



# International Journal OF Engineering Sciences & Management Research

## STUDY OF MULTIPLE VIEWS BY USING STATISTICAL TOOLS

**Dr Harsh Dev\*, Preeti Bala**

\*Computer science, PSIT Kanpur,INDIA  
IT, IMT-CDL, INDIA

**DOI:**

---

**Keywords:** multiple-views, statistical tools, automated systems, behavior

**ABSTRACT-** This article describes the behavior of multiple views, to explore the attitude of management and faculty member towards automation in the engineering institution. This article also explains the nature of questionnaire. The objective of this particular research paper is to explore the attitude of multiple people towards an automated system by using the statistical tools to found their behavior.

---

### INTRODUCTION

Statistics are a tool, not an aim. Simple inspection of data, without statistical treatment, by an experienced and dedicated analyst may be just as useful as statistical figures on the desk of the disinterested. The value of statistics lies with organizing and simplifying data, to permit some objective estimate showing that an analysis is under control or that a change has occurred. Equally important is that the results of these statistical procedures are recorded and can be retrieved.

**Multiple views-**To develop a complicated and large system there may be many participants and each participant may have their own skill and knowledge and prospect to see the system, and represent a system or role in developing the system, this environment also known as the multi perspective environment how does the view point effects on the system, what is role and responsibility of each participant, as we know that a complex system uses number of tools and different technologies to implement real world system. There are two major areas of behavior analysis: experimental and applied. Experimental behavior analysis involves basic research designed to add to the body of knowledge about behavior. Applied behavior analysis, on the other hand, is focused on applying these behavior principles to real-world situations. Those who work in the field of applied behavior analysis are interested in behaviors and their relationship with the environment [2]

My research paper behavior analysis falls into second category of behavior analysis which is applied behavior analysis. The concept which I used my research paper that is handling participants behavior when we are going to develop a large and complex system in multi-perspective environment as we know that when multiple participants involve in a system each participants have their own views according to their own skills and knowledge.

### MATERIALS AND METHODS

#### Collection of primary data

To explore my research work I took the data from an engineering institution which is situated in Sahibabad, I preferred randomnessampling.

I had made the separate questionnaire for the management member & the faculty member.

Sir/Madam,

I, PreetiBala, I am pursuing research to explore the attitude of management member towards automation in the engineering institution. I therefore request you to kindly furnish me the information on the following question. Your help I highly appreciated. Kindly give the appropriate response.

#### Nature of questionnaire-descriptive

1. Which type of changes you want in your system?
2. Which type of modification you want in your system?
3. What is your budget to implement this system in your college?
4. How many departments are running your college?
5. How many faculties and staff member in your college?
6. Give me the list of technical savvy and non-technical staff member in your college?
7. Check your accountability for provides the technical training to your staff member?



## International Journal OF Engineering Sciences & Management Research

### QUESTIONNAIRE FOR FACULTY MEMBERS

Sir/Madam,

I, PreetiBala, I am pursuing research to explore the attitude of faculty member towards automation in the engineering institution. I therefore request you to kindly furnish me the information on the following question. Your help I highly appreciated. Kindly tick the appropriate response.

**Nature of questionnaire- closed ended -**

1. Would you like to that your system in which you are working should be automated? YES?NO
2. Are you agreed that it would be much better for you?
3. Are you happy with present & manual system?
4. Are you facing any kind of problem would you personally realize that here should be any changes or not?
5. Are you technical savvy?
6. Would you face any problem to operate the automated system college information system?
7. Which department is really needed for automation?
8. Are you ready to work with new system?

### **RESEARCH METHODOLOGY**

This section deals with the research methodology adopted during the course of the current study. The section lays emphasis on the research design, the sample selection procedure, the data collection method rounded up with the statistical tools used for analysis.

#### **Need for the Study**

##### **Objective-**

The present study has been done to ascertain the attitude of the faculty members as well as the management towards the adoption of the new technological advances and automaton in the organization. Precisely the study strives to evaluate how the people in the organization respond to queries pertaining to the liking the automation of the existing systemson which they are currently working, their belief that such a change would be better for them, their existing state of happiness as well as satisfaction with the present manual non-automated system, the problems that they are facing and the changes they would like to have, the fact whether they consider themselves to be technical savvy or not, the prospective challenges and problems that they perceive to be arising in operating the automated system college information system, the requirement for their respective departments to have an automated system as well as their willingness to work with new system.

The study has postulated the following set of hypothesis to be verified from the sample evidence.

##### **Hypothesis-**

**H<sub>1</sub>:** There is no difference in the responses on the different questions. This main hypothesis has been split into the following sub-hypothesis:

**H<sub>011</sub>:** There is no difference in the proportion of people who have responded favorably to question number 1 pertaining to the liking the automation of the existing systemson which they are currently working and the proportion who has answered in negation.

**H<sub>111</sub>:** There is a significant difference in the proportion of people who have responded favorably to question number 1 pertaining to the liking the automation of the existing systemson which they are currently working and the proportion who has answered in negation.

**H<sub>012</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 2 pertaining to their belief that such a change would be better for them and the proportion who has answered in negation.

**H<sub>112</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 2 pertaining to their belief that such a change would be better for them and the proportion who has answered in negation.

**H<sub>013</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 3 pertaining to their existing state of happiness as well as satisfaction with the present manual non-automated system and the proportion who has answered in negation.

**H<sub>113</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 3 pertaining to their existing state of happiness as well as satisfaction with the present manual non-automated system and the proportion who has answered in negation.

**H<sub>014</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 4 pertaining to the problems that they are facing and the changes they would like to have and the proportion who has answered in negation.

## International Journal Of Engineering Sciences & Management Research

**H<sub>114</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 4 pertaining to the problems that they are facing and the changes they would like to have and the proportion who has answered in negation.

**H<sub>015</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 5 pertaining to the fact whether they consider themselves to be technical savvy or not and the proportion who has answered in negation.

**H<sub>115</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 5 pertaining to the fact whether they consider themselves to be technical savvy or not and the proportion who has answered in negation.

**H<sub>016</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 6 pertaining to the prospective challenges and problems that they perceive to be arising in operating the automated system college information system and the proportion who has answered in negation.

**H<sub>116</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 6 pertaining to the prospective challenges and problems that they perceive to be arising in operating the automated system college information system and the proportion who has answered in negation.

**H<sub>017</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 7 pertaining to the requirement for their respective departments to have an automated system and the proportion who has answered in negation.

**H<sub>117</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 7 pertaining to the requirement for their respective departments to have an automated system and the proportion who has answered in negation.

**H<sub>018</sub>:** There is no difference in the proportion of people who have responded favorably to the question number 8 pertaining to their willingness to work with new system and the proportion who has answered in negation.

**H<sub>118</sub>:** There is a significant difference in the proportion of people who have responded favorably to the question number 8 pertaining to their willingness to work with new system and the proportion who has answered in negation.

**H<sub>2</sub>:** There is no difference in the responses on the different questions across the employees of different departments. This main hypothesis has been split into the following sub-hypothesis:

**H<sub>021</sub>:** There is no difference in the responses on the question number 1 pertaining to the liking the automation of the existing systemson which they are currently working across the employees of different departments (null hypothesis).

**H<sub>121</sub>:** There is a significant difference in the responses on the question number 1 pertaining to the liking the automation of the existing systemson which they are currently working across the employees of different departments (alternative hypothesis).

**H<sub>022</sub>:** There is no difference in the responses on the question number 2 pertaining to their belief that such a change would be better for them across the employees of different departments.

**H<sub>122</sub>:** There is a significant difference in the responses on the question number 2 pertaining to their belief that such a change would be better for them across the employees of different departments.

**H<sub>023</sub>:** There is no difference in the responses on the question number 3 pertaining to their existing state of happiness as well as satisfaction with the present manual non-automated system across the employees of different departments.

**H<sub>123</sub>:** There is a significant difference in the responses on the question number 3 pertaining to their existing state of happiness as well as satisfaction with the present manual non-automated system across the employees of different departments.

**H<sub>024</sub>:** There is no difference in the responses on the question number 4 pertaining to the problems that they are facing and the changes they would like to have across the employees of different departments.

**H<sub>124</sub>:** There is a significant difference in the responses on the question number 4 pertaining to the problems that they are facing and the changes they would like to have across the employees of different departments.

**H<sub>025</sub>:** There is no difference in the responses on the question number 5 pertaining to the fact whether they consider themselves to be technical savvy or not across the employees of different departments.

**H<sub>125</sub>:** There is a significant difference in the responses on the question number 5 pertaining to the fact whether they consider themselves to be technical savvy or not across the employees of different departments.

**H<sub>026</sub>:** There is no difference in the responses on the question number 6 pertaining to the prospective challenges and problems that they perceive to be arising in operating the automated system college information system across the employees of different departments.



## International Journal Of Engineering Sciences & Management Research

**H<sub>126</sub>:** There is a significant difference in the responses on the question number 6 pertaining to the prospective challenges and problems that they perceive to be arising in operating the automated system college information system across the employees of different departments.

**H<sub>027</sub>:** There is no difference in the responses on the question number 7 pertaining to the requirement for their respective departments to have an automated system across the employees of different departments.

**H<sub>127</sub>:** There is a significant difference in the responses on the question number 7 pertaining to the requirement for their respective departments to have an automated system across the employees of different departments.

**H<sub>028</sub>:** There is no difference in the responses on the question number 8 pertaining to their willingness to work with new system across the employees of different departments.

**H<sub>128</sub>:** There is a significant difference in the responses on the question number 8 pertaining to their willingness to work with new system across the employees of different departments.

### RESULTS AND DISCUSSION

#### **Research Design-**

'Research Design is a framework or blue print for conducting research' (Malhotra and Dash, 2011, pg.70) A research design specifies the methods and procedures for conducting a particular study (Beri, 2009). The current study has adopted a mixed research design. The initial part of the study has Exploratory Research Design, where the primary objective was to gain insights and comprehension of the issues related to relationship management in mobile telecommunication sector. Post the pilot survey and construction of the scales, the research design adopted was Descriptive in nature. Thus, a survey was undertaken to quantify the antecedents, the perceived relationship quality as well as customer loyalty. Further, in-depth interviews of employees working in telecom sector were conducted to understand the reasons behind the survey results.

#### **Study Population-**

The study population for this study comprised of the faculty members and management working in engineering institutions of Sahibabad. The employee list of the chosen institution along with the names of the people working in their management yielded the necessary sampling frame for this study to locate the requisite sampling elements. The study used multi-stage sampling to locate the sampling entities. The list of all engineering institutions in Sahibabad region was compiled and thereafter based on the criteria the institutions with a strength of more than 1500 students were initially screened. Among the list of such institutions, the one which was convenient to commute was chosen finally for gathering the requisite data for this study. Within the chosen institution, the selection of the faculty member was done randomly using proportionate stratified random sampling. The study utilized a structured questionnaire as the research instrument comprising closed ended dichotomous questions. The sampling elements (faculty member and management people) were asked to complete the questionnaire in person during the working days of the institution. The questionnaire for the management people comprised of the open-ended questions seeking their response toward the automation in institution and their willing to spend the necessary amount for automation. The data has been analyzed using non-parametric test for significance of proportions like binomial test, chi-square test and KruskalWallis test for testing the validity of the proposed claims.

#### **Findings**

##### **TOTAL SAMPLE**

As one analyzes the results for the entire sample considered together it is observed that the responses to the questions 5 and 6 do not exhibit significant differences between the proportion of people who have answered favourably to the questions and the ones who have said no in response while the probability of the people who have responded favourably and negatively to the rest of the questions exhibit significant disparities, with p-value of the binomial statistic being less than 5% level of significance.

4	The categories defined by ques_1 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.002	Reject the null hypothesis.
5	The categories defined by ques_2 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.030	Reject the null hypothesis.
6	The categories defined by ques_3 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.030	Reject the null hypothesis.
7	The categories defined by ques_4 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.030	Reject the null hypothesis.
8	The categories defined by ques_5 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.067	Retain the null hypothesis.
9	The categories defined by ques_6 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	1.000	Retain the null hypothesis.
10	The categories defined by ques_7 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.012	Reject the null hypothesis.
11	The categories defined by ques_8 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.012	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Overall Results indicate that the responses of the people in the different departments with respect to question number 1, 2, 3, 4, 7 and 8 is showing a clear cut favourable/unfavourable response of the people across the different departments while the responses on question number 5 and 6 exhibit that the responses saying yes and no do not exhibit marked disparities.

**SAMPLE GROUPED ACCORDING TO DEPARTMENTS**

**Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of ques_1 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.720	Retain the null hypothesis.
2	The distribution of ques_2 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.871	Retain the null hypothesis.
3	The distribution of ques_3 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.871	Retain the null hypothesis.
4	The distribution of ques_4 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.871	Retain the null hypothesis.
5	The distribution of ques_5 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
6	The distribution of ques_6 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.025	Reject the null hypothesis.
7	The distribution of ques_7 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.980	Retain the null hypothesis.
8	The distribution of ques_8 is the same across categories of department.	Independent-Samples Kruskal-Wallis Test	.980	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

SAMPLE

## International Journal Of Engineering Sciences & Management Research

Further as the examination is done across the different departments the following observations are made: (Note: The interpretations would be similar to the first set of hypothesis except that now instead of the entire sample the findings are made department-wise).

### 1. MCA Department

As one analyses the results for the MCA department it is observed that the responses to the questions 2,3, 4,5, 6, 7 and 8 do not exhibit significant differences between the proportion of people who have answered favourably to the questions and the ones who have said no in response while the probability of the people who have responded favourably and negatively to the question number 1 exhibit significant disparities, with p-value of the binomial statistic being less than 5% level of significance.

**Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The categories of serial_number occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
2	The categories of Name occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
3	The categories defined by ques_1 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.021 <sup>1</sup>	Reject the null hypothesis.
4	The categories defined by ques_2 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.754	Retain the null hypothesis.
5	The categories defined by ques_3 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.754	Retain the null hypothesis.
6	The categories defined by ques_4 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.754	Retain the null hypothesis.
7	The categories defined by ques_6 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.109	Retain the null hypothesis.
8	The categories defined by ques_7 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
9	The categories defined by ques_8 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

<sup>1</sup>Exact significance is displayed for this test.

### 2. Computer Science Department

As one analyzes the results for the computer science department it is observed that the responses to none of the questions exhibit significant differences between the proportion of people who have answered favourably to the questions and the ones who have said no in response with all p-values of the binomial statistic being greater than 5% level of significance.

**Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The categories of serial_number occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
2	The categories of Name occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
3	The categories defined by ques_1 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
4	The categories defined by ques_2 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
5	The categories defined by ques_3 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
6	The categories defined by ques_4 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
7	The categories defined by ques_6 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.754	Retain the null hypothesis.
8	The categories defined by ques_7 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.
9	The categories defined by ques_8 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.344	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

<sup>1</sup>Exact significance is displayed for this test.

### 3. MBA Department

As one analyzes the results for the MBA department it is observed that the responses to none of the questions exhibit significant differences between the proportion of people who have answered favourably to the questions and the ones who have said no in response with p-value of the binomial statistic being greater than 5% level of significance.

**Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The categories of serial_number occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
2	The categories of Name occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
3	The categories defined by ques_1 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.
4	The categories defined by ques_2 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.
5	The categories defined by ques_3 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.
6	The categories defined by ques_4 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.
7	The categories defined by ques_5 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	1.000 <sup>1</sup>	Retain the null hypothesis.
8	The categories defined by ques_6 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	1.000 <sup>1</sup>	Retain the null hypothesis.
9	The categories defined by ques_7 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.
10	The categories defined by ques_8 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.453 <sup>1</sup>	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

<sup>1</sup>Exact significance is displayed for this test.

#### 4. Accounts Department

As one analyses the results for the accounts department it is observed that the responses to the questions 5 and 6 exhibit significant differences between the proportion of people who have answered favourably to the questions and the ones who have said no in response while the probability of the people who have responded favourably and negatively to the rest of the questions exhibit significant disparities, with p-value of the binomial statistic being greater than 5% level of significance.

**Hypothesis Test Summary**

	Null Hypothesis	Test	Sig.	Decision
1	The categories of serial_number occur with equal probabilities.	One-Sample Chi-Square Test	.979	Retain the null hypothesis.
2	The categories of Name occur with equal probabilities.	One-Sample Chi-Square Test	1.000	Retain the null hypothesis.
3	The categories defined by ques_1 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.
4	The categories defined by ques_2 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.
5	The categories defined by ques_3 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.
6	The categories defined by ques_4 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.
7	The categories defined by ques_5 0.00 and 1.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.039 <sup>1</sup>	Reject the null hypothesis.
8	The categories defined by ques_6 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.039 <sup>1</sup>	Reject the null hypothesis.
9	The categories defined by ques_7 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.
10	The categories defined by ques_8 1.00 and 0.00 occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.180 <sup>1</sup>	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

<sup>1</sup>Exact significance is displayed for this test.

Test of significance of proportions:

Binomial test: for two proportions

Chi-square test: For multiple proportions

Kruskalwalli test:

Level of significance: 0.05 or 5 per cents

## REFERENCES

1. Multiple Regression and Mediation Analyses Using SPSS Psychology 305p.1 G. Pierce Fall 2003
2. Klopper, R. Gruner, S. & Kourie, D. Assessment of a framework to compare software development methodologies (2007)
3. Method engineering for multi-perspective software development information and software technology IEEE journal, (Feb 1996)
4. Kimer, T.G., Prado, A.F., Lima, M. A.V. and GratTio, R.C., "An Environment for Representing Multiple Views .
5. Anthony C. W. Finkelstein, Dov Gabbay, Anthony Hunter, Jeff Kramer, and Bashar Nuseibeh (IEEE), Inconsistency handling in Multiperspective Specifications, Transactions of software engineering. ( Aug 1994) VOL 20.