of Sphericity, next step is to utilize two basic approaches for factor analysis i.e. first is Principal Component Analysis (PCA) and second one is Confirmatory Factor Analysis (CFA). However in order to analyze 20 selected variables, PCA analysis methodology is useful for factor analysis as described earlier. Moreover, it is further advisable in case that the major issue is to identify the smallest number of factors, it needs to take into consideration for variance in the given data utilized for multivariate study and such factors is considered as principal mechanism.

5.5 Principal Component Analysis (PCA):

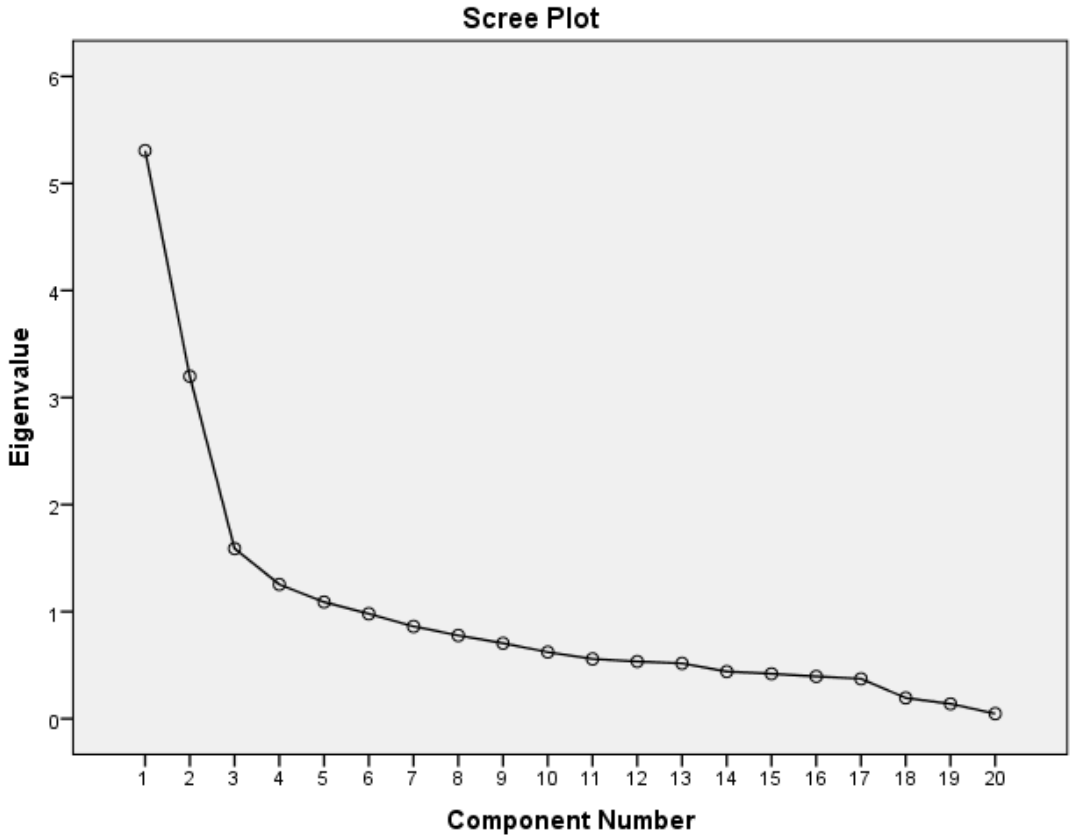
Table 5.16 : Total Variance Explained

(Question No: 17 - related to the factors influencing the decision of installation of renewable energy projects)

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.306	26.531	26.531	5.306	26.531	26.531	4.062	20.308	20.308
2	3.198	15.991	42.522	3.198	15.991	42.522	2.426	12.131	32.440
3	1.589	7.945	50.467	1.589	7.945	50.467	2.354	11.772	44.211
4	1.254	6.270	56.738	1.254	6.270	56.738	1.803	9.013	53.224
5	1.090	5.449	62.187	1.090	5.449	62.187	1.793	8.963	62.187
6	.980	4.902	67.089						
7	.862	4.309	71.397						
8	.777	3.887	75.285						
9	.705	3.523	78.807						
10	.622	3.109	81.916						
11	.558	2.789	84.705						
12	.535	2.673	87.379						
13	.517	2.585	89.963						
14	.440	2.200	92.164						
15	.420	2.100	94.264						
16	.395	1.973	96.237						
17	.373	1.864	98.101						
18	.194	.970	99.071						
19	.139	.695	99.766						
20	.047	.234	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed from Primary Data

Fig : 5.6 Scree Plot for factors influencing the decision of installation of renewable energy projects



The captioned table concludes the inferences revealed from the analysis of PCA with Varimax rotation. The table indicates that total five different factors were extracted based on the total variance analyzed. The fifth components in the initial solution have an Eigen values over 1 and the cumulative variance explained for about 62.187% of the total variables in the unique 20 variables influencing the decision of installation of renewable energy projects . Hence it shows that the analysis has drastically condensed the intricacy of the larger numbers of data set by using of such components, with loss of information about 37.813% i.e. (100-62.187). Here the sample size selected for this factor analysis was 252 stake holder respondents from various regions of India. Further, it is revealed that personal five factors based on percentage of variance explained in the given table works out to 26.531, 42.522, 50.467, 56.738 and 62.187 respectively.

Table 5.17 : Rotated Factor Loading Matrix [a]

(Question No: 17 - related to the factors influencing the decision of installation of renewable energy projects)

Rotated Component/ factor loading Matrix [a]					
Factors influencing the decision of installation of renewable energy projects	**Component / Factor loading**				
	1	**2**	**3**	**4**	**5**
Payment security mechanism				.671	
Centre level policy supports	.624				
State level policy support	.605				
Easy of procedure for RE project	.643				
Land policies		.460			
Low cost funding from Government institutions		.832			
Low cost funding from 1 Banks and Institutions		.804			
Policy for disposal of solar panels	.875				
Development of Solar Parks at different states					.557
Waiver of transmission & wheeling charges			.545		
Renewable Purchase Obligation (RPO)	.657				
Exemption of custom duties			.749		
Availability of facility for disposal of solar panel	.866				
Imposition of safeguard duty					.530
Availability of renewable energy resources			.579		
Availability of off takers				.728	
Availability of evacuation facility			.763		
Market competition					.618
Government target for RE capacity					.695
Supply chain network	.617				
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 11 iterations.					

Source: Computed from Primary Data

The captioned table shows the result of rotation component matrix method utilized for factor analysis by suppressing small coefficient by absolute value 0.4. The various factors were rotated with Varimax method with Kaiser Normalization. The extraction method employed for the analysis was principal component analysis. The table revealed that the factors that differs from one other and supports to understand the

factor by setting every variables primarily on any one of the factors. The rotation solution suggest researcher towards load factors for every variables in a set of data, this data sets are used to know the unusual variables. The loading values of the factors are above 0.4. Hence, none of the statements out of 20 needs to be excluded from the factor analysis.

Table 5.18 : Naming of Group of statements
(Statements from Question no.17)

Factor Number	Statements as per the questionnaire	Factor Name
Factor :1	Q 17_2 Centre level policy supports	Policy & procedure
	Q 17_3 State level policy support	
	Q 17_4 Easy of procedure for RE project	
	Q 17_8 Policy for disposal of solar panels	
	Q 17_11 Renewable Purchase Obligation (RPO)	
	Q 17_13 Availability of facility for disposal of solar panel	
	Q 17_20 Supply chain network	
Factor : 2	Q 17_5 Land policies	Funding & Charges
	Q 17_6 Low cost funding from Government institutions	
	Q 17_7 Low cost funding from Private Banks and Institutions	
Factor: 3	Q 17_10 Waiver of transmission & wheeling charges	Exemption & waiver
	Q 17_12 Exemption of custom duties	
	Q 17_15 Availability of renewable energy resources	
	Q 17_17 Availability of evacuation facility	
Factor: 4	Q 17_1 Payment security mechanism	Off taker & payment
	Q 17_16 Availability of off takers	
Factor: 5	Q 17_9 Development of Solar Parks at different states	Development & competition
	Q 17_14 Imposition of safeguard duty	
	Q 17_18 Market competition	
	Q 17_19 Government target for RE capacity	

Source: Computed from Primary Data

Table 5.19 : Distribution of Statements of (Question no.17_1 to 17_20)

Name of Factors	Factors Number	Statement Number						
Policy & procedure	1	2	3	4	8	11	13	20
Funding & Charges	2	5	6	7				
Exemption & waiver	3	10	12	15	17			
Off taker & payment	4	1	16					
Development & competition	5	9	14	18	19			

Source: Computed from Primary Data

Factor No. 1: The captioned table of rotated factor loading matrix inferred that the first component comprises for seven variables. The variables like Centre level policy supports, State level policy support, Easy of procedure for RE project, Policy for disposal of solar panels, Renewable Purchase Obligation (RPO), Availability of facility for disposal of solar panel and Supply chain network indicates factor loading of .624, .605, .643, .875, .657, .866, and .617 respectively. Consequently, the appropriate names referred as `Policy & procedure`. The **Cronbach`s Alfa** of 7 no's of statements is 0.873 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.873	7

Factor No. 2: The captioned table of rotated factor loading matrix inferred that the second components comprises for three variables. The variables like Land policies, Low cost funding from Government institutions and Low cost funding from Private Banks & Institutions indicates factor loading of .460, .832 and .804 respectively. Consequently, the appropriate names referred as `` Funding & Charges `` The **Cronbach`s Alfa** of 3 no's of statements is 0.785 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	No of Items
.785	3

Factor No. 3: The captioned table of rotated factor loading matrix inferred that the third components comprises for four variables. The variables like Waiver of transmission & wheeling charges, Exemption of custom duties, Availability of renewable energy resources, Availability of evacuation facility indicates factor loading of .545, .749, .579 and .763 respectively. Consequently, the appropriate names referred as `` Exemption & waiver `` The **Cronbach`s Alfa** of 4 no's of statements is 0.661 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	No of Items
.661	4

Factor No. 4: The captioned table of rotated factor loading matrix inferred that the forth components comprises for two variables. The variables like Payment security mechanism

And Availability of off takers indicates factor loading of .671 and .728 respectively. Consequently, the appropriate names referred as `` off taker & payment `` The **Cronbach`s Alfa** of 2 no's of statements is 0.586 which is more than 0.5, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	No of Items
.586	2

Factor No. 5: The captioned table of rotated factor loading matrix inferred that the fifth components comprises for four variables. The variables like Development of Solar Parks at different states, Imposition of safeguard duty, Market competition, Government target for RE capacity indicates factor loading of .557, .530, .618 and .695respectively. Consequently, the appropriate names referred as `` Development & competition `` The **Cronbach`s Alfa** of 4 no's of statements is 0.500 which is nearer to almost 0.5, which considered being the goog reliability.

Reliability Statistics

Cronbach's Alpha	No of Items
.500	4

- **Principal Component Analysis (PCA) for statement related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential.**

In this study, the statistical analysis technique of exploratory factor analysis has been adopted for question no. 19 related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential. The statement consists of 10 factors and analysis is to be carried out through the `PCA` technique, in which the total variance of the collected data is to be considered. For which `Varimax` option in SPSS was utilized. The respondent i.e. various stake holders related to the field of renewable energy projects were pursue to obtain valuable responses towards the different variables related to the factors influencing the decision of installation of renewable energy projects. Accordingly all the 252 nos of stake holders had responded for the said statements.

5.5.1 Appropriateness in Factor Analysis:

The appropriateness of factor analysis is identified by examining the correlations that exists between all the pairs of variables which are included in the in the factor analysis study. If the correlation between the variables seems to be smaller, which conclude that the factor analysis is not appropriate. Hence in order to apply factor analysis techniques most of the variable under analysis is to be correlated with each other. The sphericity test under the Bartlett`s is a statistical technique that is being used for examining whether the variables are correlated with each other or not. The interpretation of assumed null hypothesis indicates that the variables among the population are uncorrelated or correlated with each other in the given population.

The other statistical technique which is used for factor analysis calculation is Kaiser- Meyer – Olkin well known as KMO technique which is measure of sampling adequacy. In KMO statistics, the index is used to conclude the appropriateness of factor analysis. The researcher concludes that the factor

analysis is appropriate if the value of index should be between 0.5 to 1. If the value of index is below the 0.5 than factor analysis is in appropriate statistical technique for this research study.

Table No 5.20: KMO and Bartlett`s test of Sphericity

(Question No: 19 - related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential.)

Kaiser Meyer Olkin Measure and Bartlett`s Test			
Sampling Adequacy as per **Kaiser Meyer Olkin Measure**	Bartlett`s test of Sphericity		
0.712	Approx. Chi-Square	df	Sig
	584.666	45	0.000

Source: Computed from Primary Data

The above data revealed that the approximate Chi-square value of 584.666 at degree of freedom 45 under the Bartlett`s test of Sphericity, the significance value (p-value) is 0.000. The researcher analyzes the Bartlett`s test of Sphericity, considering significance level (P-value) of 0.05. In case if significance value is less than 0.05, Researcher will reject the H_0. On the contrary, if the significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject.

In this case, the significance value (p-value) is 0.000 of test which is less than p value of 0.05, hence null hypothesis is rejected, which indicates that the selected variables in the population are also not correlated. Hence it indicates that the given data`s are suitable for Factor Analysis testing.

The KMO measure was 0.712, this is adequately larger than 0.5. Hence, in view of data analysis such factor analysis is seems to be appropriate.

Table: 5.21 KMO ranges Communalities

KMO ranges Communalities		
Statements	Initial	Extraction
Land acquisition	1.000	.472
State Development Energy Authority registration, Approval and inspection of project.	1.000	.701
Supply chain issues	1.000	.663
Transmission infrastructure availability & Evacuation facility	1.000	.633
Taxes and duties like Custom duty, safeguard duty, variable taxes	1.000	.554
DISCOM Payment issues	1.000	.498
Financing issues	1.000	.599
Non availability of solar parks	1.000	.568
Off-takers issue	1.000	.538
General issues	1.000	.714
Extraction Method: Principal Component Analysis.		

All the statements are fall under the communalities ranges almost more than 0.50, hence all statements are taken into consideration for these factor analyses as these statements contributing for the factor analysis except the statement Land acquisition.

5.5.2 Identifying the method of Factor Analysis:

Once the appropriateness of factor analysis is finalized with the testing of given relevant data through appropriate method of KMO as well as Bartlett`s test of Sphericity, next step is to utilize two basic approaches for factor analysis i.e. first is Principal Component Analysis (PCA) and second one is Confirmatory Factor Analysis (CFA). However in order to analyze 10 selected variables, PCA analysis methodology is useful for factor analysis as described earlier. Moreover, it is further advisable in case that the major issue is to identify the smallest number of factors, it needs to take into consideration for variance in the given data utilized for multivariate study and such factors is considered as principal mechanism.

Principal Component Analysis (PCA):

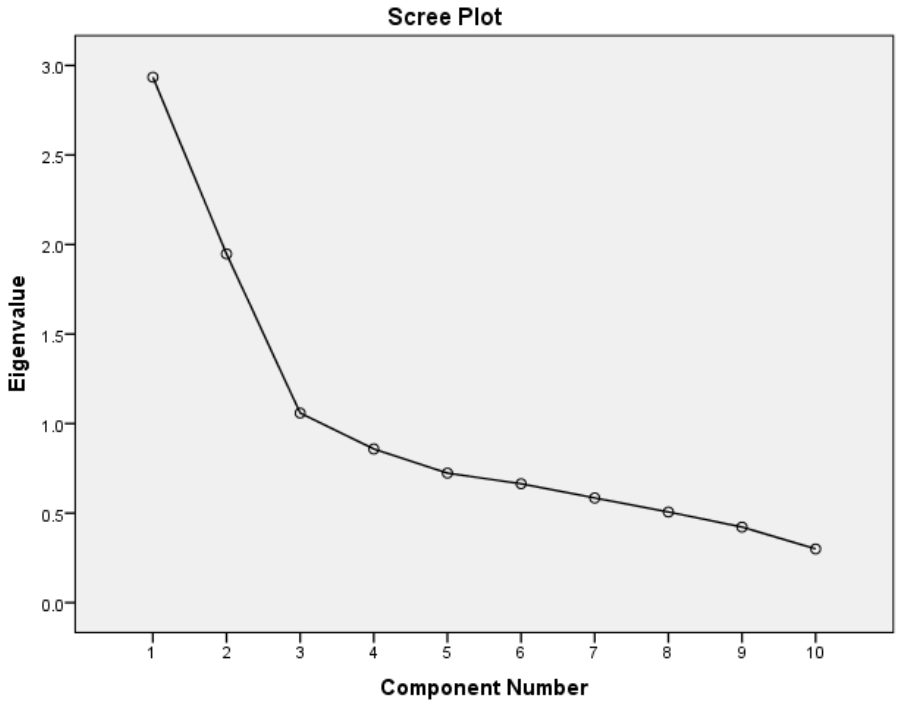
Table 5.22: Total Variance Explained

(Question No: 19 - related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential.)

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.934	29.344	29.344	2.934	29.344	29.344	2.314	23.143	23.143
2	1.948	19.478	48.821	1.948	19.478	48.821	1.974	19.742	42.885
3	1.059	10.588	59.409	1.059	10.588	59.409	1.652	16.524	59.409
4	.858	8.582	67.991						
5	.724	7.235	75.226						
6	.664	6.641	81.867						
7	.585	5.846	87.713						
8	.506	5.064	92.776						
9	.422	4.222	96.998						
10	.300	3.002	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed from Primary Data

Fig : 5.7 Scree Plot for the factors on constraints for Renewable Energy project capacity development with respect to available RE potential



The captioned table concludes the inferences revealed from the analysis of PCA with Varimax rotation. The table indicates that total three different factors were extracted based on the total variance analyzed. The third components in the initial solution have an Eigen values over 1 and the cumulative variance explained for about 59.409% of the total variables in the unique 10 variables related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential. Hence it shows that the analysis has drastically condensed the intricacy of the larger numbers of data set by using of such components, with loss of information about 40.591% i.e. (100-62.187). Here the sample size selected for this factor analysis was 252 stake holder respondents from various regions of India. Further, it is revealed that personal three factors based on percentage of variance explained in the given table works out to 29.344, 48.821and 59.409 respectively.

Table 5.23: Rotated Factor Loading Matrix [a]

(Question No: 19 - related to the factors on constraints for Renewable Energy project capacity development with respect to available RE potential.)

Rotated Component/ factor loading Matrix [a]			
Factors on constraints for Renewable Energy project capacity development with respect to available RE potential	**Component / Factor loading**		
	1	2	3
Land acquisition		.632	
State Development Energy Authority registration, Approval and inspection of project.	.826		
Supply chain issues	.786		
Transmission infrastructure availability & Evacuation facility		.622	
Taxes and duties like Custom duty, safeguard duty, variable taxes		.723	
DISCOM Payment issues		.624	
Financing issues			.657
Non availability of solar parks			.732
Off-takers issue			.636
General issues	.804		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

Source: Computed from Primary Data

The captioned table shows the result of rotation component matrix method utilized for factor analysis by suppressing small coefficient by absolute value 0.4. The various factors were rotated with Varimax method with Kaiser Normalization. The extraction method employed for the analysis was principal component analysis. The table revealed that the factors that differs from one other and supports to understand the factor by setting every variables primarily on any one of the factors. The rotation solution suggest researcher towards load factors for every variables in a set of data, this data sets are used to know the unusual variables. The loading values of the factors are above 0.4. Hence, none of the statements out of 10 needs to be excluded from the factor analysis.

Table 5.24: Naming of Group of statements
(Statements from Question no.19)

Factor Number	Statements as per the questionnaire	Factor Name
Factor :1	Q19_2 State Development Energy Authority registration, Approval and inspection of project.	General & approvals
	Q19_3 Supply chain issues	
	Q19_10 General issues	
Factor: 2	Q19_1 Land acquisition	Payment & taxes
	Q19_4 Transmission infrastructure availability & Evacuation facility	
	Q19_5 Taxes and duties like Custom duty, safeguard duty, variable taxes	
	Q19_6 DISCOM Payment issues	
Factor: 3	Q19_7 Financing issues	Financing & parks
	Q19_8 Non availability of solar parks	
	Q19_9 Off-takers issue	

(Source: Computed from Primary Data)

Table 5.25: Distribution of Statements of (Question no.19_1 to 19_10)

Name of Factors	Factors Number	Statement Number			
General & approvals	1	2	3	10	
Payment & taxes	2	1	4	5	6
Financing & parks	3	7	8	9	

(Source: Computed from Primary Data)

Factor No. 1: The captioned table of rotated factor loading matrix inferred that the first component comprises for four variables. The variables like State Development Energy Authority registration, Approval and inspection of project, Supply chain issues and General issues indicates factor loading of .826, .786 and .804 respectively. Consequently, the appropriate names referred as `` General & approvals `` The **Cronbach`s Alfa** of 3 no's of statements is 0.791 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.791	3

Factor No. 2: The captioned table of rotated factor loading matrix inferred that the second components comprises for three variables. The variables likes Land acquisition, Transmission infrastructure availability & Evacuation facility, Taxes and duties like Custom duty, safeguard duty, variable taxes and DISCOM Payment issues indicates factor loading of .632, .622, .723 and .624 respectively. Consequently, the appropriate names referred as `` Payment & taxes `` The **Cronbach`s Alfa** of 4 no's of statements is 0.586 which is more than 0.500, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.587	4

Factor No. 3: The captioned table of rotated factor loading matrix inferred that the third components comprises for three variables. The variables like Financing issues, Non availability of solar parks and Off-takers issue indicates factor loading of .657, .732 and .6363 respectively. Consequently, the appropriate names referred as ``

Financing & parks `` The **Cronbach`s Alfa** of 3 no's of statements is 0.5723 which is more than 0.500, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.572	3

- **Principal Component Analysis (PCA) for statement related to the challenges / barriers affect for the developments of utility scale renewable energy projects.:**

  In this research study, the statistical analysis technique of exploratory factor analysis has been adopted for question no. 26 related to the challenges / barriers affect for the developments of utility scale renewable energy projects. The statement consists of 14 factors and analysis is to be carried out through the `PCA` technique, in which the total variance of the collected data is to be considered. For which `Varimax` option in SPSS was utilized. The respondent i.e. various stake holders related to the field of renewable energy projects were pursue to obtain valuable responses towards the different variables related to the factors related to the challenges / barriers affect for the developments of utility scale renewable energy projects. Accordingly all the 252 nos of stake holders had responded for the said statements.

  Appropriateness in Factor Analysis:

  The appropriateness of factor analysis is identified by examining the correlations that exists between all the pairs of variables which are included in the in the factor analysis study. If the correlation between the variables seems to be smaller, which conclude that the factor analysis is not appropriate. Hence in order to apply factor analysis techniques most of the variable under analysis is to be correlated with each other. The sphericity test under the Bartlett`s is a statistical technique that is being used for examining whether the variables are correlated with each other or not. The interpretation of assumed null hypothesis indicates that the variables among the population are uncorrelated or correlated with each other in the given population.

The other statistical technique which is used for factor analysis calculation is Kaiser- Meyer – Olkin well known as KMO technique which is measure of sampling adequacy. In KMO statistics, the index is used to conclude the appropriateness of factor analysis. The researcher concludes that the factor analysis is appropriate if the value of index should be between 0.5 to 1. If the value of index is below the 0.5 than factor analysis is in appropriate statistical technique for this research study.

Table No 5.26: KMO and Bartlett`s test of Sphericity

(Question No: 26 - related to the challenges / barriers affect for the developments of utility scale renewable energy projects)

Kaiser Meyer Olkin Measure and Bartlett`s Test			
Sampling Adequacy as per **Kaiser Meyer Olkin Measure**	**Bartlett`s test of Sphericity**		
0.867	Approx. Chi-Square	df	Sig
	2083.746	91	0.000

Source: Computed from Primary Data

The above data revealed that the approximate Chi-square value of 2083.746 at degree of freedom 91 under the Bartlett`s test of Sphericity, the significance value (p-value) is 0.000. The researcher analyzes the Bartlett`s test of Sphericity, considering significance level (P-value) of 0.05. In case if significance value is less than 0.05, Researcher will reject the $H_{0.}$ On the contrary, if the significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject.

In this case, the significance value (p-value) is 0.000 of test which is less than p value of 0.05, hence null hypothesis is rejected, which indicates that the selected variables in the population are also not correlated. Hence it indicates that the given data`s are suitable for Factor Analysis testing.

The KMO measure was 0.867, this is adequately larger than 0.5. Hence, in view of data analysis such factor analysis is seems to be appropriate.

Table: 5.27. KMO ranges Communalities

KMO ranges Communalities		
Statements	Initial	Extraction
Technology Development	1.000	.692
Supply chain issue	1.000	.539
Taxes and duties	1.000	.742
General Infrastructure development	1.000	.716
Geographical and ecological barriers	1.000	.784
Lack of knowledge and awareness of technologies barriers	1.000	.804
Financial and economical barriers	1.000	.575
Policy & regulatory barriers	1.000	.723
Market related barriers say lack of business model, Lack of defined market	1.000	.744
Initial investment / upfront cost	1.000	.728
Transmission infrastructures development	1.000	.476
Land acquisition issues	1.000	.638
Political issues	1.000	.740
Forecasting & Scheduling / DSM	1.000	.671
Extraction Method: Principal Component Analysis.		

All the statements are fall under the communalities ranges almost more than 0.50, hence all statements are taken into consideration for these factor analyses as these statements contributing for the factor analysis except the statement Transmission infrastructures development

Identifying the method of Factor Analysis:

Once the appropriateness of factor analysis is finalized with the testing of given relevant data through appropriate method of KMO as well as Bartlett`s test of Sphericity, next step is to utilize two basic approaches for factor analysis i.e. first is Principal Component Analysis (PCA) and second one is Confirmatory Factor Analysis (CFA). However in order to analyze 14 selected variables, PCA analysis methodology is useful for factor analysis as described earlier. Moreover, it is further advisable in case that the major issue is to identify the smallest number of factors, it needs to take into consideration for variance in the given data utilized for multivariate study and such factors is considered as principal mechanism.

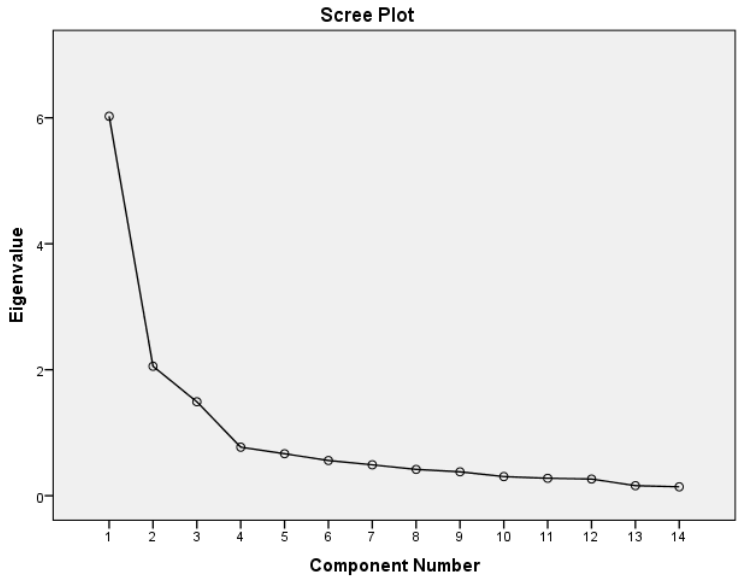
Table 5.28: Total Variance Explained

(Question No: 26 - related to the challenges / barriers affect for the developments of utility scale renewable energy projects)

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.025	43.033	43.033	6.025	43.033	43.033	5.090	36.357	36.357
2	2.055	14.678	57.712	2.055	14.678	57.712	2.848	20.339	56.696
3	1.491	10.652	68.363	1.491	10.652	68.363	1.633	11.667	68.363
4	.770	5.503	73.867						
5	.667	4.763	78.630						
6	.559	3.994	82.623						
7	.490	3.501	86.124						
8	.418	2.987	89.111						
9	.379	2.705	91.816						
10	.304	2.169	93.985						
11	.277	1.979	95.964						
12	.265	1.891	97.856						
13	.159	1.134	98.989						
14	.142	1.011	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed from Primary Data

Fig : 5.8: Scree Plot for factors related to the challenges / barriers affect for the developments of utility scale renewable energy projects



The captioned table concludes the inferences revealed from the analysis of PCA with Varimax rotation. The table indicates that total five different factors were extracted based on the total variance analyzed. The third components in the initial solution have an Eigen values over 1 and the cumulative variance explained for about 68.363% of the total variables in the unique 14 variables related to the challenges / barriers affect for the developments of utility scale renewable energy projects. Hence it shows that the analysis has drastically condensed the intricacy of the larger numbers of data set by using of such components, with loss of information about 31.637% i.e. (100-68.363). Here the sample size selected for this factor analysis was 252 stake holder respondents from various regions of India. Further, it is revealed that personal three factors based on percentage of variance explained in the given table works out to 43.033, 57.712 and 68.363 respectively.

Table 5.29: Rotated Factor Loading Matrix [a]

(Question No: 26 - related to the challenges / barriers affect for the developments of utility scale renewable energy projects)

Rotated Component/ factor loading Matrix [a]			
Factors related to the challenges / barriers affect for the developments of utility scale renewable energy projects	**Component / Factor loading**		
	1	**2**	**3**
Technology Development	.812		
Supply chain issue	.704		
Taxes and duties		.861	
General Infrastructure development	.741		
Geographical and ecological barriers	.847		
Lack of knowledge and awareness of technologies barriers	.890		
Financial and economical barriers		.698	
Policy & regulatory barriers	.646		
Market related barriers say lack of business model, Lack of defined market	.856		
Initial investment / upfront cost			.851
Transmission infrastructures development			.513
Land acquisition issues			.723
Political issues	.617		
Forecasting & Scheduling / DSM		.778	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Source: Computed from Primary Data

The captioned table shows the result of rotation component matrix method utilized for factor analysis by suppressing small coefficient by absolute value 0.4. The various factors were rotated with Varimax method with Kaiser Normalization. The extraction method employed for the analysis was principal component analysis. The table revealed that the factors that differs from one other and supports to understand the factor by setting every variables primarily on any one of the factors. The rotation solution suggest researcher towards load factors for every variables in a set of data, this data sets are used to know the unusual variables. The loading values of the factors are above 0.4. Hence, none of the statements out of 20 needs to be excluded from the factor analysis.

Table 5.30: Naming of Group of statements
(Statements from Question no.26)

Factor Number	Statements as per the questionnaire	Factor Name
Factor :1	Q 26_1 Technology Development	Technology & market
	Q 26_2 Supply chain issue	
	Q 26_4 General Infrastructure development	
	Q 26_5 Geographical and ecological barriers	
	Q 26_6 Lack of knowledge and awareness of technologies barriers	
	Q 26_8 Policy & regulatory barriers	
	Q 26_9 Market related barriers say lack of business model, Lack of defined market	
	Q 26_13 Political issues	
Factor : 2	Q 26_3 Taxes and duties	Financial & Taxes
	Q 26_7 Financial and economical barriers	
	Q 26_14 Forecasting & Scheduling / DSM	
Factor: 3	Q 26_10 Initial investment / upfront cost	Investment & Infrastructures
	Q 26_11 Transmission infrastructures development	
	Q 26_12 Land acquisition issues	

Source: Computed from Primary Data

Table 5.31: Distribution of Statements of (Question no.26_1 to 26_14)

Name of Factors	Factors Number	Statement Number							
Technology & market	1	1	2	4	5	6	8	9	13
Financial & Taxes	2	3	7	14					
Investment & Infrastructures	3	10	11	12					

Source: Computed from Primary Data

Factor No. 1: The captioned table of rotated factor loading matrix inferred that the first component comprises for eight variables. The variables like Technology Development, Supply chain issue, General Infrastructure development, Geographical and ecological barriers, Lack of knowledge and awareness of technologies barriers, Policy & regulatory barriers, Market related barriers say lack of business model, Lack of defined market and Political issues indicates factor loading of .812, .704, .741, .847, .890, .646 and .856 respectively. Consequently, the appropriate names referred as `` Technology & market `` The **Cronbach`s Alfa** of 8 no's of statements is 0.926 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.926	8

Factor No. 2: The captioned table of rotated factor loading matrix inferred that the second components comprises for three variables. The variables like Taxes and duties, Financial and economical barriers and Forecasting & Scheduling / DSM indicates factor loading .861, .698 and .778 respectively. Consequently, the appropriate names referred as `` Financial & Taxes`` The **Cronbach`s Alfa** of 3 no's of statements is 0.766 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.766	3

Factor No. 3: The captioned table of rotated factor loading matrix inferred that the third components comprises for three variables. The variables like Initial investment / upfront cost, Transmission infrastructures development and Land acquisition issues indicates factor loading of .851, .513and .723respectively. Consequently, the appropriate names referred as `` Investment & Infrastructures `` The **Cronbach`s Alfa** of 3 no's of statements is 0.530 which is more than 0.500, which considered being the good reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.530	3

- **Principal Component Analysis (PCA) for statement related to the government policies that are supportive for the investment in the utility scale renewable energy projects:**

In this research study, the statistical analysis technique of exploratory factor analysis has been adopted for question 28 focuses on the government policies that are supportive for the investment in the utility scale renewable energy projects. The statement consists of 12 factors and analysis is to be carried out through the `PCA` technique, in which the total variance of the collected data is to be considered. For which `Varimax` option in SPSS was utilized. The respondent i.e. various stake holders related to the field of renewable energy projects were pursue to obtain valuable responses towards the different variables related to the government policies that are supportive for the investment in the utility scale renewable energy projects. Accordingly all the 252 nos of stake holders had responded for the said statements.

Appropriateness in Factor Analysis:

The appropriateness of factor analysis is identified by examining the correlations that exists between all the pairs of variables which are included in the in the factor analysis study. If the correlation between the variables seems to be smaller, which conclude that the factor analysis is not appropriate. Hence in order to apply factor analysis techniques most of the variable under analysis is to be correlated with each other. The sphericity test under the Bartlett`s is a statistical technique that is being used for examining whether the variables are correlated with each other or not. The interpretation of assumed null hypothesis indicates that the variables among the population are uncorrelated or correlated with each other in the given population.

The other statistical technique which is used for factor analysis calculation is Kaiser- Meyer – Olkin well known as KMO technique which is measure of sampling adequacy. In KMO statistics, the index is used to conclude the

appropriateness of factor analysis. The researcher concludes that the factor analysis is appropriate if the value of index should be between 0.5 to 1. If the value of index is below the 0.5 than factor analysis is in appropriate statistical technique for this research study.

Table No 5.32: KMO and Bartlett`s test of Sphericity

(Question no. 28 focuses on the government policies that are supportive for the investment in the utility scale renewable energy projects.)

Kaiser Meyer Olkin Measure and Bartlett`s Test			
Sampling Adequacy as per **Kaiser Meyer Olkin Measure**	**Bartlett`s test of Sphericity**		
0.855	Approx. Chi-Square	df	Sig
	1425.146	66	0.000

Source: Computed from Primary Data

The above data revealed that the approximate Chi-square value of 1425.146 at degree of freedom 66 under the Bartlett`s test of Sphericity, the significance value (p-value) is 0.000. The researcher analyzes the Bartlett`s test of Sphericity, considering significance level (P-value) of 0.05. In case if significance value is less than 0.05, Researcher will reject the $H_{0.}$ On the contrary, if the significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject.

In this case, the significance value (p-value) is 0.000 of test which is less than p value of 0.05, hence null hypothesis is rejected, which indicates that the selected variables in the population are also not correlated. Hence it indicates that the given data`s are suitable for Factor Analysis testing.

The KMO measure was 0.855, this is adequately larger than 0.5. Hence, in view of data analysis such factor analysis is seems to be appropriate.

Table: 5.33 KMO ranges Communalities

KMO ranges Communalities		
Statements	Initial	Extraction
Amendment in tariff policy 2015(Reduction in tariff cost)	1.000	.668
Waiver of transmission charges (Promoting grid connectivity)	1.000	.263
Financial support from government institutions	1.000	.683
Defined Renewable Purchase obligation (RPO)	1.000	.617
Promoting Research & Development	1.000	.733
Promoting expansion of market	1.000	.730
Repowering policy	1.000	.703
Import taxes, Custom duties, Safeguard duties	1.000	.737
Financial and Promotional Initiatives	1.000	.760
Promoting supply chain from other countries	1.000	.589
Removal of feed in tariff	1.000	.666
Introduction of competitive bidding	1.000	.697
Extraction Method: Principal Component Analysis.		

All the statements are fall under the communalities ranges almost more than 0.50, hence all statements are taken into consideration for these factor analyses as these statements contributing for the factor analysis except the statement Waiver of transmission charges.

Identifying the method of Factor Analysis:

Once the appropriateness of factor analysis is finalized with the testing of given relevant data through appropriate method of KMO as well as Bartlett`s test of Sphericity, next step is to utilize two basic approaches for factor analysis i.e. first is Principal Component Analysis (PCA) and second one is Confirmatory Factor Analysis (CFA). However in order to analyze 12 selected variables, PCA analysis methodology is useful for factor analysis as described earlier. Moreover, it is further advisable in case that the major issue is to identify the smallest number of factors, it needs to take into consideration for variance in the given data utilized for multivariate study and such factors is considered as principal mechanism.

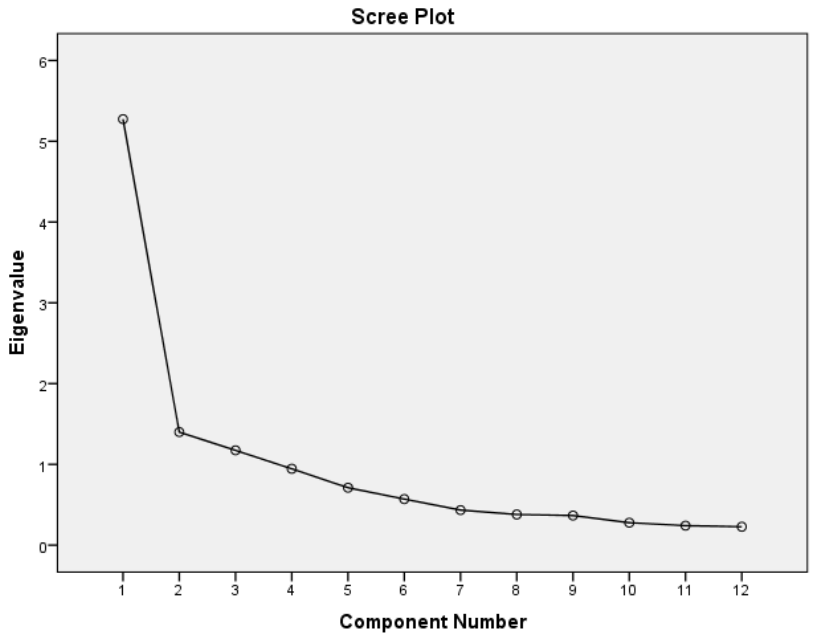
Table 5.34 : Total Variance Explained

(Question no. 28 focuses on the government policies those are supportive for the investment in the utility scale renewable energy projects.)

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.274	43.950	43.950	5.274	43.950	43.950	3.903	32.528	32.528
2	1.399	11.660	55.610	1.399	11.660	55.610	2.059	17.158	49.686
3	1.174	9.780	65.390	1.174	9.780	65.390	1.885	15.704	65.390
4	.945	7.877	73.267						
5	.711	5.924	79.191						
6	.570	4.754	83.944						
7	.433	3.612	87.556						
8	.380	3.164	90.720						
9	.366	3.053	93.774						
10	.278	2.314	96.088						
11	.242	2.013	98.101						
12	.228	1.899	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed from Primary Data

Fig : 5.9. Scree Plot for focuses on the government policies those are supportive for the investment in the utility scale renewable energy projects



The captioned table concludes the inferences revealed from the analysis of PCA with Varimax rotation. The table indicates that total five different factors were extracted based on the total variance analyzed. The third components in the initial solution have an Eigen values over 1 and the cumulative variance explained for about 65.390% of the total variables in the unique 12 variables related to the challenges / barriers affect for the developments of utility scale renewable energy projects. Hence it shows that the analysis has drastically condensed the intricacy of the larger numbers of data set by using of such components, with loss of information about 34.610% i.e. (100-65.390). Here the sample size selected for this factor analysis was 252 stake holder respondents from various regions of India. Further, it is revealed that personal three factors based on percentage of variance explained in the given table works out to 43.950, 55.610 and 65.390 respectively.

Table 5.35 : Rotated Factor Loading Matrix [a]

(Question no. 28 focuses on the government policies those are supportive for the investment in the utility scale renewable energy projects.)

Rotated Component/ factor loading Matrix [a]			
Factors related to the government policies those are supportive for the investment in the utility scale renewable energy projects	**Component / Factor loading**		
	1	**2**	**3**
Amendment in tariff policy 2015(Reduction in tariff cost)	.768		
Waiver of transmission charges (Promoting grid connectivity)			.505
Financial support from government institutions	.595		
Defined Renewable Purchase obligation (RPO)	.748		
Promoting Research & Development			.655
Promoting expansion of market			.829
Repowering policy	.767		
Import taxes, Custom duties, Safeguard duties		.778	
Financial and Promotional Initiatives		.807	
Promoting supply chain from other countries			.589
Removal of feed in tariff	.788		
Introduction of competitive bidding	.824		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

Source: Computed from Primary Data

The captioned table shows the result of rotation component matrix method utilized for factor analysis by suppressing small coefficient by absolute value 0.4. The various

factors were rotated with Varimax method with Kaiser Normalization. The extraction method employed for the analysis was principal component analysis. The table revealed that the factors that differs from one other and supports to understand the factor by setting every variables primarily on any one of the factors. The rotation solution suggest researcher towards load factors for every variables in a set of data, this data sets are used to know the unusual variables. The loading values of the factors are above 0.4. Hence, none of the statements out of 12 needs to be excluded from the factor analysis.

Table 5.36: Naming of Group of statements
(Statements from Question no.28)

Factor Number	Statements as per the questionnaire	Factor Name
Factor :1	Q 28_1 Amendment in tariff policy 2015 (Reduction in tariff cost)	Tariff Policies
	Q 28_3 Financial support from government institutions	
	Q 28_4 Defined Renewable Purchase obligation (RPO)	
	Q 28_7 Repowering policy	
	Q 28_11 Removal of feed in tariff	
	Q 28_12 Introduction of competitive bidding	
Factor : 2	Q 28_8 Import taxes, Custom duties, Safeguard duties	Financial policies
	Q 28_9 Financial and Promotional Initiatives	
Factor: 3	Q 28_2 Waiver of transmission charges (Promoting grid connectivity)	Promotional policies
	Q 28_5 Promoting Research & Development	
	Q 28_6 Promoting expansion of market	
	Q 28_10 Promoting supply chain from other countries	

Source: Computed from Primary Data

Table 5.37 : Distribution of Statements of (Question no.28_1 to 28_12)

Name of Factors	Factors Number	Statement Number					
Tariff Policies	1	1	3	4	7	11	12
Financial policies	2	8	9				
Promotional policies	3	2	5	6	10		

Source: Computed from Primary Data

Factor No. 1: The captioned table of rotated factor loading matrix inferred that the first component comprises for six variables. The variables like Amendment in tariff policy 2015 (Reduction in tariff cost), Financial support from government institutions, Defined Renewable Purchase obligation (RPO), Repowering policy, Removal of feed in tariff and

introduction of competitive bidding indicates factor loading of .768, .595, .748, .767, .788 and .824 respectively. Consequently, the appropriate names referred as `` Tariff Policies `` The **Cronbach`s Alfa** of 6 no's of statements is 0.892 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.892	6

Factor No. 2: The captioned table of rotated factor loading matrix inferred that the second components comprises for two variables. The variables like Import taxes, Custom duties, Safeguard duties and Financial and Promotional Initiatives indicates factor loading .778 and .807 respectively. Consequently, the appropriate names referred as `` Financial policies `` The **Cronbach`s Alfa** of 2 no's of statements is 0.706 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.706	2

Factor No. 3: The captioned table of rotated factor loading matrix inferred that the third components comprises for four variables. The variables Waiver of transmission charges (Promoting grid connectivity), Promoting Research & Development, Promoting expansion of market and Promoting supply chain from other countries indicates factor loading of .505, .655, .829 and .589respectively. Consequently, the appropriate names referred as `` Promotional policies ``. The **Cronbach`s Alfa** of 4 no's of statements is 0.637 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.637	4

- **Principal Component Analysis (PCA) for statement related to the factors that contribute to make utility scale renewable energy project more affordable and viable:**

  In this research study, the statistical analysis technique of exploratory factor analysis has been adopted for Question no. 42 focuses on the factors that contribute to make utility scale renewable energy project more affordable and viable. The statement consists of 12 factors and analysis is to be carried out through the `PCA` technique, in which the total variance of the collected data is to be considered. For which `Varimax` option in SPSS was utilized. The respondent i.e. various stake holders related to the field of renewable energy projects were pursue to obtain valuable responses towards the different variables related to the government policies that are supportive for the investment in the utility scale renewable energy projects. Accordingly all the 252 nos of stake holders had responded for the said statements.

  Appropriateness in Factor Analysis:

  The appropriateness of factor analysis is identified by examining the correlations that exists between all the pairs of variables which are included in the in the factor analysis study. If the correlation between the variables seems to be smaller, which conclude that the factor analysis is not appropriate. Hence in order to apply factor analysis techniques most of the variable under analysis is to be correlated with each other. The sphericity test under the Bartlett`s is a statistical technique that is being used for examining whether the variables are correlated with each other or not. The interpretation of assumed null hypothesis indicates that the variables among the population are uncorrelated or correlated with each other in the given population.

  The other statistical technique which is used for factor analysis calculation is Kaiser- Meyer – Olkin well known as KMO technique which is measure of sampling adequacy. In KMO statistics, the index is used to conclude the

appropriateness of factor analysis. The researcher concludes that the factor analysis is appropriate if the value of index should be between 0.5 to 1. If the value of index is below the 0.5 than factor analysis is in appropriate statistical technique for this research study.

Table No 5.38 : KMO and Bartlett`s test of Sphericity

(Question no. 42 focuses on the factors that contribute to make utility scale renewable energy project more affordable and viable)

Kaiser Meyer Olkin Measure and Bartlett`s Test			
Sampling Adequacy as per **Kaiser Meyer Olkin Measure**	**Bartlett`s test of Sphericity**		
0.722	Approx. Chi-Square	df	Sig
	940.896	66	0.000

Source: Computed from Primary Data

The above data revealed that the approximate Chi-square value of 940.896 at degree of freedom 66 under the Bartlett`s test of Sphericity, the significance value (p-value) is 0.000. The researcher analyzes the Bartlett`s test of Sphericity, considering significance level (P-value) of 0.05. In case if significance value is less than 0.05, Researcher will reject the $H_{0.}$ On the contrary, if the significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject.

In this case, the significance value (p-value) is 0.000 of test which is less than p value of 0.05, hence null hypothesis is rejected, which indicates that the selected variables in the population are also not correlated. Hence it indicates that the given data`s are suitable for Factor Analysis testing.

The KMO measure was 0.722, this is adequately larger than 0.5. Hence, in view of data analysis such factor analysis is seems to be appropriate.

Table: 5.39 KMO ranges Communalities

KMO ranges Communalities		
Statements	Initial	Extraction
Government should provide more subsidy	1.000	.557
Invest more in R&D for technology development	1.000	.629
Promote domestic manufacturing capacity	1.000	.699
Implementation of policies	1.000	.769
Secured payment mechanism	1.000	.659
Power Purchase Agreement with Off takers/ DISCOM	1.000	.842
Waival of inter-state transmission charges	1.000	.427
Facilitate international trade	1.000	.687
Facilitate supply chain management	1.000	.754
Must Run status to RE power	1.000	.599
Waival of taxes & duties	1.000	.635
Awareness and capacity building	1.000	.777
Extraction Method: Principal Component Analysis.		

All the statements are fall under the communalities ranges almost more than 0.50, hence all statements are taken into consideration for these factor analyses as these statements contributing for the factor analysis except the statement Waiver of inter-state transmission charges.

Identifying the method of Factor Analysis:

Once the appropriateness of factor analysis is finalized with the testing of given relevant data through appropriate method of KMO as well as Bartlett`s test of Sphericity, next step is to utilize two basic approaches for factor analysis i.e. first is Principal Component Analysis (PCA) and second one is Confirmatory Factor Analysis (CFA). However in order to analyze 12 selected variables, PCA analysis methodology is useful for factor analysis as described earlier. Moreover, it is further advisable in case that the major issue is to identify the smallest number of factors, it needs to take into consideration for variance in the given data utilized for multivariate study and such factors is considered as principal mechanism.

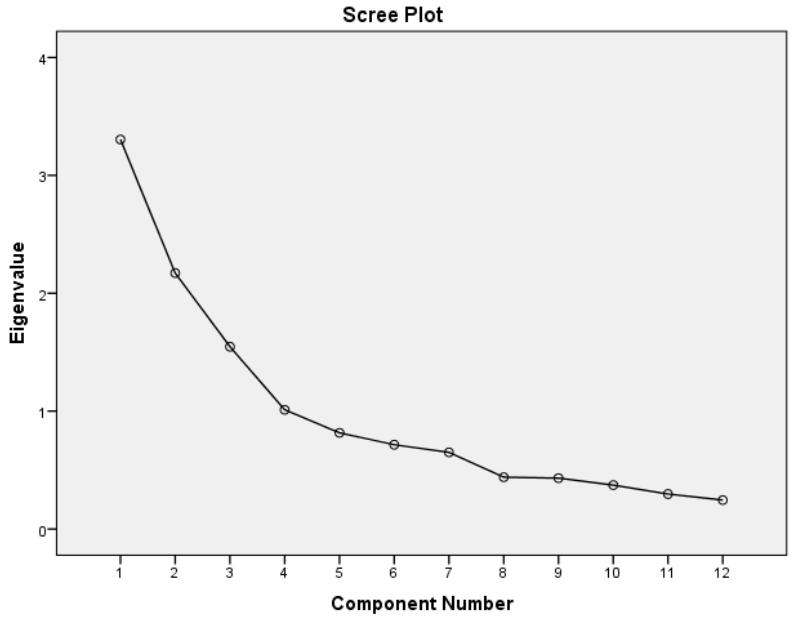
Table 5.40 : Total Variance Explained

(Question no. 42 focuses on the factors that contribute to make utility scale renewable energy project more affordable and viable)

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.304	27.535	27.535	3.304	27.535	27.535	2.362	19.687	19.687
2	2.171	18.094	45.630	2.171	18.094	45.630	2.249	18.742	38.429
3	1.547	12.888	58.518	1.547	12.888	58.518	1.943	16.193	54.622
4	1.011	8.429	66.947	1.011	8.429	66.947	1.479	12.325	66.947
5	.816	6.798	73.744						
6	.715	5.959	79.704						
7	.650	5.417	85.120						
8	.439	3.662	88.782						
9	.431	3.595	92.377						
10	.373	3.106	95.484						
11	.297	2.474	97.958						
12	.245	2.042	100.000						
Extraction Method: Principal Component Analysis.									

(Source: Computed from Primary Data)

Fig : 5.10. Scree Plot for factors that contribute to make utility scale renewable energy project more affordable and viable



The captioned table concludes the inferences revealed from the analysis of PCA with Varimax rotation. The table indicates that total four different factors were extracted based on the total variance analyzed. The fourth components in the initial solution have an Eigen values over 1 and the cumulative variance explained for about 66.947% of the total variables in the unique 12 variables related to the challenges / barriers affect for the developments of utility scale renewable energy projects. Hence it shows that the analysis has drastically condensed the intricacy of the larger numbers of data set by using of such components, with loss of information about 33.053% i.e. (100-66.947). Here the sample size selected for this factor analysis was 252 stake holder respondents from various regions of India. Further, it is revealed that personal three factors based on percentage of variance explained in the given table works out to 27.535, 45.630, 58.518 and 66.947 respectively.

Table 5.41 : Rotated Factor Loading Matrix [a]

(Question no. 42 focuses on the factors that contribute to make utility scale renewable energy project more affordable and viable)

Rotated Component/ factor loading Matrix [a]					
Sr No.	**Factors that contribute to make utility scale renewable energy project more affordable and viable**	**Component / Factor loading**			
		1	2	3	4
1	Government should provide more subsidy	.602			
2	Invest more in R&D for technology development				.709
3	Promote domestic manufacturing capacity				.766
4	Implementation of policies	.830			
5	Secured payment mechanism		.610		
6	Power Purchase Agreement with Off takers/ DISCOM	.912			
7	Waival of inter-state transmission charges			.488	
8	Facilitate international trade			.587	
9	Facilitate supply chain management			.805	
10	Must Run status to RE power		.759		
11	Waival of taxes & duties		.769		
12	Awareness and capacity building			.758	
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
	a. Rotation converged in 8 iterations.				

Source: Computed from Primary Data

The captioned table shows the result of rotation component matrix method utilized for factor analysis by suppressing small coefficient by absolute value 0.4. The various factors were rotated with Varimax method with Kaiser Normalization. The extraction method employed for the analysis was principal component analysis. The table revealed that the factors that differs from one other and supports to understand the factor by setting every variables primarily on any one of the factors. The rotation solution suggest researcher towards load factors for every variables in a set of data, this data sets are used to know the unusual variables. The loading values of the factors are above 0.4. Hence, none of the statements out of 12 needs to be excluded from the factor analysis.

Table 5.42: Naming of Group of statements
(Statements from Question no.42)

Factor Number	Statements as per the questionnaire	Factor Name
Factor :1	Q 42_1 Government should provide more subsidy	Policy matter
	Q 42_4 Implementation of policies	
	Q 42_6 Power Purchase Agreement with Off takers/DISCOM	
Factor :2	Q 42_5 Secured payment mechanism	Payment & Taxes
	Q 42_10 Must Run status to RE power	
	Q 42_11 Waiver of taxes & duties	
Factor: 3	Q 42_7 waiver of inter-state transmission charges	Supply chain
	Q 42_8 Facilitate international trade	
	Q 42_9 Facilitate supply chain management	
	Q 42_12 Awareness and capacity building	
Factor: 4	Q 42_2 Invest more in R&D for technology development	Technology development
	Q 42_3 Promote domestic manufacturing capacity	

(Source: Computed from Primary Data)

Table 5.43 : Distribution of Statements of

(Question no.42_1 to 42_12)

Name of Factors	Factors Number	Statement Number			
Policy matter	1	1	4	6	
Payment & Taxes	2	5	10	11	
Supply chain	3	7	8	9	12
Technology development	4	2	3		

Source: Computed from Primary Data

Factor No. 1: The captioned table of rotated factor loading matrix inferred that the first component comprises for three variables. The variables like Government should provide more subsidies, Implementation of policies and Power Purchase Agreement with off takers / DISCOM indicates factor loading of .602, .830 and .912respectively. Consequently, the appropriate names referred as `` Policy matter `` The **Cronbach`s Alfa** of 3 no's of statements is 0.770 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.770	3

Factor No. 2: The captioned table of rotated factor loading matrix inferred that the second components comprises for three variables. The variables like Secured payment mechanism, Must Run status to RE power and Waiver of taxes & duties indicates factor loading .610, .759 and .769respectively. Consequently, the appropriate names referred as `` Payment & Taxes `` The **Cronbach`s Alfa** of 4 no's of statements is 0.637 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.641	3

Factor No. 3: The captioned table of rotated factor loading matrix inferred that the third components comprises for four variables. The variables likes waiver of inter-

state transmission charges, Facilitate international trade, Facilitate supply chain management and Awareness and capacity building indicates factor loading of .488, .587, .805 and .758 respectively. Consequently, the appropriate names referred as `` Supply chain `` The **Cronbach`s Alfa** of 4 no's of statements is 0.677 which is nearer to almost 1, which considered being the excellent reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.677	4

Factor No. 4: The captioned table of rotated factor loading matrix inferred that the third components comprises for two variables. The variables likes invest more in R&D for technology development and Promote domestic manufacturing capacity indicates factor loading of .709 and .766 respectively. Consequently, the appropriate names referred as `` Technology development `` The **Cronbach`s Alfa** of 2 no's of statements is 0.459 which is nearer to 0.50, which considered being the good reliability.

Reliability Statistics

Cronbach's Alpha	N of Items
.459	2

Analyses of Data received from these respondents were carried out by utilizing various useful statistical tools to obtain the results for interpretation to draw the meaningful inferences.

Before processing for hypothesis testing, Test of Normality of questions considered for hypothesis testing under the questionnaire has been carried out and summarized in the Table.

Table 5.44 : Test of Normality

Tests of Normality						
Questionnaire	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
5.0	.233	252	.000	.806	252	.000
6.0	.357	252	.000	.726	252	.000
7.0	.391	252	.000	.655	252	.000
8.1	.448	252	.000	.569	252	.000
8.2	.452	252	.000	.563	252	.000
8.3	.404	252	.000	.614	252	.000
8.4	.361	252	.000	.634	252	.000
8.5	.520	252	.000	.397	252	.000
8.6	.540	252	.000	.250	252	.000
8.7	.539	252	.000	.261	252	.000
8.8	.396	252	.000	.620	252	.000
8.9	.539	252	.000	.151	252	.000
8.10	.525	252	.000	.370	252	.000
8.11	.537	252	.000	.120	252	.000
8.12	.538	252	.000	.271	252	.000
8.13	.520	252	.000	.397	252	.000
8.14	.538	252	.000	.136	252	.000
8.15	.517	252	.000	.410	252	.000
9.1	.269	252	.000	.763	252	.000
9.2	.340	252	.000	.753	252	.000
9.3	.371	252	.000	.664	252	.000
9.4	.460	252	.000	.561	252	.000
9.5	.226	252	.000	.823	252	.000
9.6	.260	252	.000	.839	252	.000
9.7	.352	252	.000	.680	252	.000
9.8	.304	252	.000	.842	252	.000
9.9	.373	252	.000	.665	252	.000
9.10	.379	252	.000	.679	252	.000

9.11	.312	252	.000	.729	252	.000
9.12	.270	252	.000	.869	252	.000
9.13	.384	252	.000	.653	252	.000
9.14	.310	252	.000	.739	252	.000
9.15	.235	252	.000	.850	252	.000
11.1	.427	252	.000	.623	252	.000
11.2	.433	252	.000	.619	252	.000
11.3	.426	252	.000	.622	252	.000
11.4	.432	252	.000	.629	252	.000
11.5	.436	252	.000	.625	252	.000
12.1	.289	252	.000	.791	252	.000
12.2	.264	252	.000	.810	252	.000
12.3	.238	252	.000	.840	252	.000
12.4	.214	252	.000	.856	252	.000
12.5	.213	252	.000	.809	252	.000
13	.332	252	.000	.698	252	.000
14	.402	252	.000	.633	252	.000
15.1	.386	252	.000	.661	252	.000
15.2	.197	252	.000	.856	252	.000
16.1	.347	252	.000	.688	252	.000
16.2	.180	252	.000	.860	252	.000
17.1	.310	252	.000	.756	252	.000
17.2	.191	252	.000	.880	252	.000
17.3	.211	252	.000	.871	252	.000
17.4	.221	252	.000	.889	252	.000
17.5	.391	252	.000	.663	252	.000
17.6	.195	252	.000	.877	252	.000
17.7	.194	252	.000	.881	252	.000
17.8	.222	252	.000	.890	252	.000
17.9	.230	252	.000	.843	252	.000
17.10	.277	252	.000	.784	252	.000
17.11	.204	252	.000	.881	252	.000

17.12	.395	252	.000	.654	252	.000
17.13	.223	252	.000	.884	252	.000
17.14	.241	252	.000	.820	252	.000
17.15	.438	252	.000	.577	252	.000
17.16	.235	252	.000	.835	252	.000
17.17	.333	252	.000	.722	252	.000
17.18	.226	252	.000	.862	252	.000
17.19	.351	252	.000	.709	252	.000
17.20	.210	252	.000	.878	252	.000
18.1	.368	252	.000	.693	252	.000
18.2	.220	252	.000	.843	252	.000
18.3	.191	252	.000	.867	252	.000
18.4	.277	252	.000	.828	252	.000
18.5	.280	252	.000	.828	252	.000
18.6	.223	252	.000	.880	252	.000
18.7	.235	252	.000	.876	252	.000
18.8	.310	252	.000	.725	252	.000
18.9	.398	252	.000	.639	252	.000
18.10	.175	252	.000	.912	252	.000
18.11	.160	252	.000	.892	252	.000
19.1	.424	252	.000	.630	252	.000
19.2	.185	252	.000	.908	252	.000
19.3	.196	252	.000	.912	252	.000
19.4	.246	252	.000	.792	252	.000
19.5	.353	252	.000	.713	252	.000
19.6	.253	252	.000	.809	252	.000
19.7	.263	252	.000	.798	252	.000
19.8	.205	252	.000	.880	252	.000
19.9	.175	252	.000	.898	252	.000
19.10	.201	252	.000	.895	252	.000
20.1	.191	252	.000	.906	252	.000
20.2	.191	252	.000	.909	252	.000

21.1	.528	252	.000	.062	252	.000
21.2	.539	252	.000	.151	252	.000
22.1	.205	252	.000	.921	252	.000
22.2	.154	252	.000	.929	252	.000
23.1	.178	252	.000	.896	252	.000
23.2	.210	252	.000	.861	252	.000
23.3	.241	252	.000	.825	252	.000
23.4	.181	252	.000	.907	252	.000
23.5	.335	252	.000	.731	252	.000
23.6	.221	252	.000	.897	252	.000
23.7	.247	252	.000	.880	252	.000
23.8	.248	252	.000	.848	252	.000
23.9	.201	252	.000	.894	252	.000
23.10	.193	252	.000	.881	252	.000
23.11	.268	252	.000	.800	252	.000
23.12	.225	252	.000	.895	252	.000
23.13	.341	252	.000	.734	252	.000
23.14	.208	252	.000	.903	252	.000
23.15	.248	252	.000	.861	252	.000
23.16	.200	252	.000	.876	252	.000
23.17	.207	252	.000	.895	252	.000
23.18	.249	252	.000	.881	252	.000
23.19	.214	252	.000	.903	252	.000
23.20	.209	252	.000	.893	252	.000
23.21	.265	252	.000	.796	252	.000
23.22	.193	252	.000	.877	252	.000
24.1	.414	252	.000	.591	252	.000
24.2	.456	252	.000	.573	252	.000
24.3	.206	252	.000	.880	252	.000
24.4	.187	252	.000	.894	252	.000
24.5	.322	252	.000	.754	252	.000
24.6	.241	252	.000	.818	252	.000

24.7	.334	252	.000	.731	252	.000
25	.275	252	.000	.801	252	.000
26.1	.188	252	.000	.912	252	.000
26.2	.204	252	.000	.904	252	.000
26.3	.210	252	.000	.863	252	.000
26.4	.191	252	.000	.910	252	.000
26.5	.178	252	.000	.898	252	.000
26.6	.217	252	.000	.887	252	.000
26.7	.212	252	.000	.866	252	.000
26.8	.194	252	.000	.885	252	.000
26.9	.174	252	.000	.917	252	.000
26.10	.380	252	.000	.672	252	.000
26.11	.263	252	.000	.799	252	.000
26.12	.444	252	.000	.553	252	.000
26.13	.211	252	.000	.860	252	.000
26.14	.214	252	.000	.899	252	.000
27.1	.314	252	.000	.806	252	.000
27.2	.252	252	.000	.888	252	.000
27.3	.219	252	.000	.894	252	.000
27.4	.274	252	.000	.875	252	.000
27.5	.219	252	.000	.892	252	.000
27.6	.253	252	.000	.882	252	.000
27.7	.295	252	.000	.728	252	.000
27.8	.221	252	.000	.893	252	.000
27.9	.243	252	.000	.871	252	.000
28.1	.171	252	.000	.914	252	.000
28.2	.272	252	.000	.787	252	.000
28.3	.180	252	.000	.888	252	.000
28.4	.215	252	.000	.887	252	.000
28.5	.221	252	.000	.895	252	.000
28.6	.292	252	.000	.836	252	.000
28.7	.223	252	.000	.867	252	.000

28.8	.198	252	.000	.828	252	.000
28.9	.212	252	.000	.869	252	.000
28.10	.264	252	.000	.862	252	.000
28.11	.206	252	.000	.896	252	.000
28.12	.167	252	.000	.907	252	.000
30.1	.181	252	.000	.888	252	.000
30.2	.172	252	.000	.915	252	.000
30.3	.158	252	.000	.894	252	.000
30.4	.211	252	.000	.879	252	.000
30.5	.197	252	.000	.877	252	.000
30.6	.325	252	.000	.747	252	.000
30.7	.254	252	.000	.885	252	.000
30.8	.216	252	.000	.875	252	.000
30.9	.217	252	.000	.884	252	.000
30.10	.246	252	.000	.839	252	.000
31.1	.256	252	.000	.815	252	.000
31.2	.300	252	.000	.798	252	.000
31.3	.260	252	.000	.801	252	.000
31.4	.250	252	.000	.868	252	.000
31.5	.162	252	.000	.916	252	.000
31.6	.269	252	.000	.867	252	.000
31.7	.263	252	.000	.775	252	.000
31.8	.202	252	.000	.906	252	.000
31.9	.221	252	.000	.896	252	.000
31.10	.201	252	.000	.907	252	.000
31.11	.437	252	.000	.603	252	.000
31.12	.219	252	.000	.891	252	.000
31.13	.191	252	.000	.903	252	.000
32.1	.274	252	.000	.833	252	.000
32.2	.223	252	.000	.891	252	.000
32.3	.252	252	.000	.821	252	.000
32.4	.257	252	.000	.791	252	.000

32.5	.275	252	.000	.778	252	.000
32.6	.164	252	.000	.906	252	.000
32.7	.366	252	.000	.671	252	.000
32.8	.247	252	.000	.866	252	.000
32.9	.294	252	.000	.760	252	.000
32.10	.272	252	.000	.798	252	.000
32.11	.225	252	.000	.894	252	.000
32.12	.191	252	.000	.872	252	.000
32.13	.306	252	.000	.742	252	.000
32.14	.162	252	.000	.914	252	.000
33.1	.195	252	.000	.878	252	.000
33.2	.260	252	.000	.872	252	.000
33.3	.274	252	.000	.780	252	.000
33.4	.211	252	.000	.901	252	.000
33.5	.199	252	.000	.899	252	.000
33.6	.189	252	.000	.910	252	.000
33.7	.186	252	.000	.907	252	.000
33.8	.280	252	.000	.850	252	.000
33.9	.199	252	.000	.896	252	.000
33.10	.309	252	.000	.841	252	.000
35.1	.181	252	.000	.923	252	.000
35.2	.200	252	.000	.861	252	.000
36.1	.326	252	.000	.793	252	.000
36.2	.309	252	.000	.810	252	.000
37.1	.269	252	.000	.800	252	.000
37.2	.260	252	.000	.789	252	.000
38.1	.350	252	.000	.766	252	.000
38.2	.272	252	.000	.775	252	.000
39.1	.329	252	.000	.805	252	.000
39.2	.268	252	.000	.861	252	.000
42.1	.240	252	.000	.836	252	.000
42.2	.218	252	.000	.874	252	.000

42.3	.349	252	.000	.724	252	.000
42.4	.228	252	.000	.855	252	.000
42.5	.368	252	.000	.698	252	.000
42.6	.254	252	.000	.821	252	.000
42.7	.319	252	.000	.750	252	.000
42.8	.288	252	.000	.790	252	.000
42.9	.192	252	.000	.867	252	.000
42.10	.406	252	.000	.630	252	.000
42.11	.408	252	.000	.637	252	.000
42.12	.176	252	.000	.915	252	.000
43.1	.188	252	.000	.906	252	.000
43.2	.257	252	.000	.859	252	.000
43.3	.226	252	.000	.892	252	.000
43.4	.247	252	.000	.813	252	.000
43.5	.332	252	.000	.736	252	.000
43.6	.233	252	.000	.882	252	.000
43.7	.178	252	.000	.907	252	.000
43.8	.230	252	.000	.897	252	.000
43.9	.221	252	.000	.896	252	.000
44.1	.471	252	.000	.514	252	.000
44.2	.212	252	.000	.902	252	.000
44.3	.254	252	.000	.881	252	.000
44.4	.197	252	.000	.907	252	.000
44.5	.240	252	.000	.893	252	.000
44.6	.390	252	.000	.675	252	.000
44.7	.243	252	.000	.897	252	.000
44.8	.244	252	.000	.826	252	.000
44.9	.427	252	.000	.594	252	.000
44.10	.245	252	.000	.861	252	.000
45.1	.255	252	.000	.802	252	.000
45.2	.262	252	.000	.781	252	.000
45.3	.189	252	.000	.908	252	.000

45.4	.225	252	.000	.883	252	.000
45.5	.410	252	.000	.634	252	.000
45.6	.222	252	.000	.887	252	.000
45.7	.210	252	.000	.865	252	.000
46	.219	252	.000	.851	252	.000
47.1	.477	252	.000	.511	252	.000
47.2	.404	252	.000	.553	252	.000
48	.258	252	.000	.863	252	.000
50.1	.283	252	.000	.755	252	.000
50.2	.317	252	.000	.755	252	.000
a. Lilliefors Significance Correction						

For testing of normality, SPSS is used to identify whether the given variables supposed to be normally distributed or not. Before proceeding for the hypothesis testing, it is important to decide that the parametric statistical test to be exercised or non-parametric test based on the normality test. This can be done with the help of statistical test widely known as Kolmogorov-Smirnova and Shapiro-Wilk. This test are used to test the null hypothesis that a set of given variables / data follows a normal distribution.

The Kolmogorov-Smirnova and Shapiro-Wilk statistical test under aforesaid table indicates that the P- value / significance value is 0.000 which is reported as P-value less than significance value of 0.005, which significant evidence that null hypothesis is rejected hence it is clear that the variable follows a non- normal distribution. In view of which non-parametric statistical test methodology is used by the researcher.

5.6 Hypothesis Testing:

The researcher has bifurcated the hypothesis based on various factors for development of renewable energy projects.

1) Potential of renewable energy for the development of Renewable Energy Projects:

$H0_1$: There is no significant difference in the perception about different state/area have different Renewable Energy potential.

Table 5.45 : Chi-Square Tests Table

	Value	df	P-Value (Asymptotic Significance- 2 sided)
Pearson Chi-Square	58.713	9	0.000

The researcher analyzes the Chi-square test, in case if significance value (P-value) is more than 0.05, the H_0 Null Hypothesis is failed to reject. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0.

In this case, the significance value (p-value) is 0.000 of chi-square test which is less than p value of 0.05, which indicates that there is significant difference in the perception about different state/area have different Renewable Energy potential.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates there is significant difference in the perception about different state/area have different Renewable Energy potential.

Moreover, Researcher also developed that correlations between two variable of `potential of renewable energy` and different state/area have different renewable energy.

Table 5.46 : Correlations between two variable of `potential of renewable energy` and different state/area have different renewable energy potential.

	Opportunities for solar power project development	
potential of solar energy	R	0.392**
	P (two tailed)	0.00
	N	252

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

- The above table presents spearman`s R correlation coefficient between two variable of `potential of renewable energy` and different state/area have different renewable energy potential.

- The r value = 0.392, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 39.2 percentage between potential of renewable energy and different state/area have different renewable energy potential.

$H0_2$: There is no significant difference in the perception about potential of solar renewable energy in India across year of experience group

Table 5.47 : Chi-Square Tests Table

	Value	df	P-Value (Asymptotic Significance- 2 sided)
Pearson Chi-Square	8.616	9	0.473

In this case, the significance value (p-value) is 0.473 of chi-square test which is greater than p value of 0.05, which indicates that there is no significant difference in the perception about potential of solar renewable energy in India across year of experience group

In view of above the null hypothesis is accepted which indicates there is no significant difference in the perception about potential of solar renewable energy in India across year of experience group

$H0_3$: There is no significant difference in the perception about potential of Wind energy in India across year of experience group

Table 5.48 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	23.401	3	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a significant difference in the perception about potential of Wind energy in India across year of experience group

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a significant difference in the perception about potential of Wind energy in India across year of experience group

$H0_4$: There is no significant difference in the perception about potential of renewable energy (solar & Wind energy) in India across Type of Organization

Table 5.49: Chi-Square Tests Table

	Value	df	P-Value (Asymptotic Significance- 2 sided)
Pearson Chi-Square	15.754	12	0.203

In this case, the significance value (p-value) is 0.203 of chi-square test which is greater than p value of 0.05, which indicates that there is no significant difference in the perception about potential of renewable energy (solar & Wind energy) in India across Type of Organization

In view of above the null hypothesis is accepted which indicates there is no significant difference in the perception about potential of renewable energy (solar & Wind energy) in India across Type of Organization

$H0_5$: There is no significant association between available renewable energy potential and achievement of Government target.

Table 5. 50: Chi-Square Tests Table

	Value	df	P-Value (Asymptotic Significance- 2 sided)
Pearson Chi-Square	239.118	16	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test which is less than p value of 0.05, which indicates that there is significant association between available renewable energy potential and achievement of Government target.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates there is significant association between available renewable energy potential and achievement of Government target.

Moreover, Researcher also developed that correlation between two variable of `available renewable energy potential` and `achievement of Government target`.

Table 5.51 : correlation between two variable of `available renewable energy potential` and `achievement of Government target`.

	Achievement of Government target	
Available renewable energy potential	R	0.575**
	P (two tailed)	0.00
	N	252

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

- The above table presents spearman`s R correlation coefficient between two variable of `available renewable energy potential` and `achievement of Government target`.

- The R value = 0.575, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 57.5 percentage between `available renewable energy potential` and `achievement of Government target`.

$H0_6$: There is no significant difference in the perception about contribution across various stockholders group for achievement of government targets for renewable energy projects.

Table 5.52: Chi-Square Tests Table

Various stake holders group	Chi-square Value	Df	Asymp.Sig (P-value)	H_0
Manufacturers	12.874	4	0.012	Rejected
Suppliers	17.882	4	0.001	Rejected
EPC contractors	6.845	4	0.144	Failed to reject
Project Developers	4.269	4	0.371	Failed to reject
Investors	7.373	4	0.117	Failed to reject
Financiers	4.921	4	0.296	Failed to reject
Policy Makers	3.340	4	0.503	Failed to reject
Consultant	14.248	4	0.007	Rejected
Power Purchaser	1.663	4	0.797	Failed to reject
Independent Power Producer	3.591	4	0.464	Failed to reject
Captive Users	0.785	4	0.940	Failed to reject
Research Institute	3.787	4	0.436	Failed to reject
Promoters of Renewable Energy	7.390	4	0.117	Failed to reject
Renewable Energy Power traders	0.551	4	0.968	Failed to reject
Other stake holders	14.040	4	0.007	Rejected

(Source: Computed from Primary Data)

The captioned table for Chi-square test indicates the significance in perception about support/contribution across various stockholders as mentioned in column one for

achievement of government targets for renewable energy projects. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject. i.e. accepted. In the contrary, if significance value is less than 0.05, Researcher will reject the $H_{0.}$

Manufacturers: The analysis revealed that there is significant difference in the perception about contribution of manufacturers for achievement of government targets for renewable energy projects, as the significance value is 0.012 which is well within the standard significance level of 0.05.

Suppliers: The analysis revealed that there is significant difference in the perception about contribution of suppliers for achievement of government targets for renewable energy projects, as the significance value is 0.001 which is well within the standard significance level of 0.05.

EPC contractors: The analysis revealed that there is no significant difference in the perception about contribution of EPC contractors for achievement of government targets for renewable energy projects, as the significance value is 0.144 which goes beyond the standard significance level of 0.05.

Project Developers: The analysis revealed that there is no significant difference in the perception about contribution of Project Developers for achievement of government targets for renewable energy projects, as the significance value is 0.371 which goes beyond the standard significance level of 0.05.

Investors: The analysis revealed that there is no significant difference in the perception about contribution of Investors for achievement of government targets for renewable energy projects, as the significance value is 0.117 which goes beyond the standard significance level of 0.05.

Financiers: The analysis revealed that there is no significant difference in the perception about contribution of Financiers for achievement of government targets for renewable energy projects, as the significance value is 0.296 which goes beyond the standard significance level of 0.05.

Policy Makers: The analysis revealed that there is no significant difference in the perception about contribution of Policy Makers for achievement of government targets for renewable energy projects, as the significance value is 0.503 which goes beyond the standard significance level of 0.05.

Consultant: The analysis revealed that there is significant difference in the perception about contribution of Consultant for achievement of government targets for renewable energy projects, as the significance value is 0.007 which is well within the standard significance level of 0.05.

Power Purchaser: The analysis revealed that there is no significant difference in the perception about contribution of Power Purchaser for achievement of government targets for renewable energy projects, as the significance value is 0.797 which goes beyond the standard significance level of 0.05.

Independent Power Producer: The analysis revealed that there is no significant difference in the perception about contribution of Independent Power Producer for achievement of government targets for renewable energy projects, as the significance value is 0.464 which goes beyond the standard significance level of 0.05.

Captive Users: The analysis revealed that there is no significant difference in the perception about contribution of Captive Users for achievement of government targets for renewable energy projects, as the significance value is 0.940 which goes beyond the standard significance level of 0.05.

Research Institute: The analysis revealed that there is no significant difference in the perception about contribution of Research Institute for achievement of government targets for renewable energy projects, as the significance value is 0.436 which goes beyond the standard significance level of 0.05.

Promoters of Renewable Energy: The analysis revealed that there is no significant difference in the perception about contribution of Promoters of Renewable Energy for

achievement of government targets for renewable energy projects, as the significance value is 0.117 which goes beyond the standard significance level of 0.05.

Renewable Energy Power traders: The analysis revealed that there is no significant difference in the perception about contribution of Renewable Energy Power traders for achievement of government targets for renewable energy projects, as the significance value is 0.968 which goes beyond the standard significance level of 0.05.

Other stake holders: The analysis revealed that there is significant difference in the perception about contribution of other stake holders for achievement of government targets for renewable energy projects, as the significance value is 0.007 which is well within the standard significance level of 0.05.

2) Key driving policies, policy supportive mechanism and barriers for the development of Renewable Energy Projects:

$H0_7$: There is no significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across different States of India.

Table 5.53: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	140.481	96	0.002

In this case, the significance value (p-value) is 0.002 of chi-square test, which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across different States of India.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across different States of India

$H0_8$: There is no significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across year of experience group

Table 5.54: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	41.504	24	0.015

In this case, the significance value (p-value) is 0.015 of chi-square test, which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across year of experience group.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across year of experience group.

$H0_9$: There is no significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across Types of Organization.

Table 5.55: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	60.145	32	0.002

In this case, the significance value (p-value) is 0.002 of chi-square test, which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across Types of Organization.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there is significant difference in the perception about existing policies and supports helps in achieving the government target for renewable energy projects across Types of Organization.

$H0_{10}$: There is no significant association between central and state level policy supports for decision of installation of renewable energy

Table 5.56: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	230.280	12	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a significant association between central and state level policy supports for decision of installation of renewable energy.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a association between central and state level policy supports for decision of installation of renewable energy.

Moreover, Researcher also developed that correlations between two variable of ` central level policy supports ` and ` state level policy supports `.

Table 5.57 : correlations between two variable of ` central level policy supports ` and ` state level policy supports `.

	State level policy supports	
central level policy supports	R	0.778**
	P (two tailed)	0.00
	N	252

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

The above table presents spearman`s R correlation coefficient between correlations between two variable of ` central level policy supports ` and ` state level policy supports `.

The r value = 0.778, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 77.8 percentage between of ` central level policy supports ` and ` state level policy supports `.

$H0_{11}$: There is no significant difference in the perception about criticality of various risks associated to investment in utility scale renewable energy projects across various organization groups.

Table 5.58 : Chi-Square Tests Table

Risks associated to investment	**Chi-square Value**	**Df**	**Asymp.Sig (P-value)**	**H_0**
Regulatory Risk	30.824	16	0.014	Rejected
Construction Risk say Time over run & cost over run	33.876	16	0.006	Rejected
Counter Party Risk say Construction Contractor, O&M Contractor	22.016	16	0.143	Failed to reject
Financial Risk	11.281	12	0.505	Failed to reject
Investment Risk	6.331	12	0.898	Failed to reject
Power Off Taker Risk	29.316	16	0.022	Rejected
Resource assessment Risk	27.802	16	0.033	Rejected
Force Majeure Risk	31.738	16	0.011	Rejected
Deviation Schedule Mechanism (DSM) penalty risk	26.589	16	0.046	Rejected

Source: Computed from Primary Data

The captioned table for Chi-square test indicates the significance in perception about criticality of various risks associated to investment in utility scale renewable energy projects across various organization groups. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject. i.e. accepted. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0.

The analysis of perceived risks associated to investment across various organizational groups from chi-square table is narrated as under:

Regulatory Risk: The analysis revealed that there is significant difference in the perception about criticality of regulatory risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.014 which is well within the standard significance level of 0.05.

Construction Risk: The analysis revealed that there is significant difference in the perception about criticality of construction risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.006 which is well within the standard significance level of 0.05.

Counter Party Risk: The analysis revealed that there is no significant difference in the perception about criticality of counter party risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.143 which goes beyond the standard significance level of 0.05.

Financial Risk: The analysis revealed that there is no significant difference in the perception about criticality of financial risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.505 which goes beyond the standard significance level of 0.05.

Investment Risk: The analysis revealed that there is no significant difference in the perception about criticality of investment risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.898 which goes beyond the standard significance level of 0.05.

Power off Taker Risk: The analysis revealed that there is significant difference in the perception about criticality of power off taker risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.022 which is well within the standard significance level of 0.05.

Resource assessment Risk: The analysis revealed that there is significant difference in the perception about criticality of resource assessment risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.033 which is well within the standard significance level of 0.05.

Force Majeure Risk: The analysis revealed that there is significant difference in the perception about criticality of force majeure risks associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.011 which is well within the standard significance level of 0.05.

Deviation Schedule Mechanism (DSM) penalty risk: The analysis revealed that there is significant difference in the perception about criticality of deviation schedule mechanism (DSM) penalty risk associated to investment in utility scale renewable energy projects across various organization groups, as the significance value is 0.046 which is well within the standard significance level of 0.05.

$H0_{12}$: There is no significant difference in factors influencing the decision of installation of utility scale renewable energy projects within different experience group.

Table 5.59 : Kruskal Wallis Test

(Regulatory policy related factors affecting the development of Renewable energy projects within different experience groups)

Factor number	Regulatory policy related factors	Chi-square	Df	Asymp .Sig	H_0
Factor:1	Policy barriers	6.098	3	0.107	Failed to reject
Factor:2	Regulatory barriers	4.274	3	0.233	Failed to reject
Factor:3	Support mechanism barriers	9.984	3	0.019	Rejected
Factor:4	Political barriers	7.303	3	0.063	Failed to reject
Factor:5	Environment barriers	10.878	3	0.012	Rejected
Factor:6	Land policy barriers	2.214	3	0.529	Failed to reject
Factor:7	Power purchase policy	6.960	3	0.073	Failed to reject
Factor:8	Institutional & Administrative barrier	20.540	3	0.000	Rejected
Factor:9	Public acceptance barrier	26.148	3	0.000	Rejected
Factor:10	International Trade barrier	7.846	3	0.049	Rejected
a. Kruskal Wallis Test					
b. Grouping Variable: Years of Experience					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the Regulatory policy related factors affecting the development of utility scale renewable energy projects within different experience group. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0.

Factor 1: The aforesaid analysis revealed that there is no significant difference in policy barrier and years of experience group as the significance value is 0.107 which goes beyond the standard level of 0.05.

Factor 2: Researcher also discovered from above Kruskal Wallis Test analysis that there is no significant difference in regulatory barrier and years of experience group as the significance value is 0.233 which goes beyond the standard level of 0.05.

Factor 3: Moreover, it is discovered from the above analysis that there is significant difference in support mechanism barrier and years of experience group as the significance value is 0.019 which stay within the standard level of 0.05.

Factor 4: Further, Researcher discovered from above analysis that there is no significant difference in political barrier and years of experience group as the significance value is 0.063 which goes beyond the standard level of 0.05.

Factor 5: Likewise, Researcher discovered from the above analysis that there is significant difference in Environmental barrier and years of experience group as the significance value is 0.012 which stay within the standard level of 0.05.

Factor 6: Further, Researcher discovered from above analysis that there is no significant difference in land policy barrier and years of experience group as the significance value is 0.529 which goes beyond the standard level of 0.05.

Factor 7: Researcher also, discovered from above analysis that there is no significant difference in power purchase policy barrier and years of experience group as the significance value is 0.073 which goes beyond the standard level of 0.05.

Factor 8: Researcher further discovered from the above analysis that there is significant difference in Institutional & Administrative barrier and years of experience group as the significance value is 0.000 which stay within the standard level of 0.05.

Factor 9: Researcher also, discovered from the above analysis that there is significant difference in Public acceptance barrier and years of experience group as the significance value is 0.000 which stay within the standard level of 0.05.

Factor 10: Similarly, Researcher discovered from the above analysis that there is significant difference in International Trade barrier and years of experience group as the significance value is 0.049 which stay within the standard level of 0.05.

3) Strengths and opportunities of renewable energy projects:

$H0_{13}$: There is no significant association between installation of renewable energy projects and opportunities for green employment generation to boost India's economy

Table 5.60 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	504.00	4	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a significant association between installation of renewable energy projects and opportunities for green employment generation to boost India's economy.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a association between installation of renewable energy projects and opportunities for green employment generation to boost India's economy.

Moreover, Researcher also developed that correlations between two variable of ` installation of renewable energy projects ` and ` opportunities for green employment generation.

Table 5.61: correlations between two variable of `installation of renewable energy projects ` and ` opportunities for green employment generation `.

	Opportunities for solar power project development	
potential of solar energy	R	1.000**
	P (two tailed)	0.00
	N	252

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

The above table presents spearman`s R correlation coefficient between `installation of renewable energy projects` and `opportunities for green employment generation`.
The r value = 1.000, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 100 percentage between of `installation of renewable energy projects` and `opportunities for green employment generation`.

$H0_{14}$: There is no significant relationship between potential of solar energy and opportunities for solar power project development.

Table 5.62: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	331.959	9	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a relationship between potential of solar energy and opportunities for solar power project development.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a relationship between potential of solar energy and opportunities for solar power project development.
Moreover, Researcher also developed that correlations between two variable of `potential of solar energy` and `opportunities for solar power project development.

Table 5.63 : Correlation between potential of solar energy and opportunities for solar power project development.

	Opportunities for solar power project development	
potential of solar energy	R	0.821**
	P (two tailed)	0.00
	N	252

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

- The above table presents spearman`s R correlation coefficient between potential of solar energy and opportunities for solar power project development.

- The r value = 0.821, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 82.1 percentage between potential of solar energy and opportunities for solar power project development.

Similarly,

$H0_{15}$: There is no significant association between potential of wind energy and opportunities for wind power project development.

Table 5.64: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	42.991	2	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a relationship between potential of wind energy and opportunities for wind power project development.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a relationship between potential of wind energy and opportunities for wind power project development.

Moreover, Researcher also developed that correlations between two variable of `potential of wind energy` and `opportunities for wind power project development`.

Table 5.65 : Correlation between potential of wind energy and opportunities for wind power project development.

	Opportunities for solar power project development	
Potential of solar energy	R	0.413**
	P (two tailed)	0.00
	N	252

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

- The above table presents spearman`s R correlation coefficient between potential of wind energy and opportunities for wind power project development.

- The r value = 0.413, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 41.3 percentage between potential of wind energy and opportunities for wind power project development.

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$H0_{16}$: There is no significant association in the perception across experience group about available renewable energy potential for achievement of government target.

Table 5.66: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	22.024	12	0.037

In this case, the significance value (p-value) is 0.037 of chi-square test, which indicates that there exists a significant association in the perception across experience group about available renewable energy potential for achievement of government target.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a significant association in the perception across experience group about available renewable energy potential for achievement of government target.

$H0_{17}$: There is no significant association in the perception across types of organization about available renewable energy potential for achievement of government target.

Table 5.67 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	21.601	16	0.157

In this case, the significance value (p-value) is 0.157 of chi-square test, which indicates that there is no significant association in the perception across types of organization about available renewable energy potential for achievement of government target.

In view of above, the null hypothesis is accepted which indicates that there does not exist significant association in the perception across types of organization about available renewable energy potential for achievement of government target.

4) Manufacturing resources, value chain for development of renewable energy projects:

$H0_{18}$: There is no significant difference in the perception about effectiveness of value chain for RE project component from other countries across the Years of experience group.

Table 5.68 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	51.669	18	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there is significant difference in the perception about effectiveness of value chain for RE project component from other countries across the Years of experience group.

In view of above, the null hypothesis is failed to reject i.e. accepted which indicates that there exist significant difference in the perception about effectiveness of value chain for RE project component from other countries across the Years of experience group.

$H0_{19}$: There is no significant difference in the perception about effectiveness of value chain for RE project component from other countries across Types of Organization.

Table 5.69 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	33.288	24	0.098

In this case, the significance value (p-value) is 0.098 of chi-square test, which indicates that there is no significant difference in the perception about effectiveness of value chain for RE project component from other countries across Types of Organization.

In view of above, the null hypothesis is fail to reject i.e. accepted which indicates that there does not exist significant difference in the perception about effectiveness of value chain for RE project component from other countries across Types of Organization.

$H0_{20}$: There is no significant difference in perception about cost of procurement of materials for renewable energy projects from India & abroad across types of organizations.

Table 5.70 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	27.945	16	0.032

In this case, the significance value (p-value) is 0.032 of chi-square test, which indicates that there is significant difference in perception about cost for procurement of materials for renewable energy projects from India & abroad across types of organizations.

In view of above, the null hypothesis is reject which indicates that there exists significant difference in perception about cost for procurement of materials for renewable energy projects from India & abroad across types of organizations.

$H0_{21}$:There is no significant relationship between Government target and available manufacturing capacity in India to meet target.

Table 5.71: Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	41.752	28	0.046

In this case, the significance value (p-value) is 0.046 of chi-square test, which indicates that there is significant association between Government target and available manufacturing capacity in India to meet target.

In view of above, the null hypothesis is rejected which indicates that there exist significant association between Government target and available manufacturing capacity in India to meet target.

5) Market dynamic, cost competitiveness, viability for development of renewable energy projects:

$H0_{22}$: There is no significant difference in the perception about cost competition for development of solar and wind power projects across the various states of India.

Table 5.72 : Chi-Square Tests

Development of RE projects across states	Pearson Chi-Square Value	df	Asymp. sig (P-Value)	Ho
Solar power projects	63.841	36	0.003	Reject
Wind power projects	37.806	48	0.854	Failed to Reject

(Source: Computed from Primary Data)

In the case of solar power project development, the significance value (p-value) is 0.003 of chi-square test, which indicates that there is significant difference in the perception about cost competition for development of solar power projects across the various states of India. However, In the case of Wind power projects developments, the significance value (p-value) is 0.854 of chi-square test, which indicates that there is no significant difference in the perception about cost competition for development of wind power projects across the various states of India.

In view of above, for solar projects, the null hypothesis is rejected which indicates that there exist significant difference in the perception about cost competition for development of solar power projects across the various states of India. However for wind projects, the null hypothesis is fail to rejects which indicates that there is no significant difference in the perception about cost competition for development of wind power projects across the various states of India.

$H0_{23}$: There is no significant difference in the perception about project cost viability about solar power project across Types of Organization

Table 5.73 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	42.773	20	0.002

In this case, the significance value (p-value) is 0.002 of chi-square test, which indicates that there is significant difference in the perception about project cost viability about solar power project across Types of Organization.

In view of above, the null hypothesis is rejected which indicates that there exist significant difference in the perception about project cost viability about solar power project across Types of Organization.

$H0_{24}$: There is no significant difference in the perception about project cost viability about Wind Project across Types of Organization

Table 5.74 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	30.190	20	0.067

In this case, the significance value (p-value) is 0.067 of chi-square test, which indicates that there is no significant difference in the perception about project cost viability about Wind power Project across Types of Organization

In view of above, the null hypothesis is fail to reject i.e. accepted which indicates that there does not exist significant difference in the perception about project cost viability about Wind power Project across Types of Organization

$H0_{25}$: There is no significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Years of Experience group

Table 5.75 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	21.058	9	0.012

In this case, the significance value (p-value) is 0.012 of chi-square test, which indicates that there is significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Years of Experience group

In view of above, the null hypothesis is rejected which indicates that there exist significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Years of Experience group

$H0_{26}$: There is no significant difference in the perception regarding the initial cost of the setting up of utility scale **wind** power projects across Years of Experience group

Table 5.76 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	8.443	6	0.207

In this case, the significance value (p-value) is 0.207 of chi-square test, which indicates that there is no significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Years of Experience group

In view of above, the null hypothesis is fail to reject i.e. accepted which indicates that there does not exist significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Years of Experience group

$H0_{27}$: There is no significant difference in the perception regarding the initial cost of the setting up of utility scale **solar** power projects across Types of Organization

Table 5.77 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	11.413	12	0.494

In this case, the significance value (p-value) is 0.494 of chi-square test, which indicates that there is no significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Types of Organization

In view of above, the null hypothesis is accepted which indicates that there does not exist significant difference in the perception regarding the initial cost of the setting up of utility scale solar power projects across Types of Organization

$H0_{28}$: There is no significant difference in the perception regarding the initial cost of the setting up of utility scale **wind** power projects across Types of Organization

Table 5.78 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	17.986	8	0.021

In this case, the significance value (p-value) is 0.021of chi-square test, which indicates that there is significant difference in the perception regarding the initial cost of the setting up of utility scale wind power projects across Types of Organization

In view of above, the null hypothesis is rejected which indicates that there exist significant difference in the perception regarding the initial cost of the setting up of utility scale wind power projects across Types of Organization

$H0_{29}$: There is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Years of Experience group

Table 5.79 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	11.770	12	0.464

In this case, the significance value (p-value) is 0.464 of chi-square test, which indicates that there is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Years of Experience group

In view of above, the null hypothesis is failed to reject i.e. accepted which indicates that there does not exist significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Years of Experience group

$H0_{30}$: There is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale **wind** power projects across Years of Experience group

Table 5.80 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	10.335	12	0.587

In this case, the significance value (p-value) is 0.587 of chi-square test, which indicates that there is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Years of Experience group

In view of above, the null hypothesis is fail to reject i.e. accepted which indicates that there does not exist significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Years of Experience group

$H0_{31}$: There is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale **solar** power projects across Types of Organization

Table 5.81 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	16.881	16	0.393

In this case, the significance value (p-value) is 0.393 of chi-square test, which indicates that there is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Types of Organization

In view of above, the null hypothesis is accepted which indicates that there does not exist significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale solar power projects across Types of Organization

$H0_{32}$: There is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale **wind** power projects across Types of Organization

Table 5.82 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	11.642	16	0.768

In this case, the significance value (p-value) is 0.768 of chi-square test, which indicates that there is no significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale wind power projects across Types of Organization

In view of above, the null hypothesis is failed to reject i.e. accepted which indicates that there does not exist significant difference in the perception regarding the operation & maintenance cost of the setting up of utility scale wind power projects across Types of Organization

$H0_{33}$: There is no significant association between investment risk and investment cost associated with renewable energy projects.

Table 5.83 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	109.630	9	0.000

In this case, the significance value (p-value) is 0.000 of chi-square test, which indicates that there exists a association between investment risk and investment cost associated with renewable energy projects.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist a relationship between investment risk and investment cost associated with renewable energy projects.

Moreover, Researcher also developed that correlation between two variables of `investment risk' and 'investment cost' associated with renewable energy projects.

Table 5.84: Correlations between two variables of `investment risk' and 'investment cost' associated with renewable energy projects.

	`investment risk'	
'investment cost'	R	0.522**
	P (two tailed)	0.00
	N	252

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

The above table presents spearman`s R correlation coefficient between two variables of `investment risk' and 'investment cost' associated with renewable energy projects.

The r value = 0.522, p - value = 0.00 and N=252. As p value is significant i.e. 0.00 which is less than 0.05, the results indicates positive correlation to the tune of 52.2 percentage between two variables of `investment risk' and 'investment cost' associated with renewable energy projects.

6) Weaknesses, threats and Challenges of renewable energy projects:

$H0_{34}$: There is no significant difference in the perception regarding challenges faced for development of utility scale renewable energy projects across Types of Organization

Table 5.85 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	173.280	168	0.374

In this case, the significance value (p-value) is 0.374 of chi-square test, which indicates that there is no significant difference in the perception regarding challenges

faced for development of utility scale renewable energy projects across Types of Organization

In view of above, the null hypothesis is accepted which indicates that there does not exist significant difference in perception regarding challenges faced for development of utility scale renewable energy projects across Types of Organization

$H0_{35}$: There is no significant difference in the perception about challenges faced for development of utility scale renewable energy projects across Years of experience group

Table 5.86 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	134.450	126	0.287

In this case, the significance value (p-value) is 0.287of chi-square test, which indicates that there is no significant difference in the perception about challenges faced for development of utility scale renewable energy projects across Years of experience group

In view of above, the null hypothesis is accepted which indicates that there does not exist significant difference in the perception about challenges faced for development of utility scale renewable energy projects across Years of experience group

$H0_{36}$: There is no significant difference in the perception about awareness for renewable energy project development across various regions/ states of India.

Table 5.87 : Chi-Square Tests Table

	Value	df	P-Value
Pearson Chi-Square	77.750	48	0.004

In this case, the significance value (p-value) is 0.004 of chi-square test, which indicates that there exists significant difference in the perception about awareness for renewable energy project development across various regions/ states of India.

In view of above the null hypothesis is rejected and alternate hypothesis is accepted which indicates that there exist significant difference in the perception about awareness for renewable energy project development across various regions/ states of India.

$H0_{37}$: There is no significant difference in Regulatory policy related factors affecting the development of utility scale renewable energy projects within different experience group.

Table 5.88: Kruskal Wallis Test

(Regulatory policy related factors affecting the development of Renewable energy projects within different experience groups)

Factor number	**Regulatory policy related factors**	**Chi-square**	**Df**	**Asymp. Sig**	**H_0**
Factor:1	Policy barriers	6.098	3	0.107	Failed to reject
Factor:2	Regulatory barriers	4.274	3	0.233	Failed to reject
Factor:3	Support mechanism barriers	9.984	3	0.019	Rejected
Factor:4	Political barriers	7.303	3	0.063	Failed to reject
Factor:5	Environment barriers	10.878	3	0.012	Rejected
Factor:6	Land policy barriers	2.214	3	0.529	Failed to reject
Factor:7	Power purchase policy	6.960	3	0.073	Failed to reject
Factor:8	Institutional & Administrative barrier	20.540	3	0.000	Rejected
Factor:9	Public acceptance barrier	26.148	3	0.000	Rejected
Factor:10	International Trade barrier	7.846	3	0.049	Rejected
b. Kruskal Wallis Test					
b. Grouping Variable: Years of Experience					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the Regulatory policy related factors affecting the development of utility scale renewable energy projects within different experience group. In case, if significance value is

more than 0.05, the H_0 Null Hypothesis is failed to reject. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0.

Factor 1: The aforesaid analysis revealed that there is no significant difference in policy barrier among the years of experience group as the significance value is 0.107 which goes beyond the standard level of 0.05.

Factor 2: Researcher also discovered from above Kruskal Wallis Test analysis that there is no significant difference in regulatory barrier among the years of experience group as the significance value is 0.233 which goes beyond the standard level of 0.05.

Factor 3: Moreover, it is discovered from the above analysis that there is significant difference in support mechanism barrier among the years of experience group as the significance value is 0.019 which stay within the standard level of 0.05.

Factor 4: Further, Researcher discovered from above analysis that there is no significant difference in political barrier among the years of experience group as the significance value is 0.063 which goes beyond the standard level of 0.05.

Factor 5: Likewise, Researcher discovered from the above analysis that there is significant difference in Environmental barrier among the years of experience group as the significance value is 0.012 which stay within the standard level of 0.05.

Factor 6: Further, Researcher discovered from above analysis that there is no significant difference in land policy barrier among the years of experience group as the significance value is 0.529 which goes beyond the standard level of 0.05.

Factor 7: Researcher also, discovered from above analysis that there is no significant difference in power purchase policy barrier among the years of experience group as the significance value is 0.073 which goes beyond the standard level of 0.05.

Factor 8: Researcher further discovered from the above analysis that there is significant difference in Institutional & Administrative barrier among the years of experience group as the significance value is 0.000 which stay within the standard level of 0.05.

Factor 9: Researcher also, discovered from the above analysis that there is significant difference in Public acceptance barrier among the years of experience group as the significance value is 0.000 which stay within the standard level of 0.05.

Factor 10: Similarly, Researcher discovered from the above analysis that there is significant difference in International Trade barrier among the years of experience group as the significance value is 0.049 which stay within the standard level of 0.05.

$H0_{38}$: There is no significant difference in factors related to current challenges for installation of renewable energy projects within different organizational group.

Table 5.89 : Kruskal Wallis Test

(Factors related to current challenges for installation of renewable energy projects within different organizational group)

Factor number	Factors related to current challenges	Chi-square	Df	Asymp .Sig	H_0
Factor: 1	Distribution & transmission facilities	7.368	4	0.118	Failed to reject
Factor: 2	Frequent changes in state policies	13.438	4	0.009	Rejected
Factor: 3	Difficulty in funding project	18.808	4	0.001	Rejected
Factor: 4	Financing cost	13.367	4	0.010	Rejected
Factor: 5	Reduced tariff	6.509	4	0.164	Failed to reject
Factor: 6	Variable output	26.362	4	0.000	Rejected
Factor: 7	Initial investment	4.865	4	0.301	Failed to reject
Factor: 8	Market Competition	7.739	4	0.102	Failed to reject
Factor: 9	Cost Competition	6.785	4	0.148	Failed to reject
Factor: 10	International trade issues	9.888	4	0.042	Rejected
Factor: 11	Competitive bidding process	3.311	4	0.507	Failed to reject
Factor: 12	Local Taxes & duties	15.795	4	0.003	Rejected
Factor: 13	Safe guard & anti-dumping duties	9.386	4	0.052	Failed to reject
Factor: 14	Domestic Content Requirement (DCR)	13.433	4	0.009	Rejected
a. Kruskal Wallis Test					
b. Grouping Variable: Types of Organizations					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the factors related to current challenges for installation of renewable energy projects within different organizational group. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject i.e. accepted. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0.

Factor 1: The aforesaid analysis revealed that there is no significant difference in Distribution & transmission facilities for installation of renewable energy projects within different organizational group as the significance value is 0.118 which goes beyond the standard significance level of 0.05.

Factor: 2 Moreover, it is discovered from the above analysis that there is significant difference in Frequent changes in state policies for installation of renewable energy projects within different organizational group as the significance value is 0.009 which stay within the standard significance level of 0.05.

Factor: 3 Researcher discovered from the above analysis that there is significant difference in Difficulty in funding project for installation of renewable energy projects within different organizational group as the significance value is 0.001 which stay within the standard significance level of 0.05.

Factor: 4 Researcher further discovered from the above analysis that there is significant difference in financing cost for installation of renewable energy projects within different organizational group as the significance value is 0.010 which stay within the standard significance level of 0.05.

Factor: 5 Researcher discovered that there is no significant difference in reduced tariff for installation of renewable energy projects within different organizational group as the significance value is 0.640 which goes beyond the standard significance level of 0.05.

Factor: 6 Researcher discovered from the above analysis that there is significant difference in Variable output for installation of renewable energy projects within different organizational group as the significance value is 0.000 which stay within the standard significance level of 0.05.

Factor: 7 Researcher discovered that there is no significant difference in Initial investment for installation of renewable energy projects within different organizational group as the significance value is 0.301 which goes beyond the standard significance level of 0.05.

Factor: 8 Researcher further that there is no significant difference in Market Competition for installation of renewable energy projects within different organizational group as the significance value is 0.102 which goes beyond the standard significance level of 0.05.

Factor: 9 likewise, Researcher discovered that there is no significant difference in Cost Competition for installation of renewable energy projects within different

organizational group as the significance value is 0.148 which goes beyond the standard significance level of 0.05.

Factor: 10 Researcher discovered from the above analysis that there is significant difference in International trade issues for installation of renewable energy projects within different organizational group as the significance value is 0.042 which stay within the standard significance level of 0.05.

Factor: 11 Researcher discovered that there is no significant difference in Competitive bidding process for installation of renewable energy projects within different organizational group as the significance value is 0.507 which goes beyond the standard significance level of 0.05.

Factor: 12 Researcher discovered from the above analysis that there is significant difference in Local Taxes & duties for installation of renewable energy projects within different organizational group as the significance value is 0.003 which stay within the standard significance level of 0.05.

Factor: 13 Researcher discovered that there is no significant difference in Safe guard & anti-dumping duties for installation of renewable energy projects within different organizational group as the significance value is 0.052 which goes beyond the standard significance level of 0.05.

Factor: 14 Researcher lastly discovered from the above analysis that there is significant difference in Domestic Content Requirement for installation of renewable energy projects within different organizational group as the significance value is 0.009 which stay within the standard significance level of 0.05.

$H0_{39}$: There is no significant difference in operational related factors affecting the development of utility scale renewable energy projects within different states.

Table 5.90 : Chi-Square Tests Table

Factor number	Operational related factors	Chi-square	Df	Asymp .Sig	H_0
Factor: 2	Evacuation issues	22.234	12	0.035	Rejected
Factor: 8	Awareness & capacity development barriers	22.673	12	0.031	Rejected
Factor: 9	Sale of power barriers	30.865	12	0.002	Rejected
Factor: 10	Forecasting & scheduling barrier	27.321	12	0.007	Rejected
Factor: 11	Land acquisition barrier	16.027	12	0.190	Failed to reject
Factor: 12	Deviation Schedule Mechanism (DSM)	22.387	12	0.033	Rejected
a. Kruskal Wallis Test					
b. Grouping Variable: Different States					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the Operational related factors affecting the development of utility scale renewable energy projects within different States. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject. In the contrary, if significance value is less than 0.05, Researcher will reject the $H_{0.}$ Accordingly, the researcher discovered following fact from the above Kruskal Wallis test analysis.

Factor: 2 Researcher discovered from the above analysis that there is significant difference in Evacuation issues within the different states, as the significance value is 0.035 which stay within the standard significance level of 0.05.

Factor: 8 Researcher discovered from the above analysis that there is significant difference in Awareness & capacity development challenges within the different states, as the significance value is 0.031 which stay within the standard significance level of 0.05.

Factor: 9 Researcher discovered from the above analysis that there is significant difference in Sale of power related issue within the different states, as the significance value is 0.002 which stay within the standard significance level of 0.05.

Factor: 10 Researcher discovered from the above analysis that there is significant difference in Forecasting & scheduling issues within the different states, as the significance value is 0.007 which stay within the standard significance level of 0.05.

Factor: 11 Researcher also, discovered from above analysis that there is no significant difference in Land acquisition issues within the different states, as the significance value is 0.190 which goes beyond the standard level of 0.05.

Factor: 12 Researcher discovered from the above analysis that there is significant difference in Deviation Schedule Mechanism issues within the different states, as the significance value is 0.033 which stay within the standard significance level of 0.05.

$H0_{40}$: There is no significant difference in functional challenges related factors affecting the development of utility scale renewable energy projects within different organizational groups.

Table 5.91 : Chi-Square Tests Table

Factor number	Functional challenges related factors	Chi-square	Df	Asymp .Sig	H_0
Factor: 1	Financial Challenges	13.858	4	0.008	Rejected
Factor: 3	Costing Challenges	10.472	4	0.033	Rejected
Factor: 4	Competition Challenges	4.991	4	0.288	Failed to reject
Factor: 5	Technical Challenges	36.411	4	0.000	Rejected
Factor: 6	Infrastructure Challenges	8.453	4	0.076	Failed to reject
Factor: 7	Investment Challenges	8.598	4	0.072	Failed to reject
Factor: 13	Supply chain Challenges	8.231	4	0.083	Failed to reject
a. Kruskal Wallis Test					
b. Grouping Variable: Types of Organization					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the functional challenges related factors affecting the development of utility scale renewable energy projects within different organizational groups. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0. Accordingly, the researcher discovered following fact from the above Kruskal Wallis test analysis.

Factor: 1 Researcher discovered from the above analysis that there is significant difference in Financial Challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.008 which stay within the standard significance level of 0.05.

Factor: 3 Further, Researcher discovered from the above analysis that there is significant difference in Costing challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.033 which stay within the standard significance level of 0.05.

Factor: 4 Researcher discovered from the above analysis that there is no significant difference in Competition challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.288 which goes beyond the standard significance level of 0.05.

Factor: 5 Researcher discovered from the above analysis that there is significant difference in Technical Challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.000 which stay within the standard significance level of 0.05.

Factor: 6 Researcher discovered from the above analysis that there is no significant difference in Infrastructure challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.076 which goes beyond the standard significance level of 0.05.

Factor: 7 Researcher discovered from the above analysis that there is no significant difference in Investment challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.072 which goes beyond the standard significance level of 0.05.

Factor: 13 Researcher discovered from the above analysis that there is no significant difference in supply chain challenges for development of utility scale renewable energy projects within different organizational groups as the significance value is 0.083 which goes beyond the standard significance level of 0.05.

$H0_{41}$: There is no significant difference in General factors affecting the development of utility scale renewable energy projects within different states.

Table 5.92 : Chi-Square Tests Table

Factor number	Operational related factors	Chi-square	Df	Asymp .Sig	H_0
Factor: 1	Frequent changes in state level regulations	31.655	12	0.002	Rejected
Factor: 2	Difficulty in finding buyers for generated electricity	19.414	12	0.079	Failed to reject
Factor: 3	Investment cost	13.428	12	0.339	Failed to reject
Factor: 4	Operation & Maintenance	16.780	12	0.158	Failed to reject
Factor: 5	Seasonal availability of renewable resource	27.377	12	0.007	Rejected
Factor: 6	Distribution companies not willing to buy beyond Renewable Power Obligation	25.505	12	0.013	Rejected
Factor: 7	Process for obtaining Renewable Energy Certification (REC)	38.466	12	0.000	Rejected
Factor: 8	Wheeling & supervision charges.	17.487	12	0.132	Failed to reject
Factor: 9	Procedure for permission, registration etc.	25.008	12	0.015	Rejected
Factor: 10	Procedure for connectivity	11.862	12	0.457	Failed to reject
a. Kruskal Wallis Test					
b. Grouping Variable: Different States					

Source: Computed from Primary Data

The captioned table for Kruskal Wallis Test indicates the significance in the General factors affecting the development of utility scale renewable energy projects within different States. In case, if significance value is more than 0.05, the H_0 Null Hypothesis is failed to reject .i.e accepted. In the contrary, if significance value is less than 0.05, Researcher will reject the H_0. Accordingly, the researcher discovered following fact from the above Kruskal Wallis test analysis.

Factor: 1 Researcher discovered from the above analysis that there is significant difference in frequent changes in state level regulations within the different states, as the significance value is 0.002 which stay within the standard significance level of 0.05.

Factor: 2 Researcher discovered from the above analysis that there is no significant difference in Difficulty in finding buyers for generated electricity for renewable

energy projects within different States as the significance value is 0.079 which goes beyond the standard significance level of 0.05.

Factor: 3 Researcher discovered from the above analysis that there is no significant difference in Investment cost for development of utility scale renewable energy projects within different States as the significance value is 0.339 which goes beyond the standard significance level of 0.05.

Factor: 4 Researcher discovered from the above analysis that there is no significant difference in Operation & Maintenance for renewable energy projects within different States as the significance value is 0.158 which goes beyond the standard significance level of 0.05.

Factor: 5 Researcher discovered from the above analysis that there is significant difference in Seasonal availability of renewable resource for development of renewable power projects within the different states, as the significance value is 0.007 which stay within the standard significance level of 0.05.

Factor: 6 Researcher discovered from the above analysis that there is significant difference in Distribution companies not willing to buy beyond Renewable Power Obligation within the different states, as the significance value is 0.013 which stay within the standard significance level of 0.05.

Factor: 7 Researcher discovered from the above analysis that there is significant difference in Process for obtaining Renewable Energy Certification (REC) within the different states, as the significance value is 0.000 which stay within the standard significance level of 0.05.

Factor: 8 Researcher discovered from the above analysis that there is no significant difference in Wheeling & supervision charges for renewable energy projects within different States as the significance value is 0.132 which goes beyond the standard significance level of 0.05.

Factor: 9 Researcher discovered from the above analysis that there is significant difference in Procedure for permission, registration etc within the different states, as the significance value is 0.015 which stay within the standard significance level of 0.05.

Factor: 10 Researcher discovered from the above analysis that there is no significant difference in Procedure for connectivity for renewable energy projects within different States as the significance value is 0.457 which goes beyond the standard significance level of 0.05.

$H0_{42}$: There is no significant difference in the perception about grid connectivity / evacuation issues for development of renewable energy projects between different States and types of organization.

Table 5.93 : Chi-Square Tests Table

Sr No	Evacuation Issues	Different States			Types of organization		
		Value	df	P-Value	Value	df	P-Value
1	Inadequate transmission infrastructure	42.001	48	0.716	23.350	16	0.105
2	Mismatch between the available corridor and necessary demand Centre	45.348	48	0.582	20.086	16	0.216
3	Procedure for connectivity permission	70.985	48	**0.017**	37.911	16	**0.002**
4	High cost of establishment of transmission lines	48.412	48	0.456	14.249	16	0.580
5	Right of Way (RoW) issues	35.597	36	0.631	13.132	12	0.36
6	Transmission system Supervision charges	52.574	48	0.301	31.061	16	0.13
7	Wheeling & transmission charges	33.872	48	0.939	26.085	16	0.053

Source: Computed from Primary Data

Pearson Chi-Square Tests has been applied to examine the difference in perception about grid connectivity / evacuation issues for development of renewable energy projects between different States and types of organization.

The result of the test indicates that there does not exists significant difference in the perception about grid connectivity / evacuation issues for all statement as the significance value (p-value) for all statements is well beyond the significance level of 0.05 except in case of statement `` Procedure for connectivity permission``

In view of above, the null hypothesis is failed to rejected and hence accepted which indicates that there is no significant difference in the perception about grid connectivity / evacuation issues for development of renewable energy projects between different States and types of organization.