Impact Analysis of e-initiatives in Uttarakhand

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*Abstract--*Uttarakhand, having completed more than 9 years as a separate state, is now poised to embark on a new era of rapid development and inclusive growth. The broad features of the administrative structure and systems, extending from the state to the district and sub-district levels, are now in place, though the problem of shortage of manpower in crucial areas remains. The Eleventh Five Year Plan gives a good opportunity to launch the State on the path of rapid and sustained growth with emphasis on rural development, education and welfare of the state. The previous plan was prepared at a time when the State was quite young. The administrative system was in the stage of infancy and adequate administrative support and expert assistance for planning were not available. The financial resource position of the State was quite precarious, when the State came into existence. Despite constraints, Uttarakhand has made rapid advancement and has posted a significant high rate of growth.

Keywords: e-Governance, Good-Governance, e-initiatives; impact analysis; SWOT Analysis.

I. INTRODUCTION

A. Stages in e-Initiatives

e-Initiatives are about service delivery to the citizens using the Information and communication Technologies. The e-Initiatives go through three distinct levels of implementation. These stages in the e-Initiatives are:

Provision of static information: This stage is where a local body/government department has a portal of its own. Citizens can access information, seek procedural details about city services. However, they can't interact with any of the processes within the Local Body (LB)/department.

Capability for Transactional Services: This stage is where users can carry out transactions online.

Creating Online Communities: At this stage, LB websites provide interoperability with various organizations. Majority of current -initiatives fall under the first stage.

The general use problems in the e-Initiatives system are: No clarity in the setup of Civic authority, poor information availability on initiatives, lack of clarity on procedures, time consuming processes, lack of accountability of officials of the system, too many agencies and overlap of work.

B. e-Initiatives challenges

There has been tremendous success of e-Initiatives in the

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country. In early 1990's most of the states in India started implementing the e-Initiatives. Process SMART has been implemented in the Government of Andhra Pradesh in 1992. It focuses on Simple, Moral, Accountable, Reachable, and Transparent Principle for the successful implementation of e-strategies. Many states have successfully implemented e-Strategies thereafter. However, there are many implementing challenges in deploying the e-Initiatives. They are:

- Infrastructure capacity
- Compatibility with other IT systems/ databases/ platforms
- Scalability of existing applications
- Information exchange mechanisms
- Geo referencing of assets
- Ability to carry out financial transactions

The Span and reach of e-Initiatives may primarily focus on the following:

- Various levels of administrative set-up from village/ block to State/Central agencies
- Non-governmental social agencies
- Connecting citizens to the above agencies

The main purpose of developing e-Initiatives is to develop an effective, rapid, accountable and self-sustaining mechanism for the betterment of social service through multi-layered system.

e-Initiatives are basically the concerns of governmental organizations which are to be utilized by the larger society for tackling major as well as day- to-day problems of ordinary citizens. The overall strategy for e-Initiatives is to develop methods to be used for the society using ICTs.

The state of Uttarakhand is engaged in this endeavor for the last about ten years. It is high time for a proper investigation and the assessment of the impact of e-Initiatives of the state.

C. Objectives

The objective of Educational qualification wise groups of the respondents does not differ in their mean IAOEIU (Impact Assessment of e-Initiative in Uttarakhand) scores.

There exists no significant difference in the mean IAOEIU scores of gender wise two groups of the students.

Age wise four groups of the respondents do not differ from one another with regard to their mean IAOEIU scores.

The present research work is to study the impact assessment of various e-Initiatives of Uttarakhand state with special focus on effectiveness and countable measures related to the implementation.

To address the objective, the following research questions have been undertaken:

- To describe and examine the e-Initiatives undertaken and initiated by the Central government.

- To describe and examine the attempts made by the State of Uttarakhand with regard to e-Initiatives.
- To analyze and understand the perceptions of experts towards the effectiveness of e-Initiatives in Uttarakhand.
- To collect and elaborate the comments of the experts on e-Initiatives in Uttarakhand.

D. Delimitation of the Study

The study has been delimited as mentioned below:

- Perception towards the effectiveness of e-Initiatives deals with the 14 main e- endeavors of the state of Uttarakhand.
- A total of 148 respondents were contacted keeping in view their familiarity with the issues-concerned and their willingness to provide the responses. It means that Purposive sampling techniques was used to identify these respondents.
- Actual field survey technique has not been used to find out the effectiveness of e-Initiatives. It has been done by taking into consideration relevant groups of respondents.

II. RESEARCH METHODOLOGY

In order to attain the objectives of the study, the following research methodology (Fig 1) has been followed. Preliminary investigation about the e-Initiatives of the state has been checked and the perceptions of the experts towards the effectiveness of e-Initiatives in Uttarakhand have been analyzed and understood in the following manner:

A. IAOEIU

Questionnaire on the e-Initiatives, Impact assessment of e-Initiatives in Uttarakhand has been prepared.

A scale named 'Impact Assessment of e-Initiatives in Uttarakhand' IAOEIU has been prepared for the study of e-Initiatives. The questionnaire contains the feedback of different e-Initiatives of the state covering IT awareness, infrastructure issues, effectiveness, and necessity of the programme to the grass root levels. It is a five point scale and contains 28 statements. Out of these 28 statements 14 statements are positive and 14 are negative statements.
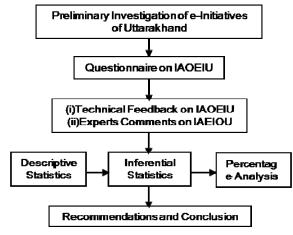

Fig. 1. Research Methodology

For a positive item the following scoring procedure has been employed:-

4 Marks awarded for strongly agree
3 Marks awarded for agree
2 Marks awarded for can't say
1 Mark awarded for disagree
0 Mark awarded for strongly disagree

For a negative item the scoring procedure is just reversed. The marking system is

0 Mark awarded for strongly agree
1 Mark awarded for agree
2 Mark awarded for can't say
3 Mark awarded for disagree
4 Mark awarded for strongly disagree

Scores on all the 28 items are added together and it fielded a score of the respondent in this scale. An individual score may be interpreted on the basis of IAOEIU "The higher the score the more favorable is the perception of the respondent towards the effectiveness of e-Initiatives and the lower the score the less favorable is the perception of the respondent towards the effectiveness of e-Initiatives". Fig 2 shows the sample questionnaire

Fig. 2. Sample questionnaire

A. The IAOEIU of the Study

The sample of the study consisted of 148 respondents. They were Computer experts, Computer teachers, Computer Education Related Students and computer users of government departments. Gender and educational qualification wise distribution of these 148 respondents has been mentioned in Table 1.

TABLE 1: GENDER AND EDUCATIONAL QUALIFICATION WISE DISTRIBUTION OF THE RESPONDENTS (N=148)

	Under Grad.	Grad.	Post Grad.	Other Qual.	Total
Male	02	17	69	24	112
Female	02	03	25	06	36
Total	04	20	94	30	148

Grad. - Graduate

Gender and age-wise group distribution of these 148 respondents has been mentioned in Table 2.

TABLE 2: GENDER AND AGE WISE DISTRIBUTION OF THE RESPONDENTS (N = 148)

	< 30 Yrs.	31-40 Yrs.	41-50 Yrs.	>51 Yrs. & above	Total
Male	42	39	19	12	112
Female	21	11	04	00	36
Total	63	50	23	12	148

As mentioned earlier, the sample included computer experts, computer teachers, computer education related students and others. The number of these sample respondents has been presented in Table 3.

TABLE 3: GENDER AND CATEGORY/STATUS WISE DISTRIBUTION OF THE SAMPLE RESPONDENTS (N = 148)

	Computer experts	Computer Teacher	Computer related Students	Others	Total
Male	44	24	01	43	112
Female	04	12	05	15	36
Total	48	36	06	58	148

B. Data Collection Procedure

The relevant data were collected by employing the above mentioned tool IAOEIU. Information with regard to gender, age, educational qualification, status/category of the respondents ware also made known. Data were collected by personally contacting the respondents, through e-mail and through postal services.

Respondents were from Almora, Bageshwar, Pithoragarh, Udham Singh Nagar, Nainital, Chamoli, Haridwar, Deharadun, Champawat, Pouri, Tehari, Uttarkashi and Rudraprayag district of the state of Uttarakhand. The data were collected in the month of October, November and December, 2009.

C. Data Analysis

In order to attain the objectives 3 of the study, the following statistics were employed:
- Descriptive Statistics
- Inferential Statistics

A master chart (MC) has been prepared which contains the following information with regard to the sample respondents:

(1)	**Gender**	**-**		**Code**
	Male	-		1
	Female	-		2
(2)	**Age – less than**			
	Less than 30 years			1
	30-40 years			2

	41-50 years	3
	51 years & above	4
(3)	**Educational Qualification**	
	Under graduates	1
	Graduates	2
	Post-graduates	3
	Other Qualification	4
(4)	**Category/Status**	
	Computer experts	1
	Computer Teachers	2
	Computer Education Related Students	3
	Others	4

D. Descriptive Statistics

In order to understand the nature of the distribution of the scores of the IAOEIU (scale) of the 148 sample respondents, the values of the relevant Descriptive statistics were prepared made known and these have been presented in Table 4.

TABLE 4: VALUES OF THE VARIOUS DESCRIPTIVE STATISTICS WITH REGARD TO THE IAOEIU SCORES OF THE SAMPLE RESPONDENTS (N=148)

S. No.	Statistics	Symbol	Value
1	Mean	M	56.43
2	Mode	Mo	54.00
3	Median	Mdn	54.83
4	Standard Deviation	SD	8.346
5	Standard Error of Mean	SEm	0.686
6	Standard Error of Median	SEmd	0.859
7	Standard Error of Standard Deviation	SEsd	0.487
8	Tenth percentile	P10	47.82
9	Twenty Fifth Percentile	P25	50.82
10	Seventy Fifth Percentile	P75	58.56
11	Ninetieth Percentile	P90	65.75
12	Skewness	Sk	+0.575
13	Kurtosis	Ku	0.247

Entries in Table 4 reveal the following:
- The values of Mean, Mode and Median are 56.43, 54.00 and 54.83 respectively. The lowest score is 42 and the highest score is 86. This shows that there is not a very large deviation in the values of these three central tendencies.
- The values of the Standard Errors of Mean, Median and Standard Deviation are 0.686, 0.859 and 0.487 respectively. There values are not very large and hence the values of the Mean, Mode and Median may be accepted as approximations of the values of the respective parameters.
- The distribution is slightly positively skewed as the value of Skewers is +0.575 in nature.
- The value of Kurtosis is 0.247. It means that the distribution is slightly leptokurtic in nature.

On the basis of the above narration the nature of the distribution of IAOEIU scale scores may be assumed to tend towards the shape of a Normal Probability Curve (NPC). Hence it has been decided to compute the values of t- ratios for ascertaining the significance of difference in the mean IAOEIU scale scores of the various relevant groups of the sample respondents.

E. Inferential Statistics

Values of t-ratios were computed to ascertain the significance of differences in the mean IAOEIU scale scores of the following groups of the respondents respectively:

- Educational qualification wise groups
- Gender wise groups
- Age wise groups

In addition to the above, appropriate procedure was followed to find out the number and percentages of the respondents to attain the following sub-objectives:

(1) To find out the number of respondents who either "agreed or strongly agreed" with regard to the 28 statements respectively of IAOEIU Scale.

(2) To find out the number of respondents who respondents in 'Can't Say' with regard to the 28 statements of IAOEIU scale respectively.

(3) To find out the number of respondents who either "disagreed or strongly disagreed" with regard to the 28 statements of IAOEIU scale respectively.

(4) To make a list of six statements of IAOEIU scale towards which "first six highest percentage of respondents" responded in "either agree or strongly agree"

(5) To make a list of six statements of IAOEIU scale towards which "last six lowest percentages of respondents" responded in "either agree or strongly agree."

(6) To make a list of five statements of IAOEIU scale towards which "first five highest percentage of respondents" responded in "Can't say"

(7) To make a list of five statement of IAOEIU scale towards which "last five lowest percentages of respondents" responded in "Can't Say"

(8) To make a list of five statements of IAOEIU scale towards which "first five highest percentages of respondents" responded in "either disagree or strongly disagree"

(9) To make a list of "last five lowest percentages of respondents in "either disagree or strongly disagree"

Furthermore, percentage analysis has been done to attain the following sub–objectives:

(1) To identify the statement towards which highest number of respondents "strongly agreed."

(2) To identify the statements towards which "lowest number of respondents "strongly agreed"

(3) To identify the statements towards which highest number of respondents "agreed."

(4) To identify the statements towards which lowest number of respondents "agreed."

(5) To identity the statements towards which highest number of respondents "Can't Say."

(6) To identify the statements towards which lowest number of respondents "Can't Say".

(7) To identify the statements towards which highest number of respondents "Strongly disagreed".

(8) To identify the statements towards which lowest number of respondents "Strongly disagreed".

(9) To identify the statements towards which highest number of respondents" disagreed".

(10) To identify the statements towards which lowest number of respondents "disagreed".

The rejection /acceptance of a hypothesis is decided and determined on the basis of the significance/insignificance of the relevant statistics of 0.05 level of significance. The data is statistically analyzed using Statistical Package for Social Sciences (SPSS).

III. DATA ANALYSIS

This section deals with the statistical analysis of the data collected to attain the following two objectives of the study:

(1) To analyze and understand the perceptions of experts towards the effectiveness of e-Initiatives in Uttarakhand.

(2) To collect and elaborate the comments of the experts on e-Initiatives in the mean Uttarakhand.

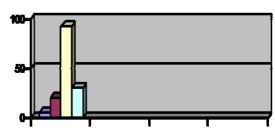### A. Qualification wise four groups of the respondents:

Fig. 3. Qualification wise Group

Above graph reveal that qualification wise four groups of the respondents do not differ in their perception towards the effectiveness of e-Initiatives. Fig 3 shows the gender wise distribution.

B. Gender wise two groups of the respondent scores

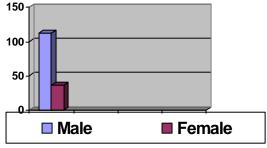*Note:-The value of t-ratio is insignificant at 0.05 Level of significance*

Fig. 4. Gender wise Group

Above graph reveal that gender wise two groups of the respondents do not differ in their perception towards the effectiveness of e-Initiatives. Fig 4 shows the gender wise distribution.

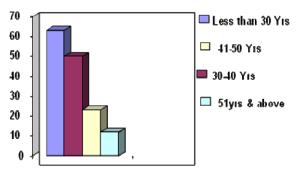### C. Age wise four groups of the respondents scores

Fig. 5. Age wise group

The comparison of the Perception towards the effectiveness of e- Initiatives of age-wise four groups of the Respondents (Fig 5).

Note: - *All the values of the six t-ratios are insignificant at 0.05 level of significance.*

IV. IMPACT ANALYSIS OF e-INITIATIVES IN UTTARAKHAND

A. Combined ratio analysis

Entries in Table 5 and Fig 6 reveal the following-

- In case of the 26 items (out of a total of 28 items), the number of responses are in decreasing order from SA+A to can't say to SD+D.
- In the case of the following two items the number of responses are not in decreasing order from SA+A to Can't Say to SD+D
- "It is improbable to technologically develop a traditional society through e-Initiatives".
- "Computerization of Government departments faces major problems because of the lake of 24X 7 hours power backup facility".

TABLE 5: COMBINED RATIO ANALYSIS OF RESPONDENTS

Item No.	SA+A	Can't Say	SD+D
1	105	36	07
2	96	31	21
3	68	27	53
4	64	46	38
5	75	52	21
6	77	50	21
7	98	39	11
8	76	57	15
9	82	39	27
10	105	14	29
11	105	25	18
12	73	61	14
13	113	22	13
14	86	49	13
15	127	15	06
16	88	32	28
17	118	20	10
18	86	39	23
19	81	57	10
20	87	46	15
21	104	32	12
22	87	48	13
23	106	27	15
24	118	15	15
25	109	21	18
26	68	55	25
27	124	16	08
28	85	49	14

Entries in Table 6 and Fig 7 reveal reveal that on the basis of the Percentage analysis of the responses towards the 28 items of   IAOEIU Scale of the 148 respondents, the following important results have been obtained :

- The Statement which has been either strongly agreed or agreed by the largest   number of   respondents (85.8%) is as follows: "More concrete efforts are required to subsequently increase the IT-awareness''
- The Statement which has been either strongly agreed or agreed by the   second largest number of respondents

(83.8%) is as follows: "e-Governance projects are providing excellent opportunities to the different department by bringing them within the ambit or e-Governance".
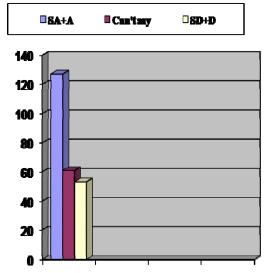

Fig. 6. Combined ratio analysis

TABLE 6: PERCENTAGE ANALYSIS OF RESPONDENTS STRONGLY AGREES +AGREES

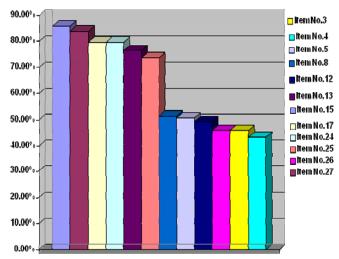| Item. No.	Number of Respondents	Percentage
Item No.15	127	85.8%
Item No.27	124	83.8%
Item No.17	118	79.7%
Item No.24	118	79.7%
Item No.13	113	76.4%
Item No.25	109	73.6%
Item No.8	76	51.4%
Item No.5	75	50.7%
Item No.12	73	49.3%
Item No.26	68	45.9%
Item No.3	68	45.9%
Item No.4	64	43.2%

Fig. 7. Percentage Analysis of respondents Strongly Agree + Agree

- The Statement which has been either strongly agreed or agreed by the   third largest number of respondents (79.7%) is as follows: "In this era of globalization e-Initiatives are imperative for overall development of the society".

- The Statement which has been either strongly agreed or agreed by the fourth largest number of respondents (79.7%) is as follows: "Computerized Government departments have successfully increased their working efficiency".
- The Statement which has been either strongly agreed or agreed by the fifth largest number of respondents (76.4%) is as follows: "There are still several shortcomings in the functioning of e-Governance projects of the state".
- The Statement which has been either strongly agreed or agreed by the sixth largest number of respondents (73.6%) is as follows: "Lack of continuous up gradation of information is a major problem being faced by the users of Uttara portal".
- The Statement which has been either strongly agreed or agreed by only 43.2% of the respondents is as follows: "Government employees have truly become IT savvy through the efforts of project Sakshyam".
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TABLE 7: PERCENTAGE ANALYSIS OF RESPONDENTS STRONGLY DISAGREE+ DISAGREE

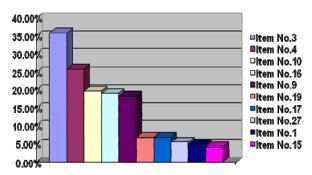| Item. No.	Number of Respondents	Percentage
Item No.3	53	35.8%
Item No.4	38	25.7%
Item No.10	29	19.6%
Item No.16	28	18.9%
Item No.9	27	18.2%
Item No.19	10	6.8%
Item No.17	10	6.8%
Item No.27	8	5.4%
Item No.1	7	4.7%
Item No.15	6	4.1%

Fig. 8. Percentage Analysis of Strongly Disagree + Disagree

Entries in Table 7 and Fig 8 reveal that on the basis of the Percentage analysis of the responses towards the 28 items of IAOE I U Scale of the 148 respondents , the following important results have been obtained:

- The Statement which has been either strongly disagreed or disagreed by the largest number of respondents 35.8% is as follows: "It is improbable to technologically develop a traditional society through the efforts of project Sakshyam"
- The Statement which has been either strongly disagreed or disagreed by the second largest number of respondents 25.7% is as follows: "Government employees have truly become IT savvy through the efforts of project Sakshyam"

- The Statement which has been either strongly disagreed or disagreed by the third largest number of respondents 19.6% is as follows: "Computerization of Government departments faces major problems because of the lack of 24 X 7 hours power backup facility"
- The Statement which has been either strongly disagreed or disagreed by the fourth largest number of respondents 18.9% is as follows: "The task of IT workforce creation in college/Universities is being adequately done through project Shikhar"
- The Statement which has been either strongly disagreed or disagreed by the fifth largest number of respondents 18.2% is as follows: "The major objective of project Hindi lab is to provide digitized content to local level is being properly attained"
- The Statements which has been either strongly disagreed or disagreed by only 4.1% respondent is as follows: "More concrete efforts are required to subsequently increase the IT- awareness"
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TABLE 8: PERCENTAGE ANALYSIS OF CAN'T SAY

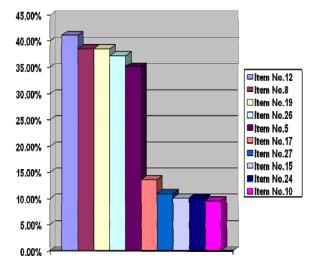| Item. No.	Number of Respondents	Percentage
Item No.12	61	41.2%
Item No.8	57	38.5%
Item No.19	57	38.5%
Item No.26	55	37.2%
Item No.5	52	35.1%
Item No.17	20	13.5%
Item No.27	16	10.8%
Item No.15	15	10.1%
Item No.24	15	10.1%
Item No.10	14	9.5%

Fig. 9. Percentage Analysis of Can't Say

Entries in Table 8 and Fig 9 that on the basis of the Percentage analysis of the responses towards the 28 items of IAOEIU Scale of the 148 respondents , the following important results have been obtained:

- The Statement towards which the largest number of respondents 41.2% responded in "Can't Say" is as follows: "Project Hermitage has really succeeded in creating centers of excellence in IT in the state"
- The Statement towards which the smallest number of respondents 9.5% responded in "Can't Say" is as

follows: "Computerization of Government departments faces major problems because of the lack of 24 x 7 hours power backup facility"

TABLE 9: COMBINED ANALYSES

Item	Strongly	Agree	Can't	Disagree	Strongly
1	29	76	36	06	01
2	26	70	31	15	06
3	26	42	27	45	08
4	18	46	46	35	03
5	25	50	52	19	02
6	26	51	50	17	04
7	36	62	39	09	02
8	36	40	57	12	03
9	21	61	39	22	05
10	51	54	14	25	04
11	40	65	25	16	02
12	23	50	61	11	03
13	43	70	22	07	06
14	26	60	49	08	05
15	63	64	15	04	02
16	20	68	32	23	05
17	53	65	20	09	01
18	27	59	39	21	02
19	26	55	57	05	05
20	29	58	46	14	01
21	28	76	32	12	00
22	29	58	48	11	02
23	35	71	27	11	04
24	43	75	15	14	01
25	37	72	21	15	03
26	15	53	55	21	04
27	35	89	16	04	04
28	19	66	49	12	02

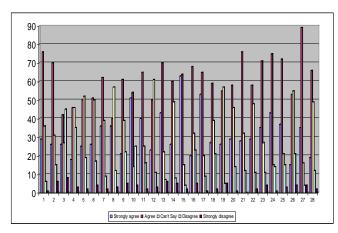Table 9 and Fig10 represent the combined ration analysis

Fig. 10. Combined Analysis

Entries in the table 10 and figure 11 represent highest verses lowest ratio analysis.

TABLE 10 RATIO ANALYSES HIGHEST VERSES LOWEST

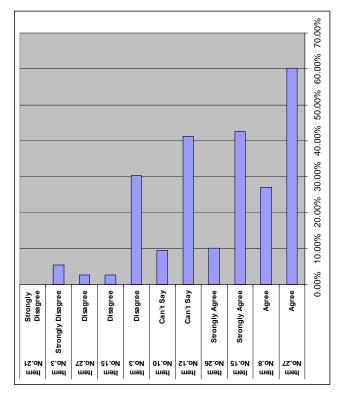| ITEM NO.		Respondents		%AGE
Item No.27	Agree	89	Highest	60.13%
Item No.8	Agree	40	Lowest	27.02%
Item No.15	Strongly Agree	63	Highest	42.56%
Item No.26	Strongly Agree	15	Lowest	10.13%
Item No.12	Can't Say	61	Highest	41.21%
Item No.10	Can't Say	14	Lowest	9.45%
Item No.3	Disagree	45	Highest	30.41%
Item No.15	Disagree	04	Lowest	2.70%
Item No.27	Disagree	04	Lowest	2.70%
Item No.3	Strongly Disagree	08	Highest	5.40%
Item No.21	Strongly Disagree	00	Lowest	0.00%

Fig. 11. Ratio analysis Highest Verses Lowest

On the basis of the Percentage analysis of the responses towards the 28 items of IAOEIU Scale of the 148 respondents, the following important results have been obtained:

- Statement which has been agreed by the highest number of respondents 60.13% is as follows: "e-Governance projects are providing excellent opportunities to the different departments by bringing to the different department by bringing them within the ambit of e-governance"
- The Statement which has been agreed by the lowest number of respondents 27.02% is as follows: "Benefit of project D-space could not yet reach the beneficiaries in the remote areas of the state"
- The Statement which has been strongly agreed by the highest number of respondents 42.56% is as follows: "More concrete efforts are required to subsequently increase the IT – awareness"
- The Statement which has been strongly agreed by the lowest number of respondents 10.13% is as follows: "Creation of center of excellence of IT through project Hermitage is beneficial for a limited number of experts only"
- The Statement which has been can't say by the highest number of respondents 41.21% is as follows: "Project Hermitage has really succeeded in creating centers of excellence in IT in the state"

- The Statement which has been can't say by the lowest number of respondents 9.45% is as follows: "Computerization of Government departments faces major problems because of the lack of 24 X 7 hours power backup facility"
- The Statement which has been disagreed by the highest number of respondents 30.41% is as follows: "It is improbable to technologically develop a traditional society through e-Initiatives"
- The Statement which has been disagreed by the lowest number of respondents 2.70% is as follows: "More concrete efforts are required to subsequently increase the IT- awareness"
- The Statement which has been disagreed by the lowest number of respondents 2.70% is as follows: "e-Governance projects are providing excellent opportunities to the different departments by bringing them within the ambit of e-Governance"
- The Statement which has been strongly disagreed by the highest number of respondents 5.40% is as follows: "It is improbable to technologically develop a traditional society through e-Initiatives"
- The Statement which has been strongly disagreed by the lowest number of respondents 0.00% is as follows: "Lack of information facility is creating problems in the attainment of the objectives of project Shikshya"

V. FUTURE SCOPE

Practical implementation of suggested applications or services is beyond the scope of this study. Future workers may design some working modules based upon our theoretical model that can be utilized by the state government. A new trend of using mobile based services and applications within developing nations is observed. In future, the m-service may be popular among people in Uttarakhand. Future research can study or implement the new forms of m-services integrated with basic internet and e-Governance services. In Uttarakhand, more focus is required on mobile based applications such as m-commerce and m-governance. The SMS based alert systems could be viewed as an early initiative in this direction. Future work could test the validity of the findings of this study's on m-Governance and m-Commerce initiatives.

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