SLDM

Warm Up Task-I: Learning from Data

Case Study: Perceptions of Gender Roles in the Advertising Industry

Abstract-

The advertising industry typically encompasses gender stereotypes, particularly in the field of beauty. Despite the growing number of female workers in the industry the stereotypes still continue to some extent.

To understand the consumer perception of these advertisements, 105 responses were collected and analyzed. To understand more about perceptions of gender stereotypes, the data was subdivided into males and females. Student's t-test was carried out to check the significant differences in the means of males and females considering advertisements as stereotypical and empowering. While the Chi-sq test was carried out to check if other factors like education and their opinions on whether empowering advertising would help transform cultural gender stereotypes and advertisements in reinforcing specific gender stereotypes have any significant correlation among them.

The results obtained were a mean perspective in considering ads as stereotypical is very different when compared to males and females.

Introduction -

Gender stereotypes specifically use cultural perceptions of what constitutes an attractive, acceptable, and desirable man or woman, frequently exploiting specific gender roles.

Empowerment advertising challenges gender norms and visually depicts the individual differences in each person. Men and women are expected to represent a variety of body types, perceptions of femininity and masculinity and beauty in empowerment advertising.

Tools used:

1. t test for two sample tests :
   The two-sample *t*-test (also known as the independent samples *t*-test) is a method used to test whether the unknown population means of two groups are equal or not.

2. Chi square test : This test is used to determine if two categorical variables are independent or if they are in fact related to one another. If two categorical variables are independent, then the value of one variable does not change the probability distribution of the other. If two categorical variables are related, then the distribution of one depends on the level of the other.

Objective -

1. To understand the perspective of males and females regarding gender stereotypes in advertisement
2. To understand the impact of Education on advertisements reinforcing specific gender stereotypes
3. To understand the impact of Education on the extent of empowerment advertising in transforming cultural gender stereotypes

Methodology -

Dataset-

The data for studying the gender stereotypes in the advertising industry was collected via a survey that was conducted. 105 responses were collected out of which 19 respondents were males and the rest were females.

10 questions were asked based on their ad frequency and their perception of those being stereotypical or empowering. To what extent do they agree that these empowering ads would bring transformation in cultural gender stereotypes. How much do they think these advertisements contribute to the perpetuation of particular gender stereotypes? Other questions were related to age, education, income and spending.

Hence, there are five responses that were categorical data and the rest of the responses were numerical data.

The ad frequency ranged from 0 to 1100, out of which, the respondents considered stereotypical goes upto 1050.

Terminologies used -

Spending - On average, how much is paid for beauty and hygiene products or services per year? Include references to the following products: soap, deodorant, shampoo, conditioner, lotion, perfume, cologne, make-up, chemical hair color, razors, skin care, feminine care, and salon services.

Ad Frequency - On average, how many beauty and hygiene advertisements, if at all, are viewed or heard per day?

Stereotype - On average how many of those advertisements, if all specifically subscribe to gender roles and stereotypes.

Reinforcing - On the following scale, what role, if any, do these advertisements have in reinforcing specific gender stereotypes?

Transform - To what extent do you agree that empowerment advertising, which explicitly communicates the unique
differences in each individual, would help transform cultural gender stereotypes?

Empowerment- On average what percentage of advertisements that are viewed or hear per day utilize empowerment advertising?

Tools used for Analysis -

1. t - test for two unpaired samples :

- The two samples taken in consideration for t-test for two samples were the percentage of Empowerment advertisement for male and female.
- Similarly, samples were considered for Stereotype advertisement

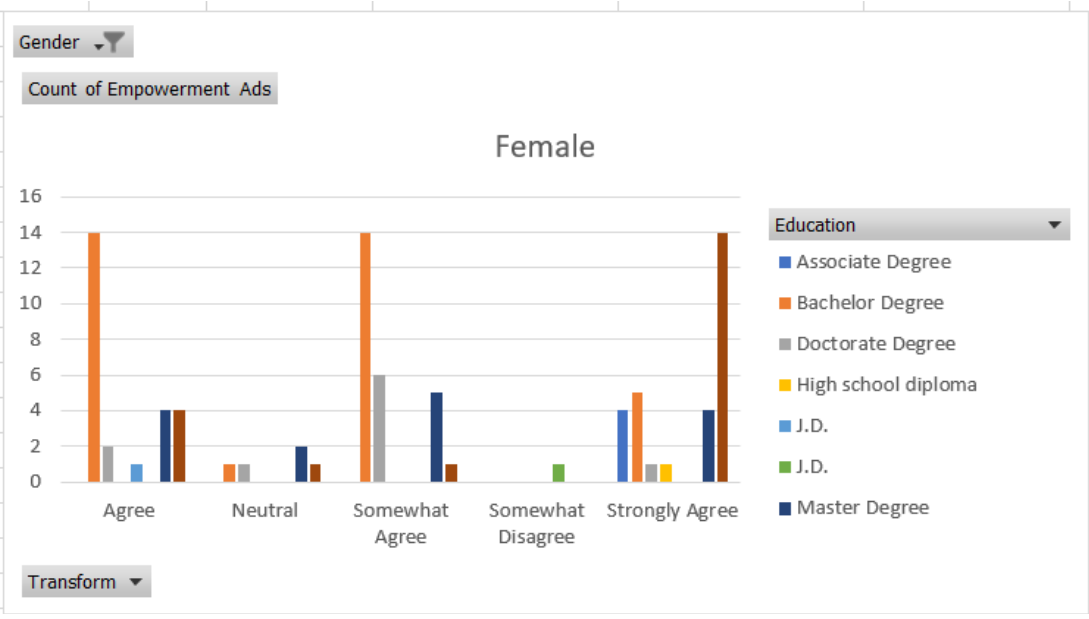
2. Chi-square test for Independence for categorical variables:

- The two categories under consideration were Education and Reinforcing for males
- The two categories under consideration were Education and Reinforcing for females
- The two categories under consideration were Education and Transform for males
- The two categories under consideration were Education and Transform for females
- The two categories under consideration were Reinforcing and Transform for males
- The two categories under consideration were Reinforcing and Transform for females

Analysis

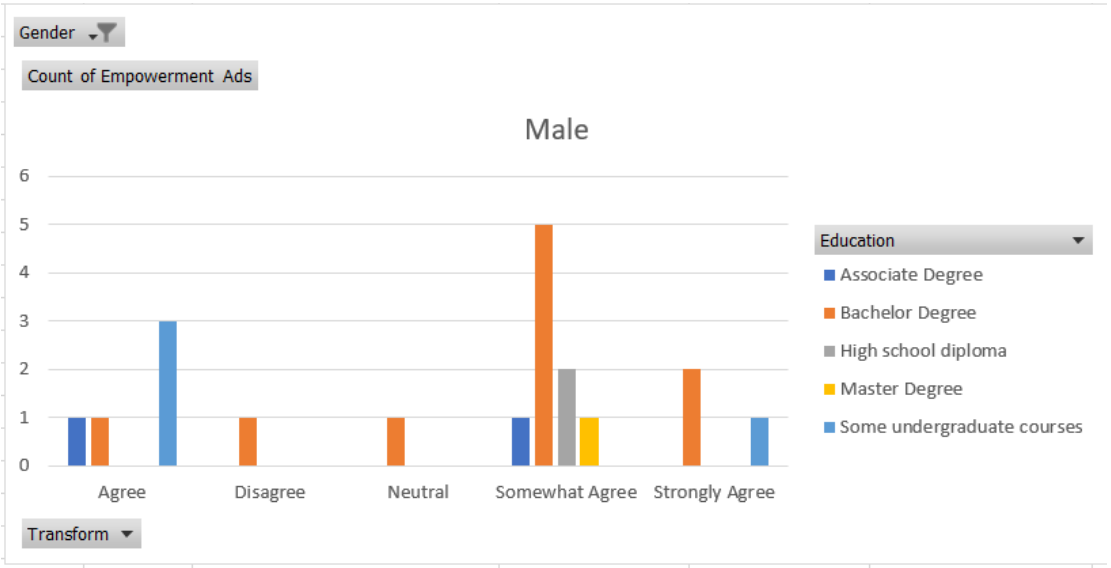
EDA

After going through the data and respective terminologies, values of the stereotype column was converted into percentage so that the scale of comparison is the same for empowerment and stereotype. Furthermore, data was visualized using Pivot charts in excel.



It is visible that females with Bachelor degree have provided many responses towards agreeing that the stereotypes can be transformed with more empowerment advertisements.

Based on this graph, it can be concluded that females from various educational background think that empowerment advertisments transform the gender stereotypes



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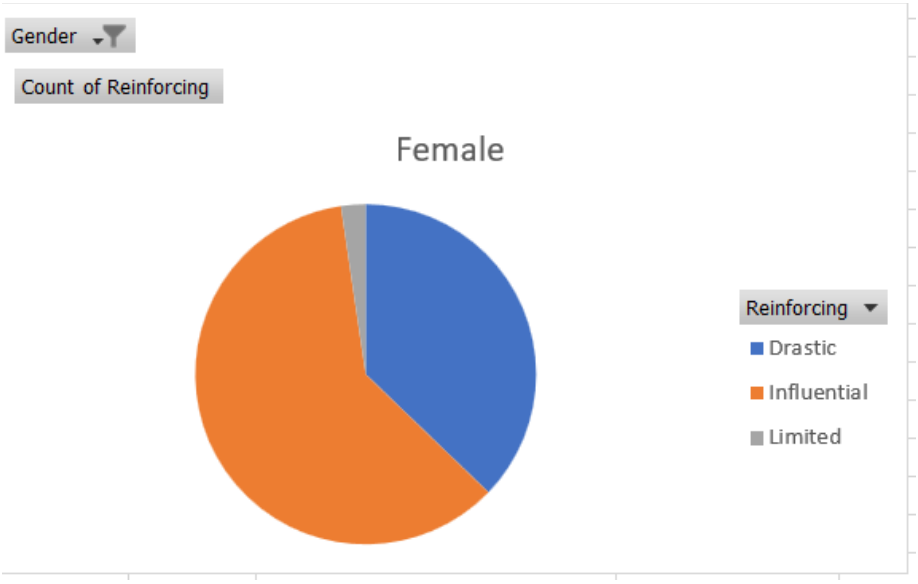
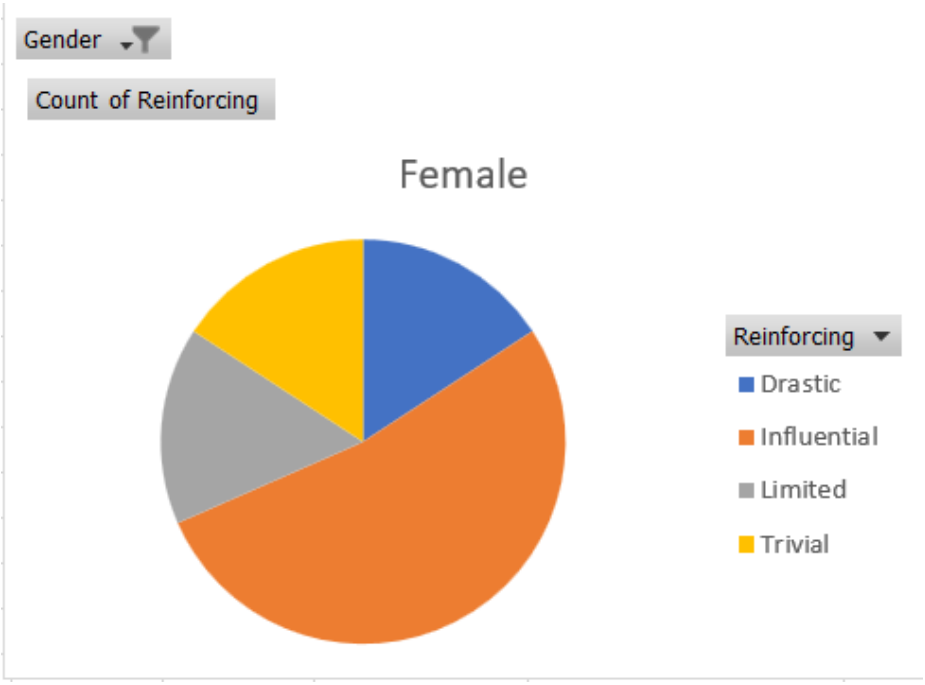


It is visible that more than half of the females think that there is an influential reinforcing of gender stereotypes and more than quarter think it is drastic.
It can be concluded that according to this sample, females think there is major reinforcing of gender stereotypes through advertising.



It is visible that more than half of the males think that there is an influential reinforcing of gender stereotypes.

It can be concluded that according to this sample, males think there is major reinforcing of gender stereotypes through advertising.

T test for two samples :

1. Empowerment advertising :

The two samples taken in consideration for t-test for two samples were percentage of Empowerment advertisement for male and female

The null hypothesis is written as:
Ho :$\mu 1 = \mu 2$
I.e Means are equal

The alternative hypothesis is written as:
Ha : $\mu 1 \neq \mu 2$
I.e Means are not equal

The Decision Rule is given as :
If P-value$\leq$ 0.05 (5% significance), we reject H0.
If P-value> 0.05 (5% significance) then, we fail to reject H0.

R Output :

t = 1.9883, df = 103, p-value = 0.04944

95 percent confidence interval:
7.785373e-05 6.177037e-02

sample estimates:
mean of x mean of y
0.07894737 0.04802326

Interpretation :
Since p value is less than 0.05 we reject null hypothesis and conclude that the means are significantly different
I.e Men and women have significantly different perspective in considering an advertisement as empowering

2. Stereotype advertising :

The two samples taken in consideration for t-test for two samples were percentage of Stereotype advertisement for male and female

The null hypothesis is written as:
Ho :$\mu 1 = \mu 2$
I.e Means are equal

The alternative hypothesis is written as:
Ha : $\mu 1 \neq \mu 2$
I.e Means are not equal

The Decision Rule is given as :

If P-value≤ 0.05 (5% significance), we reject H0.
If P-value> 0.05 (5% significance) then, we fail to reject H0.

R output:
t = 0.44089, df = 103, p-value = 0.6602

95 percent confidence interval:
-0.1112002 0.1747742

sample estimates:
mean of x mean of y
1.047368 1.015581

Interpretation :
Since p value is greater than 0.05 we do not reject null hypothesis
and conclude that there is no significant difference in the means
I.e Men and women does not have significantly different perspective in considering an advertisement as stereotype

- Mean stereotype advertising according to both genders is comparatively greater than mean empowering advertising..

Chi square

1. Education and Reinforcing for Male

The two categories under consideration were Education and Reinforcing for males

Null Hypothesis :
Ho : Two variables are independent

Alternative Hypothesis :
Ha : Two variables are not independent

R output :
Pearson's Chi-squared test with simulated p-value
(based on 2000 replicates)

data: chi_male_ed_re
X-squared = 10.957, df = NA, p-value = 0.6432

Interpretation :
Here the p-value is greater than 0.05 hence we do not reject the null hypothesis and conclude that the education and reinforcement for males are independent.

2. Education and Reinforcing for Female

The two categories under consideration were Education and Reinforcing for females

Null Hypothesis :
Ho : Two variables are independent

Alternative Hypothesis :
Ha : Two variables are not independent

R output :
Pearson's Chi-squared test with simulated p-value
(based on 2000 replicates)

data: chi_female_ed_re
X-squared = 11.816, df = NA, p-value = 0.4288

Interpretation :
Here the p-value is greater than 0.05 hence we do not reject the null hypothesis and conclude that the education and reinforcement for females are independent.

3. Education and Transform for male

The two categories under consideration were Education and Transform for males

Null Hypothesis :
Ho : Two variables are independent

Alternative Hypothesis :
Ha : Two variables are not independent

R output :

Pearson's Chi-squared test with simulated p-value
(based on 2000 replicates)

data: chi_male_ed_tr
X-squared = 12.413, df = NA, p-value = 0.7166

Interpretation :

Here the p-value is greater than 0.05 hence we do not reject the null hypothesis and conclude that the education and transformation for males are independent.

4. Education and Transform for females

The two categories under consideration were Education and Transform for females

Null Hypothesis :
Ho : Two variables are independent

Alternative Hypothesis :
Ha : Two variables are not independent

R output :

Pearson's Chi-squared test with simulated p-value
(based on 2000 replicates)

data: chi_female_ed_tr
X-squared = 124.92, df = NA, p-value = 0.0004

Interpretation :

Here the p-value is less than 0.05 hence reject the null hypothesis and conclude that the education and transformation for females are dependent on each other.

Conclusion-

1. Despite all the awareness regarding gender stereotypes, the advertising industry still focuses on stereotyping. Although, lately some advertisements started focusing on empowerment. But when it comes to the perspective of considering an advertisement as empowering or stereotypical, men and women have different perspectives.
2. Women with higher education believe that empowering advertising can transform cultural stereotypes. This cannot be seen in the case of men.
3. Comparing the perspectives of male and female, it can be seen that females believe the reinforcing of gender stereotype to be higher in advertising

Limitations-

1. The survey has less number of male responses which can be a bias to the conclusions.