Conjoint Product Design Exercise Report

Group 4

August 3, 2022

I. Provide a description of the product you have studied. What are the attributes and levels, and why did you choose them?

The product we decided to study is hard liquor. The attributes with their levels include flavor (no flavor additives or flavored), price ($15, $30, $45), alcohol percentage by volume (20%, 40%, 60%), and type of liquor (tequila, whiskey, rum, vodka).

The reason we chose the attributes is because we feel these 4 categories are the most representative of hard liquor. According to our personal experience as consumers, when we pick hard liquor, these are the most common and important attributes that we will refer to. We are creating a liquor brand that is targeted towards college students so our sample was representative of this segment.

By providing a variety of levels in each attribute that are most common in liquor (such as average price), we are able to see which combination of levels has the most worth.

II. Provide answers to all parts of all five questions from Step 3 (above).

1. part a.

Mariana's part worths		
Base case	**Intercept**	4.774630542
Flavor	No flavor additives	0
	Flavored	-2.151477833
Price	$30	0
	$15	0.39408867
	$45	-0.21182266
Alc content	20.00%	0
	40.00%	0.209359606
	60.00%	0.418719212
Type	Tequila	0
	Rum	-0.348522167
	Whiskey	-1.604679803
	Vodka	0.743842365

part b.

Mariana's best& worst choice			
Best choice			
No flavor additives	$15	60%	Vodka
Worst choice			
flavored	$45	20%	Whiskey

2.

Relative Importance of Attributes		
	Range	Relative Importance
Flavor	2.151477833	38.94%
Price	0.60591133	10.97%
Alc content	0.418719212	7.58%
Type	2.348522167	42.51%
SUM	5.524630542	100.00%

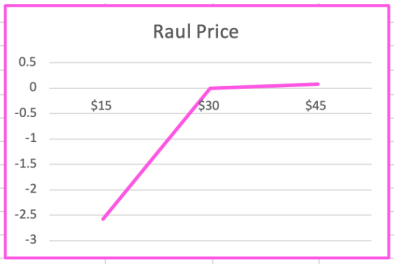
3.

Mariana

Price	Part-worth
$15	0.39408867
$30	0
$45	-0.21182266

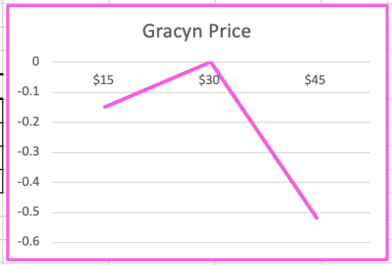
Raul

Price	Part-worth
$15	-2.57034723
$30	0
$45	0.07881773



Gracyn

Price	Part-worth
$15	-0.148864592
$30	0
$45	-0.517241379

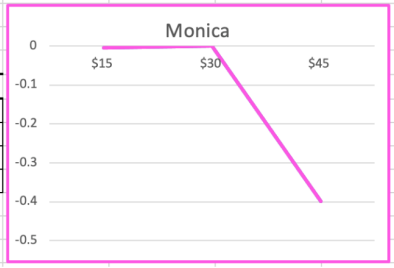


Rachel

Price	Part-worth
$15	0.69968761
$30	0
$45	-2.06403941

Monica

Price	Part-worth
$15	-0.004385438
$30	0
$45	-0.399014778



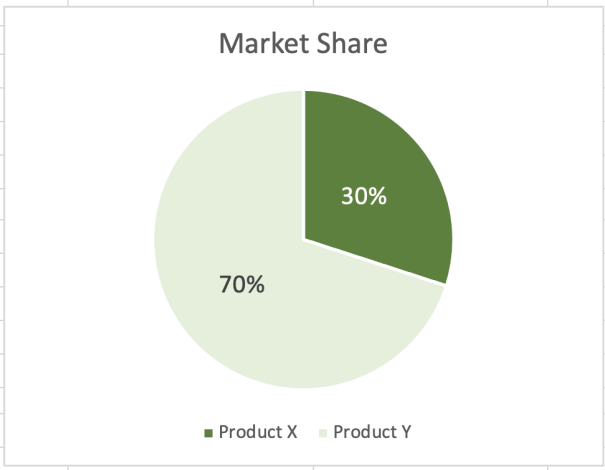
We thought these plots are not very consistent with our expectation about the impact of price. We predicted that as the price goes up, respondents' willingness to pay and their utility will decrease. However, the plots show that some respondents' utility is higher at a higher price level. In the hard liquor product category, higher price may be a sign of quality.

4.

	New Product Profiles
Competitor X	Flavored, $45, 40%, Tequila
Competitor Y	Non flavored, $15, 60%, Rum

		Mariana Murzi	Gracyn Womeldorph	Rachel Oles	Abby Nichols	Monica Hebner	Chelsea Okoroafor	Raul Vazquez	Sam Bryant	Peter Geib	Sami Puri
	Intercept	4.774630542	1.089781329	3.756382915	0.753469302	5.950183227	6.506442989	4.740267932	2.02421002	4.351616004	2.495869879
Flavor	**Non-Flavored**	0	0	0	0	0	0	0	0	0	0
	Flavored	-2.151477833	0.060344828	1.491995074	1.047413793	-0.049876847	-1.233374384	-0.240147783	-0.573891626	-2.337438424	1.431650246
Price	**15**	0.39408867	-0.148864592	0.699687613	1.457947855	-0.004385438	0.993331731	-2.570347231	1.338579839	-0.300973207	2.311966839
	30	0	0	0	0	0	0	0	0	0	0
	45	-0.21182266	-0.517241379	-2.064039409	1.379310345	-0.399014778	0.133004926	0.078817734	0.408866995	0.300492611	-0.54679803
Percentage	**20.00%**	0	0	0	0	0	0	0	0	0	0
	40.00%	0.209359606	0.266190076	0.470413313	0.61333053	0.325033041	-1.218100445	1.039228644	3.028955905	0.628979935	0.960320798
	60.00%	0.418719212	0.068965517	0.184729064	0.982758621	0.381773399	-0.460591133	0.541871921	2.935960591	0.9408867	0.115763547
Type	**Tequila**	0	0	0	0	0	0	0	0	0	0
	Rum	-0.348522167	5.342094197	-0.059068245	2.519659378	-4.151342665	-0.784918299	-1.162291241	0.232428211	-0.150366454	-2.035308783
	Whiskey	-1.604679803	4.232758621	-0.296182266	-0.745689655	-4.34544335	-2.134852217	1.11453202	-0.233990148	-0.485221675	-3.528940887
	Vodka	0.743842365	5.695542473	-1.871260363	3.368797309	-4.096539709	0.113480716	-3.528054788	-0.149345188	-0.310464977	-1.200949177
Product X	Flavored, $45, 40%, Tequila	2.620689655	0.899074853	3.654751892	3.79352397	5.826324643	4.187973087	5.618166526	4.888141295	2.943650126	4.341042893
Product Y	Non flavored, $15, 60%, Rum	5.238916256	6.351976451	4.581731347	5.713835156	2.176228523	6.254265289	1.549501382	6.531178662	4.841163042	2.888291481
Preferred		Y	Y	Y	Y	X	Y	X	Y	Y	X

Market Share	
Product X	30%
Product Y	70%

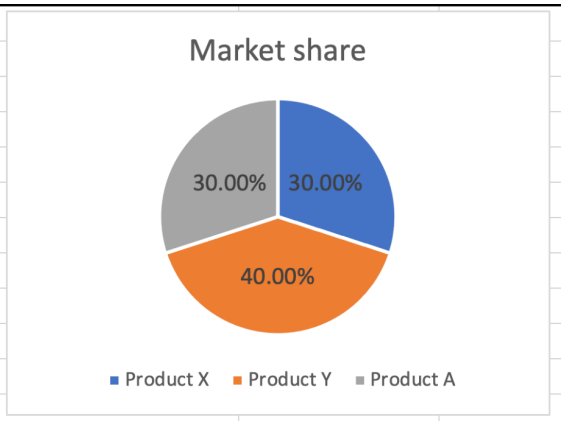


5.

		Mariana Murzi	Gracyn Womeldorph	Rachel Oles	Abby Nichols	Monica Hebner	Chelsea Okoroafor	Raul Vazquez	Sam Bryant	Peter Geib	Sami Puri
Product X	Flavored, $45, 40%, Tequila	2.620689655	0.899074853	3.654751892	3.79352397	5.826324643	4.187973087	5.618166526	4.888141295	2.943650126	4.341042893
Product Y	Non flavored, $15, 60%, Rum	5.238916256	6.351976451	4.581731347	5.713835156	2.176228523	6.254265289	1.549501382	6.531178662	4.841163042	2.888291481
Product A	Flavored, $15, 60%, Rum	3.087438424	6.412321278	6.073726421	6.761248949	2.126351676	5.020890905	1.309353598	5.957287036	2.503724619	4.319941728
If A Preferred		Product Y	Product A	Product A	Product A	Product X	Product Y	Product X	Product Y	Product Y	Product X
Product X	Flavored, $45, 40%, Tequila	2.620689655	0.899074853	3.654751892	3.79352397	5.826324643	4.187973087	5.618166526	4.888141295	2.943650126	4.341042893
Product Y	Non flavored, $15, 60%, Rum	5.238916256	6.351976451	4.581731347	5.713835156	2.176228523	6.254265289	1.549501382	6.531178662	4.841163042	2.888291481
Product B	No Flavor, $15, 40%, Vodka	6.121921182	6.902649285	3.055223477	6.193544996	2.174291121	6.395154992	-0.318905443	6.242400577	4.369157756	4.567208338
If B Preferred		Product B	Product B	Product Y	Product B	Product X	Product B	Product X	Product Y	Product Y	Product B
Product X	Flavored, $45, 40%, Tequila	2.620689655	0.899074853	3.654751892	3.79352397	5.826324643	4.187973087	5.618166526	4.888141295	2.943650126	4.341042893
Product Y	Non flavored, $15, 60%, Rum	5.238916256	6.351976451	4.581731347	5.713835156	2.176228523	6.254265289	1.549501382	6.531178662	4.841163042	2.888291481
Product C	No Flavor, $30, 20%, Tequila	4.774630542	1.089781329	3.756382915	0.753469302	5.950183227	6.506442989	4.740267932	2.02421002	4.351616004	2.495869879
If C Preferred		Product Y	Product Y	Product Y	Product Y	Product C	Product C	Product X	Product Y	Product Y	Product X

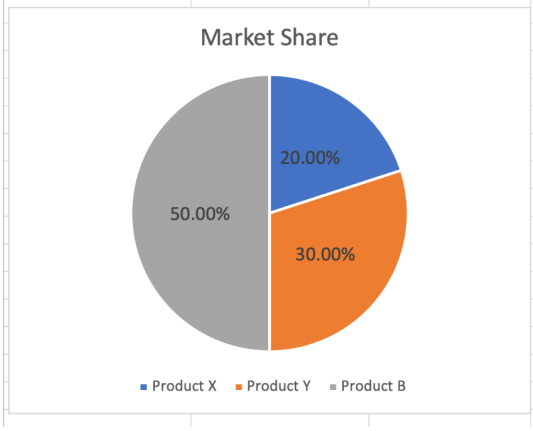
a)

Question 5, Part a		
Market Share	Product X	30.00%
	Product Y	40.00%
	Product A	30.00%



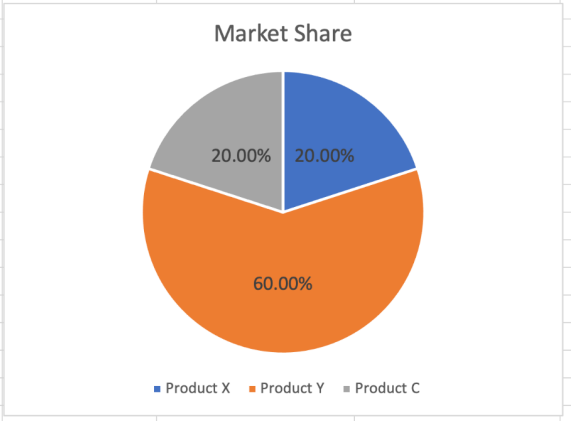
b)

Question 5, Part b		
If B preferred	Product X	20.00%
	Product Y	30.00%
	Product B	50.00%



c)

Question 5, Part c		
If C preferred	Product X	20.00%
	Product Y	60.00%
	Product C	20.00%



IV. Provide a paragraph in which you first describe what you see as research conclusions (what you would tell a marketing manager)

After conducting our research, we discovered that among the four attributes, most respondents value type and flavor most, so we might consider investing more resources in the future to launch further market research and product development; out of our expectation, respondents are not very sensitive to an increase in price. Based on this, we may adjust our price structures accordingly to optimize profits or we may research the high-end product market to seek "blue-ocean" opportunities. From the market share analysis, we found that in a market with Product X (Flavored, $45, 40%, Tequila) and Product Y (Non flavored, $15, 60%, Rum), Product Y is preferred with a 70% market share leaving Product X with 30% market share. Therefore, if we produce a liquor similar to Product Y, we may have a chance to grab some market share from product Y. Further, through estimating the performance of new products A, B, C, we found that Product B (No Flavor, $15, 40%, Vodka) performed best, taking up around half of market share. Thus in the future, we may focus on Product B and launch sample tests in our target consumer group.

V. Provide a paragraph in which you describe limitations to your ability to generalize or otherwise rely on your conjoint results to influence your decisions.

The conjoint analysis offered insight into potential customers' preferences, however, we had several limitations that hindered our ability to generalize or rely on our conjoint results to influence our decisions. There is a tendency of conjoint analysis to undervalue or overvalue the variables. Additionally, when more attributes are added, the number of combinations increases which makes the study more difficult. As a result, we are limited in the number of attributes we can introduce. We also must determine if our sample of respondents represents an accurate estimate of the population because reliability of survey data is difficult to validate unless we have a larger sample size. With only 10 respondents, we have too few people for too many options to choose from, so a larger survey would help us make more accurate generalizations.

VI. Provide a copy of the questionnaire you used to collect your data. (You may paste images or screenshots if you need to.)

https://utexas.qualtrics.com/jfe/form/SV_9B3biieXc9nfyu2

Please rate each option of liquor based on your preference.
- Flavor refers to no flavor, or with additives (such as fruit, spice, etc).
- The $ value is for a bottle ($15, $30, $45).
- The % indicates the alcohol percentage by volume (20%, 40%, 60%).
- The last feature is the type of liquor (tequila, rum, whiskey, vodka

	Dislike Extremely	Dislike Moderately	Dislike Slightly	Neither Like nor Dislike	Like Slightly	Like Moderately	Like Extremely
Flavored, $15, 40%, Tequila	○	○	○	○	○	○	○
Flavored, $15, 60%, Rum	○	○	○	○	○	○	○
No flavor additives, $30, 20%, Tequila	○	○	○	○	○	○	○
Flavored, $45, 20%, Vodka	○	○	○	○	○	○	○
Flavored, $30, 40%, Whiskey	○	○	○	○	○	○	○
No flavor additives, $30, 60%, Vodka	○	○	○	○	○	○	○
No flavor additives, $15, 60%, Whiskey	○	○	○	○	○	○	○
No flavor additives, $15, 40%, Vodka	○	○	○	○	○	○	○
Flavored, $30, 60%, Vodka	○	○	○	○	○	○	○
No flavor additives, $45, 60%, Tequila	○	○	○	○	○	○	○
No flavor additives, $45, 40%, Rum	○	○	○	○	○	○	○

VII. Paste a copy of the regression output for one respondent to demonstrate the dummy coding for your questionnaire.

Mariana

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.95017923
R Square	0.90284057
Adjusted R Squ	0.79180122
Standard Error	0.68125603
Observations	16

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	8	30.1887315	3.77359144	8.13081643	0.00606197
Residual	7	3.24876847	0.46410978		
Total	15	33.4375			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.77463054	0.51655558	9.24320775	3.5853E-05	3.55317069	5.99609039	3.55317069	5.99609039
Flavored	-2.15147783	0.3452116	-6.23234519	0.00043147	-2.96777354	-1.33518212	-2.96777354	-1.33518212
15	0.39408867	0.43143322	0.91344072	0.39138619	-0.62608878	1.41426612	-0.62608878	1.41426612
45	-0.21182266	0.44854258	-0.47224649	0.65111873	-1.27245733	0.84881201	-1.27245733	0.84881201
0.4	0.20935961	0.44807614	0.46724114	0.65452281	-0.85017211	1.26889132	-0.85017211	1.26889132
0.6	0.41871921	0.41131846	1.01799275	0.34256858	-0.5538944	1.39133282	-0.5538944	1.39133282
Rum	-0.34852217	0.49364796	-0.70601359	0.50299302	-1.5158141	0.81876976	-1.5158141	0.81876976
Whiskey	-1.6046798	0.49257367	-3.25774579	0.01390762	-2.76943145	-0.43992816	-2.76943145	-0.43992816
Vodka	0.74384236	0.50481066	1.47350765	0.18410443	-0.44984515	1.93752988	-0.44984515	1.93752988

VIII. Paste a copy of your Excel spreadsheet with your data.

Profile	Attribute 1	Attribute 2	Attribute 3	Attribute 4
	Flavor	Price (per bottle)	Alcohol Percentage	Type
	2 levels	3 levels	3 levels	4 levels
1	Flavored	$15	40%	Tequila
2	Flavored	$15	60%	Rum
3	No flavor additives	$30	20%	Tequila
4	No flavor additives	$45	20%	Rum
5	Flavored	$30	20%	Rum
6	No flavor additives	$15	20%	Whiskey
7	Flavored	$15	20%	Tequila
8	Flavored	$45	60%	Whiskey
9	Flavored	$45	20%	Vodka
10	Flavored	$30	40%	Whiskey
11	No flavor additives	$30	60%	Vodka
12	No flavor additives	$15	60%	Whiskey
13	No flavor additives	$15	40%	Vodka
14	Flavored	$30	60%	Vodka
15	No flavor additives	$45	60%	Tequila
16	No flavor additives	$45	40%	Rum

Flavored	$15	$45	40%	60%	Rum	Whiskey	Vodka
1	1	0	1	0	0	0	0
1	1	0	0	1	1	0	0
0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0
1	0	0	0	0	1	0	0
0	1	0	0	0	0	1	0
1	1	0	0	0	0	0	0
1	0	1	0	1	0	1	0
1	0	1	0	0	0	0	1
1	0	0	1	0	0	1	0
0	0	0	0	1	0	0	1
0	1	0	0	1	0	1	0
0	1	0	1	0	0	0	1
1	0	0	0	1	0	0	1
0	0	1	0	1	0	0	0
0	0	1	1	0	1	0	0

Respondent Answers									
Mariana Murzi	Gracyn Womeldorph	Rachel Oles	Abby	Monica Hebner	Chelsea Okoroafor	Raul Vazquez	Sam Bryant	Peter Geib	Sami Puri
3	1	6	4	6	5	2	6	2	7
3	7	6	7	2	5	2	7	2	4
5	1	3	2	6	6	6	3	4	3
4	6	1	5	1	5	4	3	4	1
2	6	5	4	2	5	3	1	2	1
4	6	5	1	1	6	2	2	4	1
3	1	6	3	6	6	2	2	2	7
1	5	1	5	1	2	7	4	2	1
3	6	2	6	2	6	1	3	2	1
1	6	6	1	2	2	7	5	2	1
5	7	1	5	2	6	1	5	4	1
4	4	5	2	3	5	4	7	5	1
6	7	2	7	2	6	1	6	4	5
5	7	5	6	2	5	1	3	4	4
5	1	3	2	6	7	5	5	6	1
5	6	3	5	2	5	4	5	6	1