



Case Study

Website Page Logo Position Experiment



Application of Statistical Experimentation & Regression Analysis to identify the statistically significant factors influencing customer preferences by optimising website appearance.

Contents

- The Scenario
- Hypotheses / Questions
- Methodology
- Experiment Trials
- Significant Factors (Product Features)
- Recommendation for Marketing
- Business Model Equation & Graph
- Factor Contributions to Satisfaction
- Business Strategy & Target Setting
- Business Model Validation

The Scenario

You are Start Up Company and have a logo which uses the letters 'A' & 'I'.

You want to set up a simple website and add your logo to the main page.

You have two different colour options for your logo and its position on the web page.

With statistical expert assistance, you carry out a simple 4 factor experiment by testing the appeal of 8 different formats with a sample of your customers.

Questions / Hypotheses

- A. Which colour & text size combination is preferred?
- B. What logo size & position is preferred?

Methodology

With some statistical assistance, you identify the following factors to test in a statistical experiment. The experiment simply requires each factor to be set as two different levels.

Factor	Level 1	Level 2
A Logo Box Size	Small	Large
B Font Size	10	14
C Logo Box Colour	Black	Red
D Logo Box Position	Top Right	Top Left

Experiment Trials

Traditionally, a test with 4 factors requires 16 trials, changing each factor one by one, to ensure the influence of each factor can be calculated accurately.

In practice, there is often insufficient time and resource to conduct 16 tests runs.

Statistical Experimentation reduces this to 8 runs by specifying key combinations of the factors and calculating the average effect for each factor at each level to provide an accurate estimate of each factor's influence on customer preferences.

Web based graphics are reasonably easy to change and quickly test.

For each run you ask a sample of customers to rate their Preferences with the appearance out of 10; 1 being extreme dislike, 10 being extremely like.

Website Options & Customer Ratings



8 trials based on Taguchi's Experimental Array L8.

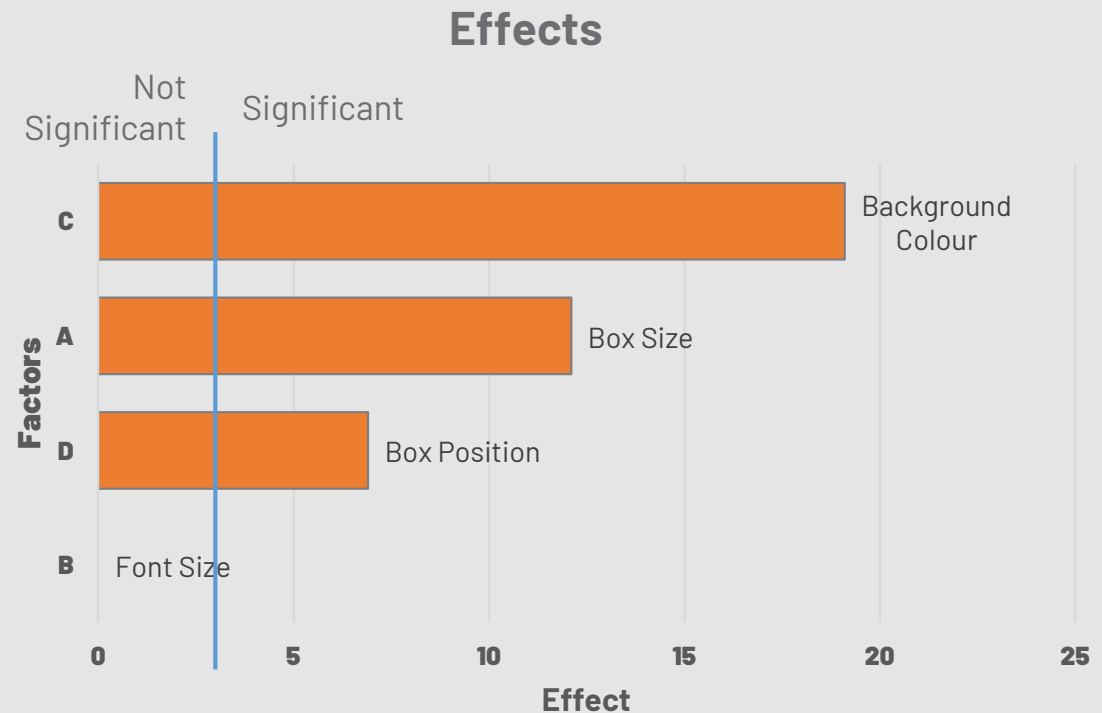
Significant Factors

The Effects Chart on the right plots the significance of each factor with 95% confidence (Alpha = 0.05).

By far the most significant factor is the Logo Box Background Colour (C).

Box Size (A) and Position (D) are also significant.

However, Font Size (B) is not significant.



The standardized effects are t-statistics that test the null hypothesis that the effect is 0 or not.

Regression Equation

We have now identified the most significant factors driving customer Satisfaction. We can define the Satisfaction based Business Model Equation.

$$\begin{aligned}
 \text{Preference Rating} &= 5.875 \\
 &+ 0.0 \text{ Box Large} + 1.75 \text{ Box Small} \\
 &+ 0.0 \text{ Background Black} - 2.75 \text{ Background Red} \\
 &+ 0.0 \text{ Box Top Right} + 1.00 \text{ Box Top Left}
 \end{aligned}$$

Background Colour has the largest influence of 2.75 Ratings

Coefficients
0.0 - baseline
-ve reduces Rating
+ve increases rating

Recommendation

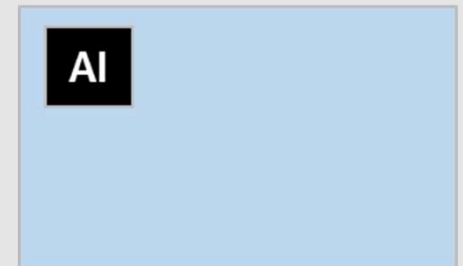
Customers prefer

- A Small Box
- With a Black Background.
- Positioned in the Top Left of the website.

Note that this combination was not specifically tested on Page 7.

Producing a Maximum Preference Rating of **8.63**

Since Font Size is not a significant factor you choose to use a font size of 14 for better Legibility.



We hope this Case Study has helped you appreciate the power of statistical analysis in optimising graphic design decisions & appearance perceptions from a small data set.

Imagine the possibilities for optimising with larger data sets!

Data Analysis using Minitab 

Please return to the 1iDEA website for more tutorials and case studies.

All you need is...



Thank You