Procedure to Verify Whether A Hypothesis is A Null Hypothesis or an Alternate Hypothesis for the Business Intelligence

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Abstract --**The main aim of this research paper is to bring out a procedure to verify the hypothesis which is of two kinds namely, the Null Hypothesis and the Alternate Hypothesis for the research questions or the research statements for a particular phenomenon or a scenario. In this paper , the analysis had been taken up with the online survey questionnaires and the analysis had been done with the help of the online or web-based calculators for enhancing the research practices qualitatively and quantitatively. The ultimate aim of this research paper is check the explanations and to strengthen findings or the observations aroused due to the Hypothesis.**

***Keywords*-- Null Hypothesis, Alternate Hypothesis, online survey questionnaires, web-based calculators,**

I. INTRODUCTION

"Hypothesis is a formal statement that presents the expected relationship between an independent and dependent variable.

"(Creswell, 1994), A research question is essentially a hypothesis asked in the form of a question."

The Null Hypothesis generally represents a theory that had been put forward, either because the same is believed to be true or it is to be used as a basis for the argument but has not been proved so far. The same would have a serious outcome if an incorrect decision is made.

The Alternate Hypothesis is a statement of what a hypothesis test is set up to establish. And this is the opposite of the Null Hypothesis. This could be only reached if the Null Hypothesis is rejected altogether. Or in other words, the Alternate Hypothesis is the actual desired conclusion of the Researcher that is to be put-up.

Hypothesis is a documented prediction that provides an explanation for the observed events. Any observed event is a measurable result or the condition. The Null Hypothesis states that the stated parameters are equal to a value whereas the Alternate Hypothesis states that the facts are believed to be true and are hoped to be considered true.

Null Hypothesis	Nothing Happened	Right thing been wrongly rejected .
Alternate Hypothesis	Something Happened	Wrong thing not rejected .

The hypothesis is to determine whether one population mean $\mu1$ is equal to the different population mean $\mu2$ and thus includes the following:

Ho :	$\mu1 = \mu2$
H1 :	$\mu1 < \mu2$
H1 :	$\mu1 > \mu2$
H1 :	$\mu1$ not equal to $\mu2$

Tests to work-out the Hypothesis

Ho :	$\mu1 = \mu2$	No Test
H1 :	$\mu1 < \mu2$	Low Tailed Test
H1 :	$\mu1 > \mu2$	Upper Tailed Test
H1 :	$\mu1$ not equal to $\mu2$	Two Tailed Test

II. LITERATURE REVIEW

As mentioned in the web-link : http://courses.aiu.edu/RESEARCH%20%20METHODOLOGY/session%204/4.pdf

The rules of the Qualitative Research according to Kleining are as mentioned herewith ,

Kleining offers four rules for a scientific and qualitative process of approaching understanding to reality.

Rule 1 (refers to subject / researcher)

"Prior understandings of the phenomenon to be researched should be seen as provisional and should be transcended with [the discovery of] new information with which they are not consistent."(1982: 231)

Rule 2 (refers to the object of study)

"The object is provisional; it is only fully known after the successful completion of the process of discovery."(1982: 233)

Rule 3 (refers to action in relation to the subject of research, hence to data collection)

"The object should be approached from "all" sides; rule of the maximum variation of perspectives."(1982: 234)

Rule 4 (refers to the evaluation of information gathered, hence to data analysis)

"Analysis of the data for common elements."(1982: 237)

The use of the Research Questions and the Research Objectives is more frequently carried-out in case of the Survey Projects whereas in the case of the Experiments , the use of the Hypotheses is more frequently used for comparing between the variables and for finding out the relationships between the variables.

The research statements become the Research Hypothesis. The research questions donot make –up the Hypothesis statements.

The null hypothesis always contains the condition of equality (=) . The alternative hypothesis is the same as the claim. A hypothesis test is a test of significance.

III. METHODOLOGY

The methodology that was followed was as mentioned below :

Step1: Preparing the On-Line Questionnaire .

Step 2: Launching the same for the anonymous result summary.

Step 3: Further analyzing the results for the decision making .

Step 4 : Generalising the results for the benefit of the society of Professional Researchers.

Begin
Begin with the Broad Questions
Narrow Down and Focus In
Operationalize
Observe
Reach Conclusions
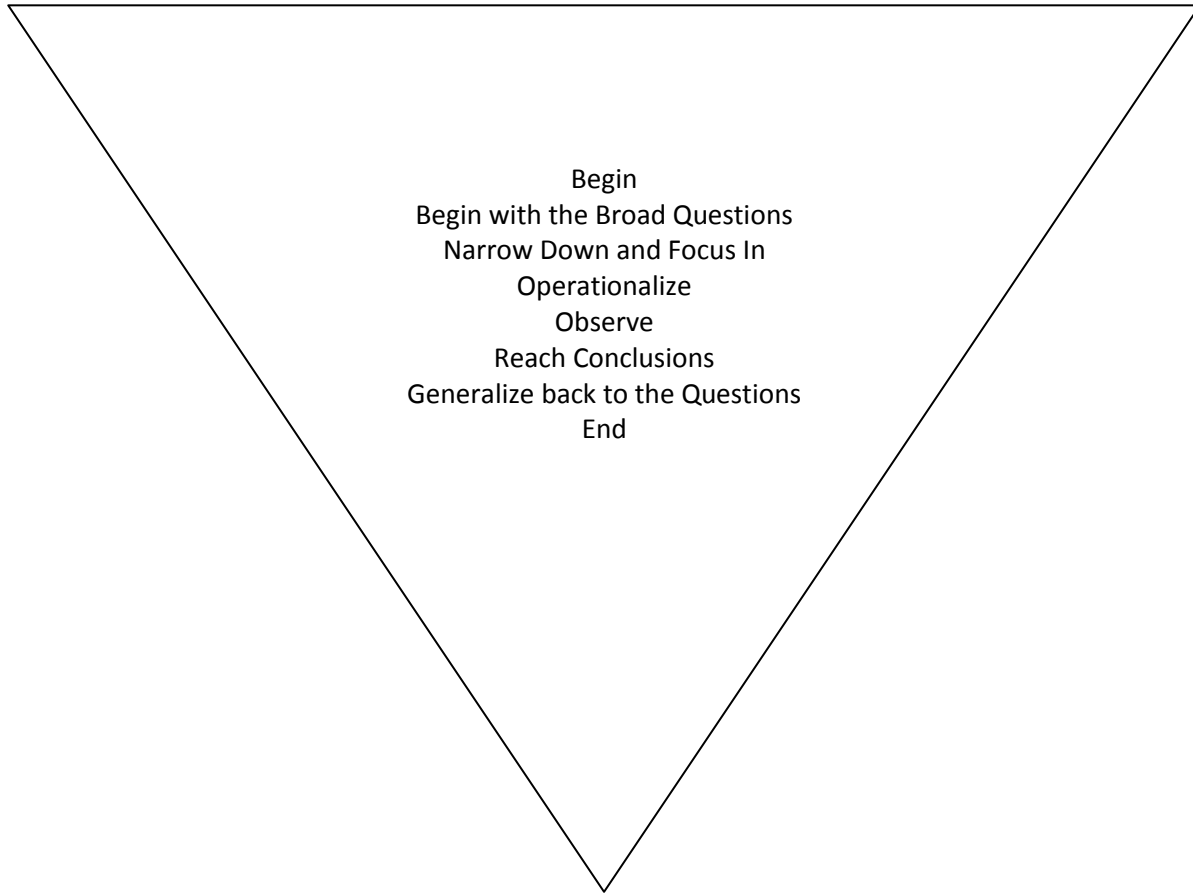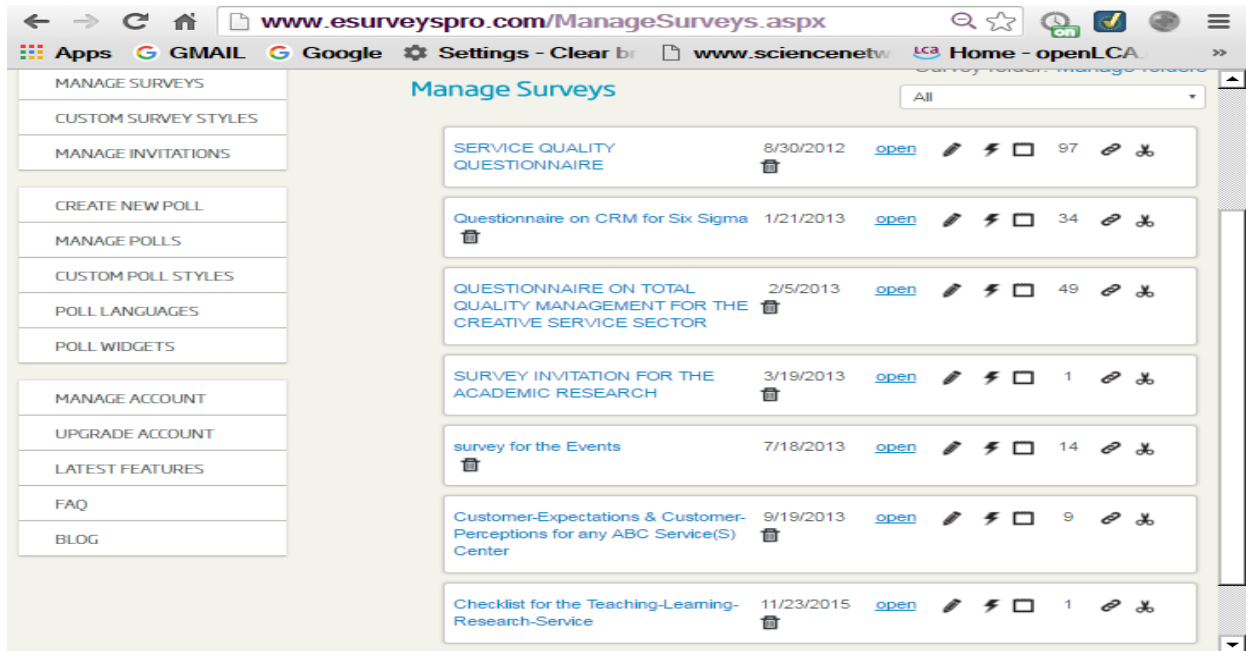Generalize back to the Questions
End

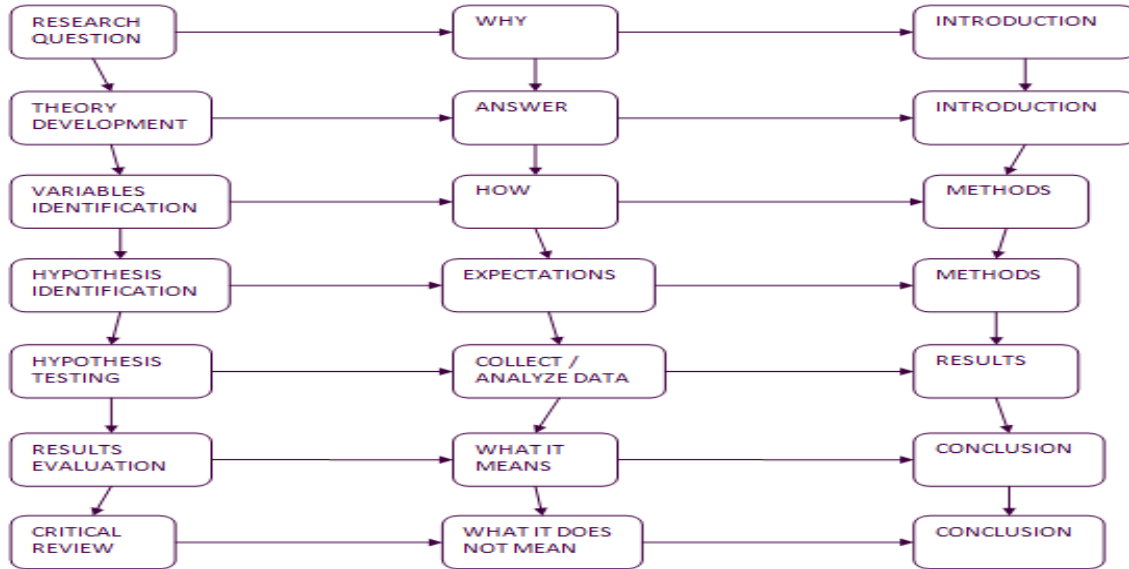**Fig-1 Inverted Triangle Concept for the Generalization of the Results**

The methodology to generalize the results should be put-up in the form of the inverted triangle so that the Begin and the End are clearly defined like the figure drawn.

Data Collection

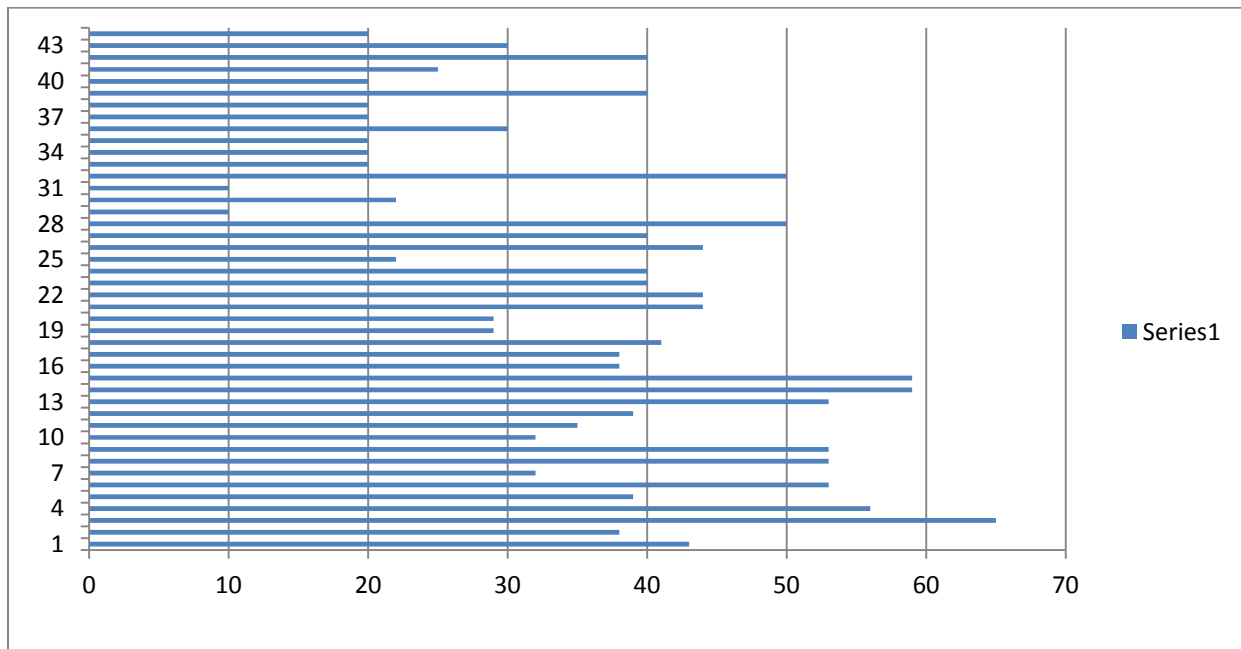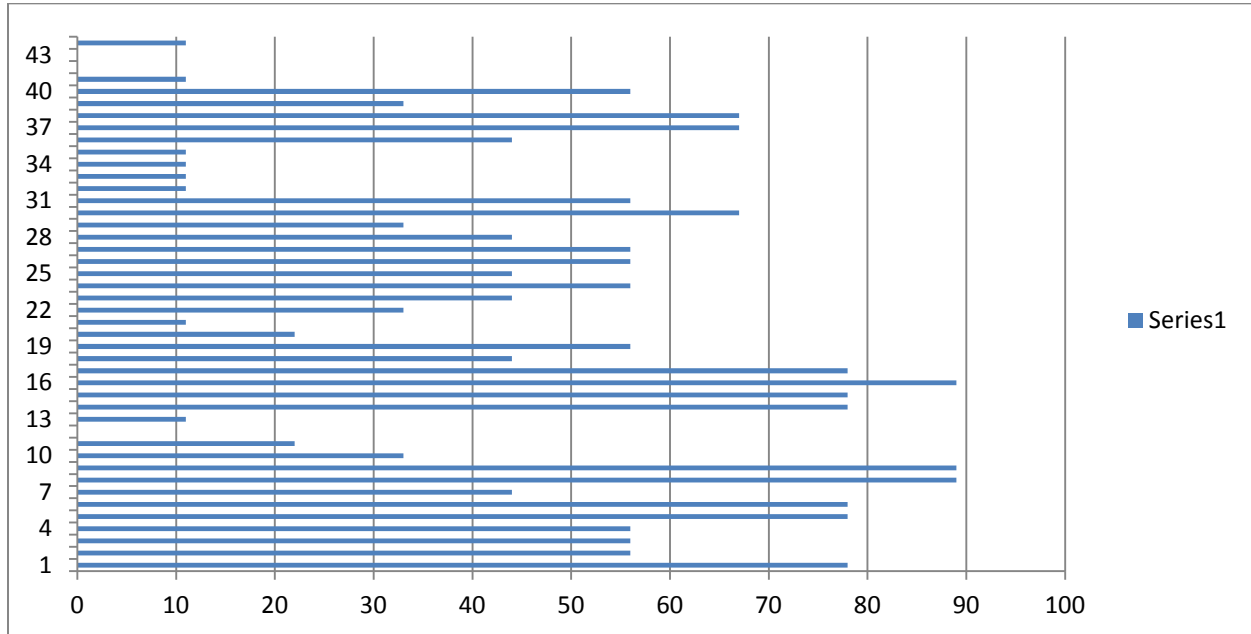| Group-1		Group-2	
Group Item No.	Scores	Group Item No.	Scores
1	43	1	78
2	38	2	56
3	65	3	56
4	56	4	56
5	39	5	78
6	53	6	78
7	32	7	44
8	53	8	89
9	53	9	89
10	32	10	33
11	35	11	22
12	39	12	00
13	53	13	11
14	59	14	78
15	59	15	78
16	38	16	89
17	38	17	78
18	41	18	44
19	29	19	56
20	29	20	22
21	44	21	11
22	44	22	33
23	40	23	44
24	40	24	56
25	22	25	44
26	44	26	56
27	40	27	56
28	50	28	44
29	10	29	33
30	22	30	67
31	10	31	56
32	50	32	11
33	20	33	11
34	20	34	11
35	20	35	11
36	30	36	44
37	20	37	67
38	20	38	67
39	40	39	33
40	20	40	56
41	25	41	11
42	40	42	00
43	30	43	00
44	20	44	11

(courtesy : Internet)

IV. DATA ANALYSIS

The below mentioned are the charts pertaining to the work that had been carried out to analyze the data.

The data that follows after the graph-1 and the graph -2 is the one that had been calculated through the graphpad software which is an online calculator that had been provided for the comparative results.

GRAPH-1 GROUP-1

GRAPH-2 GROUP-2

	PAIRED t-test	UN-PAIRED t-test
Two –Tailed P-Value	0.0452	0.0760
Criteria	Statistically significant	Statistically in-significant
Confidence Interval (Mean of Group-I and Group-II)	(-8.25)	(-8.25)
95% Confidence Interval of this Difference	(-16.31) to (-0.19)	(-17.38) to (-0.88)
Intermediate Values	t= 0.631 , df=43 , Standard mean of Difference = 3.999	t= 1.7962 , df=86 , Standard mean of Difference = 4.593
Decision	Reject the Null Hypothesis based upon the P-Value	Accept the Null Hypothesis based upon the P-Value

If the P-value is lesser than 0.05 , then this provides the evidence to reject the null hypothesis .
If the P-value is greater than 0.05 , then this provides the evidence to accept the null hypothesis.

Descriptive Statistics

Sl No.	Group-I		Group-II		Average Group[(I + II)/2]	
1	Parameters	Values	Parameters	Values	Parameters	Values
2	Mean	36.48	Mean	44.73	Mean	40.602
3	SD	13.70	SD	27.21	SD	16.978
4	SEM	2.07	SEM	4.10	SEM	2.559
5	N	44	N	44	N	44
6	90 % CI	33.33 to 39.95	90 % CI	37.83 to 51.62	90 % CI	36.300 to 44.905
7	95 % CI	32.31 to 40.64	95 % CI	36.45 to 53.00	95 % CI	35.441 to 45.764
8	99 % CI	30.91 to 42.04	99 % CI	37.67 to 55.78	99 % CI	33.704 to 47.500
9	Minimum	10	Minimum	0	Minimum	15
10	Median	38.5	Median	44	Median	40.25
11	Maximum	65	Maximum	89	Maximum	71

http://www.graphpad.com/quickcalcs/ttest1/?Format=50

V. CONCLUSION

A "hypothesis is perhaps the most powerful tool, man has invented to achieve dependable knowledge" –Fred Kerlinger…

REFERENCES

[1] WWW.PAPERRATER.COM

[2] http://www.public.asu.edu/~kroel/www500/hypothesis.pdf

[3] http://study.com/academy/lesson/formulating-the-research-hypothesis-and-null-hypothesis.html

[4] 500 Research Methods by ShaliniPrasad,Ajith Rao and Eeshoo Rehani.

[5] http://www.graphpad.com/quickcalcs/ttest1.cfm?Format=SD

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Earlier he was associated with the GITAM University – Visakhapatnam as an Assistant Professor and Research Scholar – Industrial Engineering Department from 2K09-2K15. Before that the same had worked in Al-Ameer College of Engineering and Information Technology as an Assistant Professor and prior to that worked as Hired - Lecturer in Military College of EME – Secunderabad- INDIA.