EMPIRICAL STUDY

GROUP 13

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AUTOMATED LIVE CLASSROOM PERFORMANCE EVALUATION

Research Question:

The following is the testable question that we framed.
In this research question, we considered three factors in order to make sure that we are taking into account as many factors that might affect the empirical data as possible.

RQ: How does the aesthetic score (on a scale of 1-10) depend on the "**number of objects**", "**layout of interface objects**" and "**no of questions per page**"?

Hypothesis from RQ:
Ho : the aesthetic score (on a scale of 1-10) does **not** depend on the "**number of objects**", "**layout of interface objects**" and "**no of questions per page**"
H1 : The aesthetic score (on a scale of 1-10) depend on the "**number of objects**", "**layout of interface objects**" and "**no of questions per page**"

Determination of Variables:

Independent Variables:
We have used three independent variables which are measured using a nominal scale. The factors and their corresponding levels are shown in the table below:

Factors	Levels		
No. of objects	5	10	15
Layout of objects	1(Layout1)	2(Layout2)	
No. of questions per page	1	2	

Dependent Variable: The aesthetic rating (on a scale of 1-10) is the dependent variable

Design of Experiment:

Participants : We have used 12 participant for our study
Task: Each participant was shown 12 interfaces one by one and was asked to rate them on a scale of 1 to 10.
According to the above mentioned factors and levels, we created 12 (3x2x2) interfaces to use in testing. Since we created the test conditions ourselves, the influence of factors not accounted for is minimal. The interfaces are present in this link: https://drive.google.com/drive/folders/1dPIL8arjuT0AGILQNBBFq273f0tB5PEz?usp=sharing
.
The interfaces are as follows:

Interface #1: <N=5,L=1,Q=1>
Interface #2: <N=10,L=1,Q=1>
Interface #3: <N=15,L=1,Q=1>
Interface #4: <N=5,L=1,Q=2>
Interface #5: <N=10,L=1,Q=2>
Interface #6: <N=15,L=1,Q=2>
Interface #7: <N=5,L=2,Q=1>
Interface #8: <N=10,L=2,Q=1>
Interface #9: <N=15,L=2,Q=1>
Interface #10: <N=5,L=2,Q=2>
Interface #11: <N=10,L=2,Q=2>
Interface #12: <N=15,L=2,Q=1>

- We have used “within-subject” study design
- We have used Latin Square method for taking care for of practice effect

P#1	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
P#2	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R1
P#3	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R1	R2
P#4	R4	R5	R6	R7	R8	R9	R10	R11	R12	R1	R2	R3
P#5	R5	R6	R7	R8	R9	R10	R11	R12	R1	R2	R3	R4
P#6	R6	R7	R8	R9	R10	R11	R12	R1	R2	R3	R4	R5
P#7	R7	R8	R9	R10	R11	R12	R1	R2	R3	R4	R5	R6
P#8	R8	R9	R10	R11	R12	R1	R2	R3	R4	R5	R6	R7
P#9	R9	R10	R11	R12	R1	R2	R3	R4	R5	R6	R7	R8
P#10	R10	R11	R12	R1	R2	R3	R4	R5	R6	R7	R8	R9
P#11	R11	R12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
P#12	R12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11

Data Obtained

The ratings collected from each participant for every interface are shown in the table below. The leftmost column specifies the participant names and the topmost row specifies the Interface numbers.

Each of the other cells mention the rating given by the corresponding user to the corresponding interface. The second row specifies more details about the corresponding interface. The first value represents the number of objects, the second is for layout (1 for horizontal, 2 for vertical) and the third represents the number of questions.

NAMING CONVECTION

T_A is interface 1

T_B is interface 2

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T_L is interface 12

	T_A	T_B	T_C	T_D	T_E	T_F	T_G	T_H	T_I	T_J	T_K	T_L
Sajal Goyla	3	4	5	5	6	7	4	4	8	6	6	8
Takshyak petkar	6	6	7	7	7	7	8	8	9	8	9	6
Piyush Tiwari	6	8	8	7	5	7	8	6	8	9	6	8
Pranjal Verma	3	2	3	3	9	8	7	9	9	6	9	7
Nikhil Upadhyay	7	7	7	8	7	8	9	9	6	8	5	6
Vanshaj Vore	5	5	7	5	7	9	9	3	5	5	3	7
Vipin	4	3	7	6	5	8	6	5	3	2	6	7
Shishir Mishra	7	6	6	5	7	5	8	7	4	6	7	3
Rahul Jakhad	5	4	5	5	6	7	5	4	7	7	5	7
Kushal Jhanwar	4	4	4	5	6	5	3	7	8	5	7	8
Alay Shah	3	5	6	7	5	3	8	9	4	7	8	6
Ashish Rai	3	5	5	5	5	7	8	5	6	7	5	7
average	4.66	4.916	5.833	5.66	6.25	6.75	6.916	6.33	6.416	6.33	6.333	6.666

Analysis of Empirical Data:

To analyse the data nonparametric Friedman test is used which was found appropriate as our design has only three factors.

We have also attached the results of the friedman tests.

Conclusion:

F(11) = 22.687928

p<0.05, statistically significant

Thus we reject the null hypothesis.

Also, we concluded that more the number of objects more the aesthetic score.
Layout 2 is more preferred.
Less Questions make more aesthetic interface.