

Market Research Final Report:

Tesla

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Executive Summary

The purpose of this study was to research consumers perception of Tesla and understand what factors lead to a negative or positive view of the brand. *Both qualitative and quantitative research were collected to provide insight to our research problem.*

For the qualitative research, four in-depth interviews were conducted with individuals in Tesla's target market. Our qualitative research indicates that the most impactful factors that lead to positive and negative brand awareness are:

- Positive: Performance, Aesthetics, Electric
- Negative: Elon Musk, Safety of Car, Price, Practicality, Mileage

For the quantitative research, an online survey was conducted with 65 respondents. Of the 65 respondents, 40% represented Tesla's target market. The survey was designed to take a deeper look into the key findings from the qualitative research. The factors focused on were:

- Price
- Safety
- Elon Musk
- Tesla Features

A multivariable regression test was used to find the results based on the hypothesis:

Hypothesis: Safety, Price, Elon Musk, and Tesla Features affect people's view of Tesla.

Our recommendations based on our research to improve consumers perception of Tesla are:

- Identify and prioritize Tesla features that consumers like and dislike and use this information when designing future models.
- Maintain high levels of safety for Tesla vehicles.
- Monitor competition and adjust prices to maintain competitiveness.
- Elon Musk moderates his outspokenness on controversial topics to avoid turning away potential customers.

Introduction

Tesla Inc. is an American automotive and clean energy company. The company was founded in 2003, originally under the name Tesla Motors, by Martin Eberhard and Marc Tarpinning. It is headquartered in Austin, Texas. Tesla aims to help speed up the move to sustainable transportation and energy through electric vehicles and solar power. They design and manufacture electric vehicles, solar panels, and energy storage systems. Elon Musk has been serving as the CEO since 2008.

Our research problem was to understand customer perception of Tesla as a brand and obtain various factors that are leading customers to think of Tesla in a positive or negative light. Our research objectives were to explore customer perception, identify the main factors affecting their perception, and make recommendations based on our findings Tesla can use to alter their brand to gain more favor with the consumer. We chose to study Tesla after performing secondary research and reading about some of the recent lawsuits and controversies Tesla is involved in. There have been reports of safety issues with Tesla's self-driving software and criticism towards Elon Musk, like when he purchased Twitter last October. Also, the US hybrid and electric vehicle manufacturing industry has been rapidly growing. Tesla has over 50% of the market share, but their market share has been slowly declining yearly as the industry gets more saturated and newer models come out, putting the company at risk.

Our study was about understanding customer perception of Tesla. We could not survey many Tesla owners, people in our target audience, or people living in other parts of the US because we were limited to the people we knew. Therefore, our study covered about 60 people living in the

Midwest and focused on understanding their perception of Tesla to guide further research in the future.

Research Design

Qualitative Sampling Technique

For our qualitative data, we conducted four in-depth interviews. Our interviewees included a Tesla Owner, a previous Tesla Stock Owner, and two non-Tesla Owners. All our interviewees were in the target age range of 45-54 years old. We used judgment sampling to choose our interviewees, meaning that we picked them based on our knowledge of them and if we thought they would be a good representation of our target audience.

Quantitative Sampling

To obtain the sample for our survey, we used non-probability sampling techniques. The main sampling technique used was judgmental sampling. Like our quantitative sampling, we chose respondents for our survey based on our knowledge of the people and if they were a good fit for the Tesla target market. The secondary sampling technique used was convenient sampling. Due to a lack of time and wanting to get our survey out to people as quickly as possible, we sent it out to convenient and available people, which caused respondents from outside of the target audience. The final sampling technique used was snowball sampling. Some respondents forwarded the survey to other people they thought would belong to the target audience. It took a lot of work for us to get enough respondents in our target audience based on judgmental and convenient sampling, so snowball sampling helped us to get more respondents. Our sample size was 65 people, and 40% were in our target population of 45-54.

If we had more resources and time, we would use one of the probability sampling techniques rather than non-probability techniques. Using probability sampling, we could get a sample more representative of our population. There is a risk of sampling bias with nonprobability sampling techniques, meaning our data could have been inaccurate or misleading.

Data Collection Method

Qualitative Data Collection

We collected data from our in-depth interviews for the qualitative portion of our research. We conducted interviews with two researchers: an interviewer and a transcriber. First, the transcriber created a verbatim transcript and wrote every word our interviewees said. Then, the transcriber returned and created an edited transcript by cleaning and removing any unnecessary wording from the verbatim transcript. After we completed all the transcripts, we conducted deductive coding and found codes within our interviews. Comparing all our codes, we came up with

themes from our data. We found themes regarding both positive and negative brand awareness. The themes for positive brand awareness were performance, aesthetics, and the fact that it is electric. The themes for negative brand awareness were Elon Musk, safety, price, practicality, and mileage. We used our qualitative data collection to guide our quantitative research.

Quantitative Data Collection

For the questionnaire portion of our research, we collected our data through an internet-based survey. Due to limited time and money, this was the most efficient way for us to collect our data. Online self-administered surveys are beneficial in gaining many responses quickly; however, they have some limitations and disadvantages. The first disadvantage is that no one is present to explain questions to the respondent. Respondents may misinterpret the question's meaning and think about it in a way we did not intend them to. We kept our questions as clear and straightforward as possible to avoid this misunderstanding. We created a survey consisting of ten questions. We kept the survey to a limited number of questions to prevent a low response rate. We asked various questions based on themes we found in our qualitative research through in-depth interviews. At the end of our survey, we used a demographic question to determine which of our respondents were in Tesla's target market.

If we had more money and time to collect our data, we would consider doing in-person rather than online self-administered surveys. In-person surveys could give us higher-quality data because we could clarify any of the questions and ensure the respondents fully understand what we are asking. In-person surveys also allow us to read the respondents' body language and confirm they respond truthfully. Finally, people are more likely to respond if approached in person. Online surveys are easier to ignore or delete, causing a lower response rate than in-person surveys.

Measurement

During the data collection process, our group needed information. One type of information that we focused on was qualitative descriptive. Descriptive information was imperative because it gave us crucial information to answer our research problem. We wanted to see consumers' perceptions of the Tesla brand. After gathering a good amount of descriptive information, we generated a better picture of why and how the perceptions existed. Our group also needed numerical information. We wanted numerical information because numbers make it much easier to conduct analysis. Setting a scale of 1-10, 1 being the lowest, gives a clear and easy answer to our question. The numerical information also helped make our survey gain responses due to the ease of answering. Like our qualitative descriptive information, numerical information helped answer our problem of gauging consumer perceptions of Tesla. Examples of questions that provided qualitative descriptive and numerical data are included in Appendix A.

Analysis Procedures

After conducting our qualitative research, we began our analysis process. To begin, we made transcripts of the interviews we conducted. Having a transcript made it much easier to highlight common themes. After highlighting the common themes from each interview, we narrowed down to around five overarching themes. To accomplish this phase, we used thematic analysis on our qualitative data. Using the thematic system made our coding process seamless. On the other hand, we used a different process for our numerical information. Our approach for the numerical info was to perform a multivariable regression test. Since we had four independent variables, this was the best statistical analysis to perform. Overall, both types of analysis procedures helped give us an answer for our research problem.

Results

After conducting our qualitative research, we began our analysis process. To begin, we made transcripts of the interviews we conducted. Having a transcript made it much easier to highlight common themes. After highlighting the common themes from each interview, we narrowed it down to around five overarching themes. To accomplish this phase, we used thematic analysis on our qualitative data. Using the thematic system made our coding process seamless.

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Thematic Analysis

From the interview results, we wanted to get a different insight into what people think when they hear Tesla. The interview questions are listed below in Appendix B. The questions listed below were asked to each interviewee differently. For example, “How did you become aware of our brand...” was asked to the interviewees who do not have a Tesla, while “Where did you find your information...” was asked to the Tesla owner and stock owner.

The thematic analysis helped us gain insight into what to include in our survey questions, which came down to questions about Elon Musk, price, safety, and Tesla’s features. For Elon Musk, our interviewees mentioned his leadership and controversies in the last year. For example, some people stated, “Elon fires off and doesn’t really care what people think,” and “I would encourage Elon Musk to clean up his public image since many people let this impact their purchasing choices.” For price, our interviewees brought up how expensive Tesla vehicles are and that Tesla

owners have a fancier personalities. One interviewee shared that they felt “Teslas are for the wealthy” and didn’t consider it a budget-friendly vehicle. For safety, a few interviewees talked about accidents they heard on the news caused by Tesla’s self-driving feature. One interviewee said they had seen “a story or two that shows their cars on fire.” Lastly, for Tesla features, our interviews brought up a few areas where there was room for improvement with the car’s features. Some examples are “their cars can have issues due to the cold weather” and “the quality of build is worse than others.”

From our thematic analysis, it was noted that the four main themes in the survey should be Elon Musk, price, safety, and features. The survey questions’ wording was negative for each of these four themes. Each question from the survey and the type of survey question are listed in the subsections below.

Statistical Analysis

As for the overall statistical research, it was noticed that these four variables are the most important topic when discussing the research. Overall, the hypothesis was concluded to be:

Hypothesis: Safety, Price, Elon Musk, and Tesla Features affect people’s view of Tesla.

With this, the research conducted by our survey sample was based around negative questions, which are listed below. To fully represent this data in the truest forms, the research consisted of a negative effect for the alternative hypothesis, but no correlation in the null hypothesis. The null and alternative hypothesis is as follows:

Ho: Safety, price, Elon Musk, and Tesla features have no effect on peoples’ perception of Tesla.

Ha: Safety, price, Elon Musk, and Tesla features have a negative effect on people's perception of Tesla.

As for this research, the independent variables represented in the hypothesis are safety, price, Elon Musk, and Tesla features. The dependent variables are people's perception of Tesla. Due to the many different independent variables in the hypothesis, it is best to discuss the total variables in our data, with a multivariable regression test. Regression specifically is used because this is a causal relationship, as the independent variables (safety, price, Elon Must, and Tesla features) cause an effect on the dependent variable (perception).

The multivariable regression test, in this scenario, is expressed as:

$$\text{Perception} = a + b1(\text{Safety}) + b2(\text{Price}) + b3(\text{Elon Musk}) + b4(\text{Features})$$

(Shown in Figure 1 of the Appendix section.)

Where Y is the dependent variable for the Perception observation, a is the Intercept Coefficient, b1 is the first independent variable read as the Safety observation, b2 is the second independent variable for the Price observation, b3 is the third independent variable for the Elon Musk observation, and b4 is the fourth, and final, independent variable for the Features observation.

With this, the numerical multivariable regression equation is as follows:

$$\text{Perception} = 1.00287123 + 0.72325531(\text{Safety}) + 0.3278983(\text{Price}) + 0.55598412(\text{Elon Musk}) + .000002027(\text{Features})$$

(Shown in Figure 2 of the Appendix section.)

Unfortunately, this test did not prove to be entirely successful because features were the only P-value that showed a negative correlation to perception. Due to this, the R-Square also confirms

that the different independent variables do not fit in with perception. There is only a 34% correlation between perception and all the independent variables, making this an unreliable test. We would reject the alternative hypothesis because three variables do not fit with perception. Therefore, this equation is not statistically significant. The multivariable regression test findings are listed in Figure 3 of the Appendix C section.

To fully understand the data represented in the multivariable regression test, each item will be broken down to define each variable and why it worked or did not work. To emphasize, the independent variables in the regression test findings did not work because the wrong sample size was used, being a different age range, changing our findings.

Price

First, the price survey questions are as follows:

- What are your feelings on the price point of Tesla products? (Likert Scale)
- How likely are you to purchase a Tesla vehicle? (Likert Scale)

From the survey questions above, each question used a Likert scale, but the question used for the statistical analysis was, “What are your feelings on the price point of Tesla products?” Because the answers were based on words, the words needed to be transferred to numbers through Excel. The numbers were changed to show the regression test formula above.

The Price graph shown in Figure 4 of the Appendix C section shows the linear regression test, but the points are too far away from the line, proving there is no main correlation between price and perception. Also, the line is going down, meaning more people choose a one over a five for this correlation. If we look at this independent variable individually, the null would be accepted because the 0.3278983(Price) is not less than or equal to 0.05. Therefore, this variable is

inaccurate, causing the full alternative hypothesis to be rejected. This independent variable is not statistically significant.

Safety

Next, the safety survey questions are as follows:

- Would you consider Tesla as a safe car? (Likert Scale)

Evidently, from the survey question above, a Likert scale was used for this question and the statistical analysis. Again, because these answers were based on words, the words had to be transferred to numbers through Excel, and the numbers were changed to show the regression test formula above.

The Safety graph shown in Figure 5 of the Appendix C section shows the linear regression test, but the points are too far away from the line, proving there is no main correlation between safety and perception. In contrast to the price graph, the line appears to be going upwards, meaning more people choose a five over a one for this correlation. If we look at this independent variable individually, the null would be accepted because the $0.72325531(\text{Safety})$ is not less than or equal to 0.05. Therefore, this variable is inaccurate, causing the full alternative hypothesis to be rejected. This independent variable is not statistically significant.

Elon Musk

Then, the Elon Musk survey questions are as follows:

- What effect does Elon Musk have on your perception of the Tesla brand? (Likert Scale)
- Please elaborate on the previous question. (Short Answer Response)

From these survey questions, a Likert scale was used for the first question and the statistical analysis. Again, the answers had to be transferred to numbers through Excel, and the numbers were changed to show the regression test formula above. It was best to include a short answer response to the survey to expand on people's perception of Elon Musk because there are many different answers that people could have given. For example, people could talk about how they liked or didn't like them and explain the reasoning behind it with his ownership of Twitter or his general personality. The short answer response was not included in our regression test, but this helped us understand what makes people like or dislike Elon Musk.

The Elon Musk graph in Figure 6 of Appendix C shows the linear regression test, but the points are too far away from the line, proving there is no main correlation between Elon Musk and perception. In contrast to the price graph, the line appears to be going upwards, meaning more people choose a five over a one for this correlation. But this line is closer to a horizontal line, showing that the correlation is closer to zero and irrelevant. If we look at this independent variable individually, the null would be accepted because the 0.55598412(Elon Musk) is not less than or equal to 0.05. Therefore, this variable is inaccurate, causing the full alternative hypothesis to be rejected. This independent variable is not statistically significant.

Tesla Features

Finally, the Tesla features survey questions are as follows:

- How do you feel about the features Tesla offers? (Likert Scale)

Evidently, from the survey question above, a Likert scale was used for this question and used for the statistical analysis. Again, the answers had to be transferred to numbers through Excel, and the numbers were changed to show the regression test formula above.

The Features graph in Figure 7 of the Appendix C shows the linear regression test. The difference between this independent variable and the other variables is that this is the only statistically significant variable. Looking at the graph, the linear regression fits more within reach to a vertical line, and the points are much closer to the line. The line goes upwards, showing that the different samples voted more fives than ones.

If we were to look at this independent variable individually, the null would be rejected because the .000002027(Features) is less than or equal to 0.05. Therefore, this variable is accurate, causing the full alternative hypothesis to be accepted. This independent variable is statistically significant.

Recommendations

Based on the findings described above, we developed some overall learnings. First, we would reject the null hypothesis for Tesla's features which means that Tesla's features do affect peoples' perception of the brand negatively. We would accept the null for the safety, price, and Elon Musk aspects, which means that these three categories have no effect on people's perception of Tesla. This is not what we expected; we expected the price and Elon Musk himself to play a significant role in people's negative perception of Tesla. However, our sample is just a small group from the entire population, and if the sample size was larger, we may have seen different results.

Based on the rejection of the null hypothesis regarding Tesla's features, we recommend that they figure out what current Tesla owners like and keep those features in future models. Similarly, they should determine what features current owners dislike and remove them from future

models. Furthermore, they could figure out what current owners want to see added and what features potential new owners would like to see in their vehicles. They could do these things by conducting focus groups, in-depth interviews, or surveys, just like we did on a smaller scale throughout this project.

In contrast, based on the acceptance of our null hypothesis regarding Elon Musk, Tesla's safety, and Tesla's price, we recommend that Tesla keeps operating how they are in these aspects. Our sample mostly agreed that Tesla creates safe cars, satisfying what they look for when looking for a safe and reliable vehicle. They also thought that Tesla's price was reasonable, which, as mentioned, surprised us. However, as consumers purchase other brands, the demand for Tesla vehicles will decrease. Through our research, we learned that competitors are starting to emerge in the world of electric cars, and this has and will continue to bring down the price of Tesla vehicles.

Another thing we were surprised about is that we accepted the null for Elon Musk, which means that our sample mostly believed that he is a well-rounded and confident leader. However, some individuals expressed a dislike towards Elon Musk in our survey; his Twitter purchase and his tendency to be outspoken on various matters may fuel this. People in our survey described him as "arrogant," and one person in our interviews went as far as to say as they wished other people in the company would put a "muzzle" on him. Further, our secondary research found this to be a trend among people who did not participate in our survey. Based on these learnings, we would recommend that Elon Musk tries to become less outspoken or step back from the stage on controversial topics. This change may help convert some people who currently dislike him to supporters in the long run.

Appendices

References

Tesla Inc company profile - overview. GlobalData. (n.d.). [https://www.globaldata.com/company-profile/teslainc/#:~:text=Tesla%20Inc%20\(Tesla\)%20is%20an,Semi%20and%20Tesla%20Roadster%20vehicles.](https://www.globaldata.com/company-profile/teslainc/#:~:text=Tesla%20Inc%20(Tesla)%20is%20an,Semi%20and%20Tesla%20Roadster%20vehicles.)

(January, 2023). Hybrid and Electric Vehicle Manufacturing in the US. OD4516. Retrieved from IBISWorld Database.

Appendix A

Have you ever owned a Tesla?

- Yes/ no
 - General Question

How familiar are you with the Tesla brand/ Products?

- Not familiar at all/ Extremely familiar
 - Likert Scale

What is your view of the tesla brand?

- Extremely negative/ Extremely positive
 - Likert Scale

How do you feel about the features Tesla offers?

- Extremely displeased/ Extremely Pleased

- Likert Scale

Would you consider Tesla as a safe car?

- Extremely unsafe/ extremely safe
 - Likert Scale

What are your feelings on the price point of Tesla products?

- Extremely displeased/ Extremely pleased
 - Likert Scale

How likely are you to purchase a Tesla Vehicle?

- Extremely unlikely/ Extremely likely
 - Likert Scale

What effect does Elon Musk have on your perception of the Tesla brand?

- Extremely negative/ Extremely positive
 - Likert Scale

Please elaborate on the previous question.

- Free Answer
 - Short Answer

What age range best describes your age?

- Multiple choice by age group

Appendix B

Are you familiar with Tesla brand / products? (Screening question to understand if they are existing customers or not)

When you think of Tesla, what comes to mind? (emotional)

- How do you feel about Tesla?
- What moods/emotions/values are associated with the different products?

How did you become aware of our brand and the products/services we offer? ---- OR----- Where did you find your information about Tesla? (cognitive/knowledge)

- Social media, the news, etc.?
- What have you heard (both positive and negative) about our brand?
- What was the most recent news you have heard about Tesla?
- How would this affect your feelings on buying a Tesla?

Can you describe the various Tesla products you have used? (Descriptive) ----OR----- How would you describe Tesla products to a friend? (If they are existing customers)

- What features do you look for in a car and does Tesla have those features?
- What are they missing/ what are they doing well?

Can you tell me about your experiences of using Tesla products? (Experiences) (for existing customers) ---- OR ---- Have you ever considered buying a Tesla? (not non-customers) – followed by your probing questions

- Why would you choose a Tesla/ electric car? What made you not want to buy a Tesla?

Can you tell me about how the leadership at Tesla is affecting your perception about its products? [Elon Musk question]

If you could change one thing about the company / product, what would it be and why?

Another way of asking how Tesla could improve its brand image / existing products

Final thoughts

Appendix C

Figure 1

$$\text{Perception} = a + b1(\text{Safety}) + b2(\text{Price}) + b3(\text{Elon Musk}) + b4(\text{Features})$$

Y: Dependent Variable for Perception observation

A: Intercept Coefficient

B1: Dependent Variable 1 for the Safety observation

B2: Dependent Variable 2 for the Price observation

B3: Dependent Variable 3 for the Elon Musk observation

B4: Dependent Variable 4 for the Features observation

Figure 2

$$\text{Perception} = 1.00287123 + 0.72325531(\text{Safety}) + 0.3278983(\text{Price}) + 0.55598412(\text{Elon Musk}) + .000002027(\text{Features})$$

Y = Dependent Variable for Perception observation

1.00287123 = Intercept Coefficient

0.72325531 x Safety observation

0.3278983 x Price observation

0.55598412 x Elon Musk observation

000002027 x Features observation

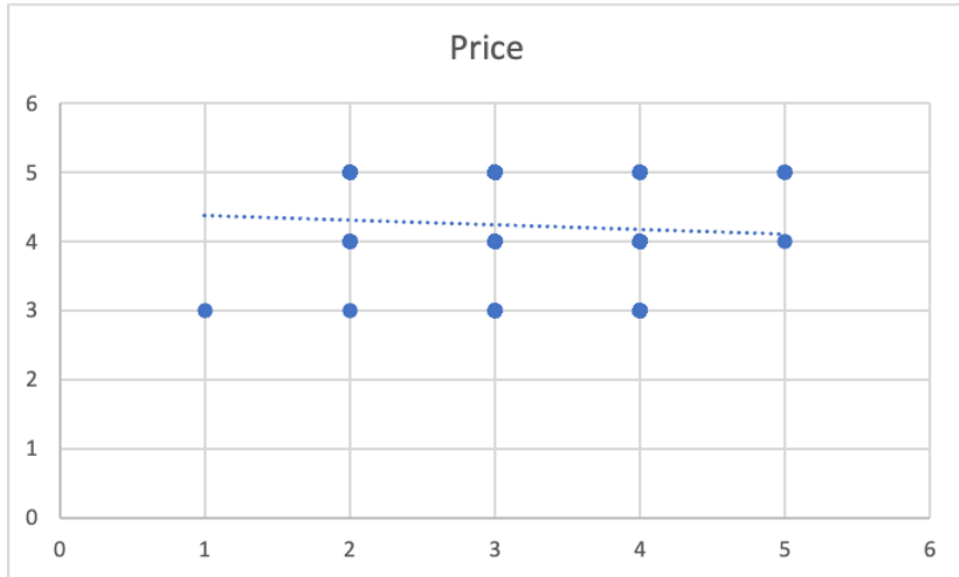
This observation is not statistically significant, so this formula is not accurate in a research test.

Figure 3

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.5831126							
R Square	0.3400203							
Adjusted R S	0.29602165							
Standard Error	0.74046663							
Observations	65							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	4	16.9487043	4.23717606	7.72797183	4.3168E-05			
Residual	60	32.8974496	0.54829083					
Total	64	49.8461538						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1.00287123	0.84977668	1.18015857	0.24259495	-0.6969352	2.70267767	-0.6969352	2.70267767
Features	0.73533695	0.14039635	5.23757871	2.2027E-06	0.45450243	1.01617147	0.45450243	1.01617147
Safety	0.05095994	0.14323555	0.35577716	0.72325531	-0.2355538	0.33747369	-0.2355538	0.33747369
Price	-0.1231733	0.12487167	-0.9863994	0.3278983	-0.3729539	0.12660718	-0.3729539	0.12660718
Elon	0.05458035	0.0921753	0.59213644	0.55598412	-0.1297977	0.2389584	-0.1297977	0.2389584

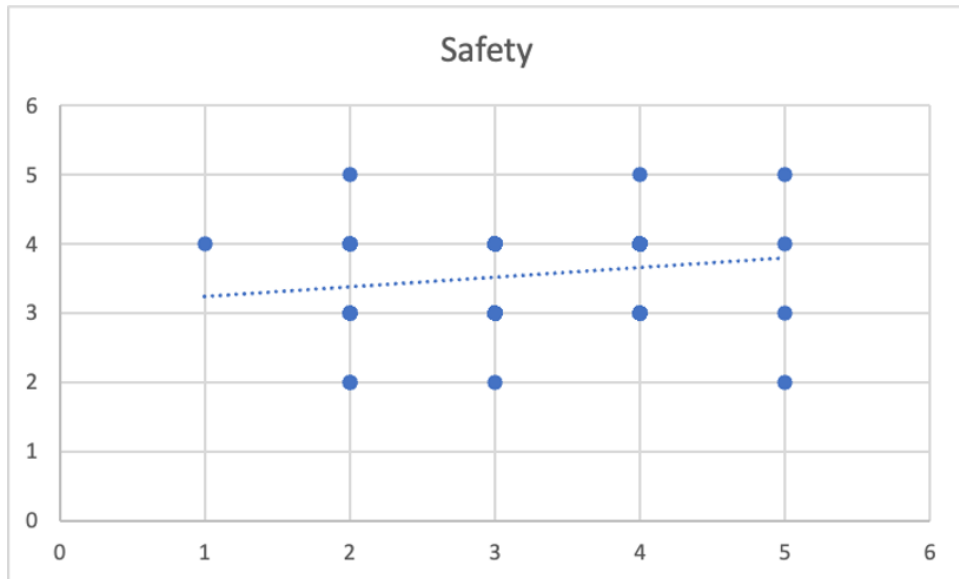
The R-Square is at 34%, being a very small number and not an accurate representation of how well the independent variables and the dependent variable.

Figure 4



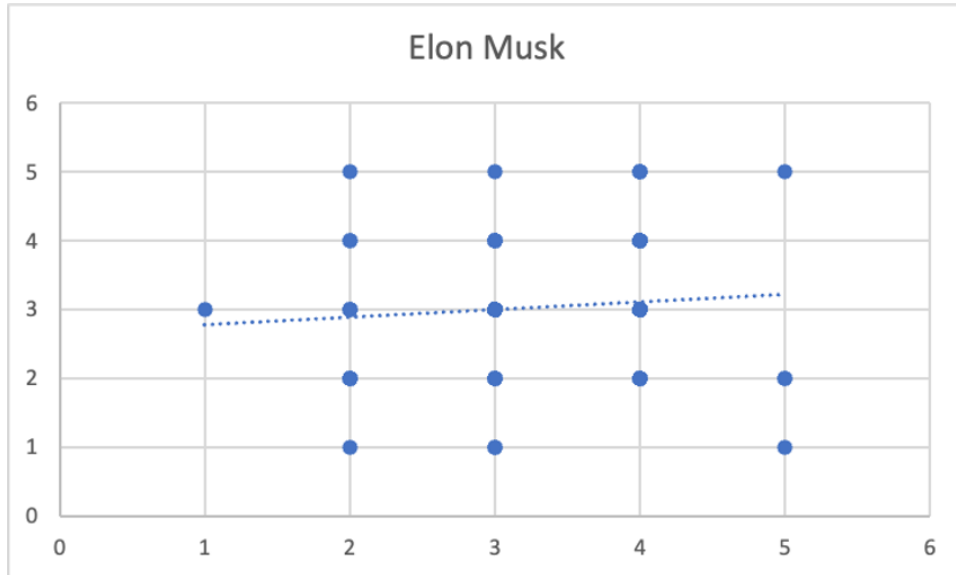
Linear regression of price.

Figure 5



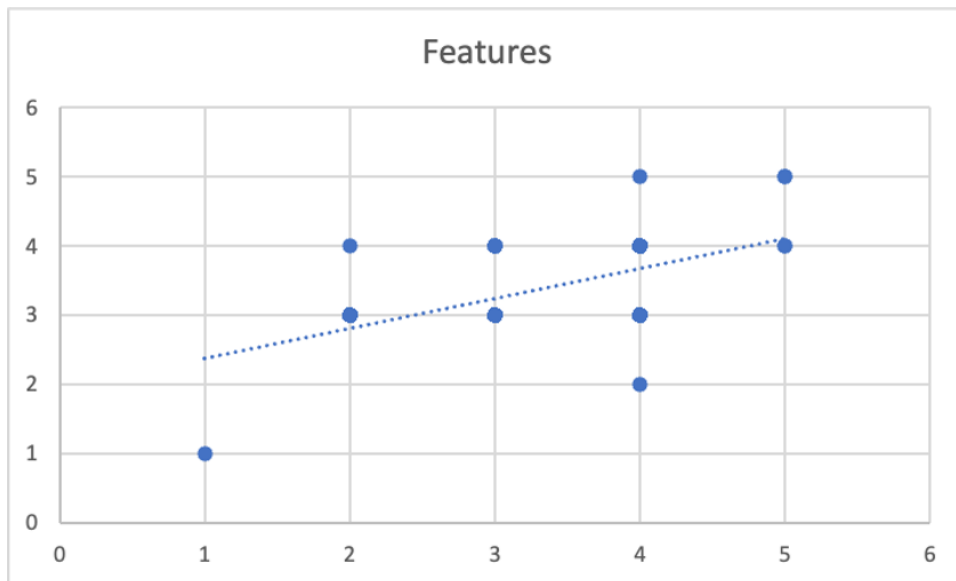
Linear regression of safety.

Figure 6



Linear regression of Elon Musk.

Figure 7



Linear regression of features.