



Customer Commitment Factor Study

Crew's Cup

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Findings Summary

- 1 Our quantitative analysis results support a five-dimension model of commitment: affective, normative, economic, forced, and habitual commitment. The five dimensions demonstrate a high level of reliability, validity, and stability;
- 2 Through k-means analysis, three proves to be the optimal number of cluster, and each cluster demonstrate different commitment types, which will be further explained in the following analysis.
- 3 Interestingly, forced commitment has the strongest relationship with intent of purchase, while affective commitment is also closely related with repurchase intentions. Normative commitment has the lowest impact on the intent of purchase.
- 4 We should optimize each dimension of commitment rather than simply maximize overall commitment;

Recommended Strategy:

Crew's Cup should focus on rebuild emotional connections with disappointed loyal customer by launching a new campaign to communicate its fundamental brand value.

This new campaign should also consider targeting newcomers who also exhibited high tendency towards affirmative commitment.

Project Overview

Background and Objective

Seeing an urgent need to abate the high customer churn rate, Crew's Cup wants to better understand the reasons behind customer's churn and retention, generating insights to determine what is the optimal retention strategy to effectively reduce the churn rate. Specifically, this study will dissect the driver's of customer retention and loyalty by applying a theoretical model about levels of customer commitment and retention. This study will leverage marketing analytics methods such as factor analysis, segmentation analysis, and linear regression analysis to evaluate and enhance current qualitative insights.

01

Examining 5 Key Commitment Factors

- Implement exploratory factor analysis to test the underlying factor structure
- Examine the validity of the factor structure

02

Defining Customer Segmentation

- Find statistically optimal number of segments via k-means analysis
- Examine whether the k-means analysis result aligns with the proposed 4 customer segmentations
- Explore commitment levels differences by segments

03

Dissecting and quantifying key influences on intent

- Conduct linear regression analysis to measure which factor has the strongest influence on customer's future intent to purchase
- Identify possible implications on retention strategies

04

Implications and Recommendations

- Interpret analysis results and derive implications
- Identify the optimal strategy recommendation based on current three retention plans
- Analyze potential risks and provide mitigations

Research Methodology Breakdown

What is 5-factor commitment model

1 Affirmative Commitment

A psychological and emotional connection to the brand

2 Economic Commitment

An intent based more specifically on the cost/benefit perceptions toward repurchase

3 Habitual Commitment

An intent as a consequence of customer routine; A not optimal but good enough option

4 Forced Commitment

An intent to purchase or repurchase solely because there were few or no other options

5 Normative Commitment

An intent based on the alignment of the individual's beliefs and the brand's value

By leveraging the 5-factor commitment model, we can uncover and statistically breakdown the reasons behind customer's retention, providing more specific insights to refine a retention strategy.

Data Collection

Commitment Factor Measurements

For each commitment factor, three measures are provided as underlying attributes

Measuring scale

All items measured on a 1-7 agreement scale with a 1=Completely Disagree and a 7=Completely Agree.

Sample size: 1507 customers who had been active in the past 90 days

Other controlled independent Variables:

- Customer Satisfaction (Csat)
- Year they opt-in (Origination)
- Profit per person
- # of classes they take

Dependent variable:

- Future intent to purchase

Data Analysis

Python is used to conduct the majority of the data analysis works, with Excel and Enginius (a marketing analytics software platform) as supportive tools

Exploratory Factor Analysis (EFA)

To explore, summarize, and validate the underlying correlational structure among factors

K-means Clustering Analysis

To identify the optimal cluster number and examine the characteristics of each segment

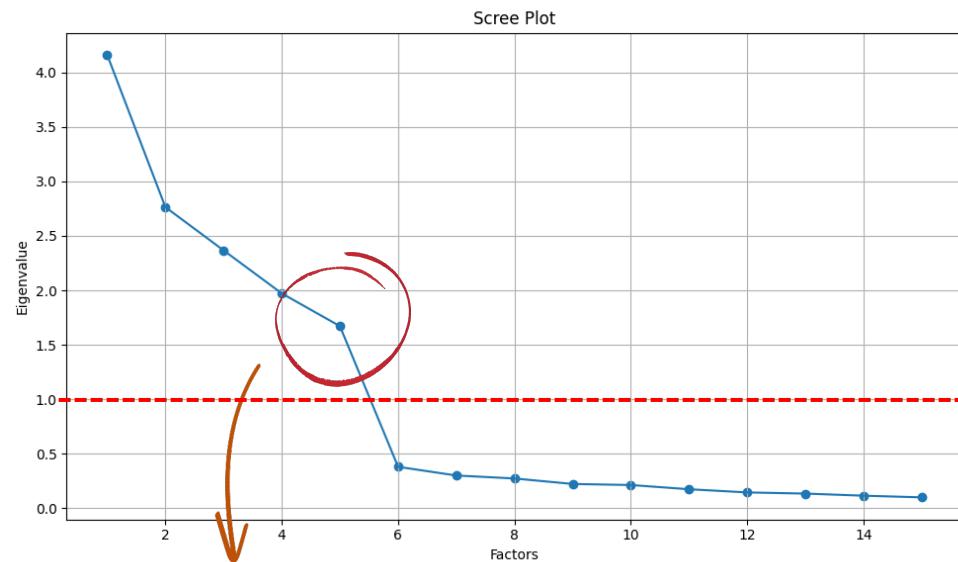
Linear Regression Model

To measure which factor has the strongest influence on customer's future intent to purchase

► Examining 5 Key Commitment Factors

Five proves to be the optimal factor number and the structure is valid

Determining The Optimal Number of Factors*



The Elbow point:

The point where the plot starts to level off or where the slope of the plot becomes less steep is known as the 'elbow'. There are two points exhibited such 'less steep' tendency: at 2-factor and 5-factor. To further examine the issue, we need to look at Eigenvalue.

The Rule of thumb for Eigenvalue:

When EVs are over 1, the factor is viewed as "stable". This criteria confirms that **five is the optimal number of factors**, since all the EV score drops below 1 by adding the sixth factors.

Factor Loadings and Rotation

The result of varimax rotation of factor loadings helps us to know whether the five factors aligns with the 5 types of commitment in the model, and how to name each factor. As shown in the table, each factor clearly matches with one type of commitment.

	Factor1	Factor2	Factor3	Factor4	Factor5
a1	-0.0257	0.0294	0.0936	0.8142	-0.0207
a2	0.0324	-0.0267	-0.0973	0.9678	-0.0241
a3	-0.0193	-0.0816	-0.1828	0.8116	0.0500
n1	-0.0929	-0.0274	-0.0507	0.0033	0.7687
n2	-0.1351	-0.0844	-0.0739	-0.0044	0.9606
n3	-0.0914	-0.0818	-0.1587	0.0048	0.7881
e1	-0.0078	0.1533	0.8227	-0.0636	-0.0807
e2	0.0130	0.1338	0.9494	-0.0470	-0.1021
e3	0.0525	0.1764	0.8429	-0.0624	-0.1193
f1	0.8793	0.0328	-0.0496	0.0093	-0.0829
f2	0.9739	0.0256	-0.0437	-0.0039	-0.1159
f3	0.8520	0.0882	0.1585	-0.0251	-0.1400
h1	-0.0121	0.8746	0.1292	-0.0286	-0.0315
h2	0.0533	0.9544	0.1287	-0.0314	-0.0682
h3	0.1164	0.8453	0.2154	-0.0181	-0.1076

Factor Structure Validity Examination

Factors	Cronbach's alpha
Affirmative	0.896
Normative	0.886
Economic	0.921
Forced	0.932
Habitual	0.932

Cronbach's alpha is used to measure internal reliability:

On a scale of 0-1, the higher Cronbach's alpha is, the better the reliability is. All the Cronbach's alpha are near 0.9, which indicate a good reliability of the factor structure. Moreover, none of the alpha value drops significantly if one of the items is removed*, which implies that all the items in the factors are important and should be retained.

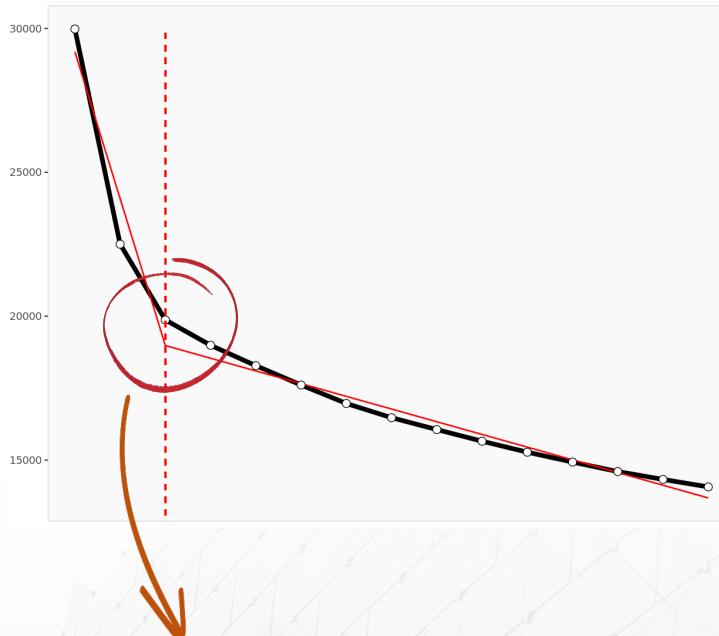
Therefore, our results support a five-dimension model of commitment, and the factor structure demonstrate a high level of reliability, validity, and stability.

*Please refer to the appendix for a full process of the factor analysis (including correlation results, full validation results, etc.) with exhibits that support the conclusions

► Redefining Customer Segmentation

The K-means analysis reveals 3 is the optimal number of customer segments

Using the elbow plot to determine the optimal number of clusters*



Understanding the three customer segments

Aligning with previous segmentation profiles

Customer Segment 1

- High forced commitment (4.9), as well as high affirmative commitment (5.1)
- Lowest in Avg Satisfaction score (3.0) and intent to purchase (2.9)
- Mostly old, loyal customers who opt-in at 2014
- Heavy users, indicating by the highest average class per person (397)
- Profit per person is also highest among all segments \$4073
- The smallest segment (26% of the total respondents)

Customer Segment 2

- High Affirmative (5.0) and relatively high Normative commitment (4.3)
- Relatively new customers, mostly come in at 2021-2022
- Low average class number (42) and profit per person(\$393)
- Highest future intent to purchase among all three segments
- The largest segment (40% of total respondents)
- Highest Avg Satisfaction score among all the segments (4.3)

Customer Segment 3

- High Economic and habitual commitment level (5.2 and 4.5 accordingly)
- The lowest in average affirmative score
- Slightly lower in satisfaction (4.2) and intent to purchase (4.1)
- Relatively old customers, mostly come in around 2015-2016
- An average class number of 247, and average profit per person is \$2699
- Approximately 34% of the total respondents

The characteristics of the first segment of customer matches with **The Faithful** group of customer suggested by the Monk--loyal customers who are disappointed by the brand's recent performances and having a love-hate relationship with Crew's Cup.

This segment is very similar to the **Bargain Hunter** group suggested by the Monk. However, it is surprising to see this segment shows high affirmative and normative commitment levels instead of economic commitment. It is potentially due to the bias of qualitative research, or this could be a previously neglected segment.

This segment is a combination of labelled **Adjacents** and **Fitness buffs**, probably also a portion of Bargain Hunters. While Monk gave them different names since they engage with Crew's Cup for different reasons, they both have low emotional attachment to the brand and come to Crew's Cup for pragmatic reasons.

The elbow method suggests that **3 cluster** is the optimal number of clusters

► Redefining Customer Segmentation

Redefine and Interpret Customer Segmentation Profile

1

The Faithful

Being the loyal customers of Crew's Cup, this group is at high risk of churn and has a high forced commitment level, indicating that they wish they can have other options but something trapped them with the brand (e.g.: the tutor they like) . However, they also have a relatively high affirmative commitment score of 5.1, indicating that there is opportunity to recover the emotional bond with this group of customer.



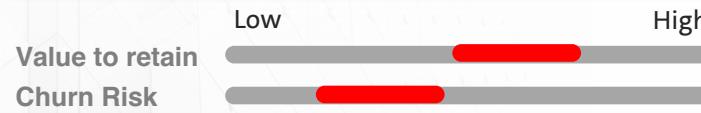
Retention Implications

- Rebuild Brand Image
- Focus on communicating brand value

2

Attached New Comers

Although relatively new to Crew's Cup, this group of customer find Crew's Cup's offerings and value really aligns with their need, and thus build up some emotional connections. With a relatively high satisfaction score and intent to purchase, this group of customer is likely to retain in near future. However, in the long run we still don't know their purchasing power and visit frequency. We might want to further understand this group of customers as they account for 40% of total customer base.



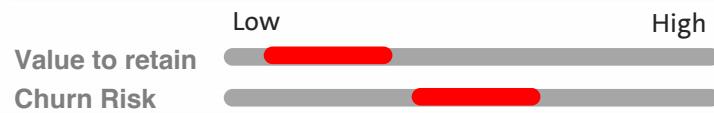
Retention Implications

- Enhance emotional connection is the key
- Conduct market research to understand their mindset and belief

3

Convenience seeker

This group of customers are not only budget-conscious but also highly value the practical benefits, such as locations, schedules, basic equipment and classes, etc. Unlike heavy users from the faithful segment, convenience seekers only purchase certain amount of classes that meet their basic needs. It is also hard to develop affirmative commitment relationship with this group of customers.



Retention Implications

- Offering specialized discounts
- Launch new subscription plan
- Improve accessibility

► Dissecting and quantifying key influences on intent of purchase

Forced commitment has the strongest influence on intent of purchase among all factors, while Affirmative commitment being the second

Linear Regression Result

***P-Value:** Normally the threshold used to test significance is 0.05. However, since we are dealing with complex and sometimes irrational customer behaviors, an 0.1 thresholds will be applied for this project. Therefore, all the factors and controlled variables are statistically significant except for Profit.

	Parameter	Standard deviation	P-value
Intercept	-397.1021	42.8553	0.0000
csat	0.1532	0.0380	0.0001
origination	0.1981	0.0212	0.0000
classes	-0.0018	0.0010	0.0827
profit	0.0001	0.0001	0.1743
Avg_Force	-0.1491	0.0283	0.0000
Avg_Habitual	0.1192	0.0206	0.0000
Avg_Economic	0.0858	0.0181	0.0000
Avg_Affirmative	0.1319	0.0238	0.0000
Avg_Normative	0.0368	0.0214	0.0850

Factors' influence on Intent of purchase

NO.1: Force Commitment

Despite its negativity in direction, forced commitment has the largest co-efficient magnitude (0.1491)

NO.2: Affirmative commitment

Affirmative falls slightly behind but still demonstrates a pretty strong and positive relationship with the intent to purchase

NO.3: Habitual Commitment

NO.4: Economic Commitment

NO.5: Normative commitment

What are the takeaways from the result?

- ① The strong negative relationship between forced commitment and intent to purchase might because forced commitment usually **associated with strong negative feelings**, which often outperforms other considerations when making retention decisions.
- ② To sustain a long-term relationship with customers, it is important to focus on **enhancing emotional connections with customers** to increase affirmative commitment levels.
- ③ Exploring other controlled variables, customers who **have registered for longer period of time, have higher satisfaction score** are more likely to make future purchases.

► *Implications and Recommendations*

Implications to Crew's Cups' Retention Strategy and Targeting Segments

Managerial Implications

- ▶ We should optimize each dimension of commitment rather than simply maximize overall commitment
- ▶ While we normally focusing on enhancing positive experiences, such as affirmative dimensions, it is important to actively examine and reduce negative feelings to forced commitment dimensions.

Who should our retention strategy target?

While we hope to retain customers in all segments, the fact that they all exhibit different commitment pattern indicates that our retention strategy should focus on the most valuable segment.

- 1 Customer segment who scores high in factors that have high positive impact on Intent to purchase
- 2 The segment that proves to be the heavy users and have high buying powers
- 3 The segment that currently exhibits high risk of churn and urgently requires relationship rebuilding.

PRIMARY TARGET SEGMENT

- Their commitment type—forced and affirmative—are the two strongest factors in impacting purchase intent
- High forced commitment level indicating high risk of churn
- Proved high value to the company

SECONDARY TARGET SEGMENT

- High in affirmative commitment level—a strong factor that positively impacting purchase intent
- The largest segment, having the potential to grow and bring in more value in the future

► *Implications and Recommendations*

Crew's Cups' should mainly focus on launch a new campaign to communicate its brand value, appealing to both loyal customers and newcomers

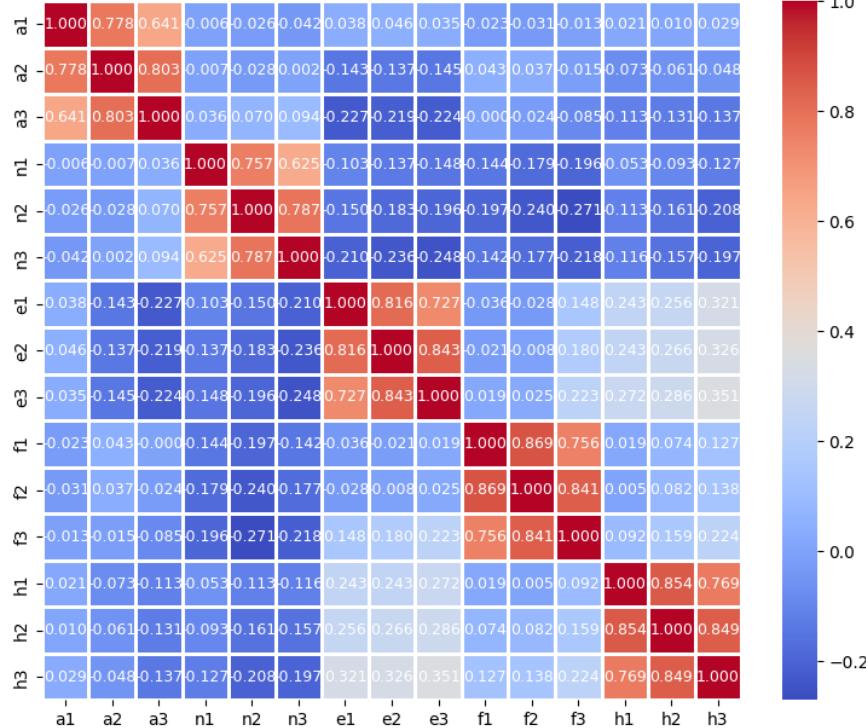
Customer Segment	Commitment Type	Strategy and Rationale
The Faithful	Forced Commitment	<p>While it is hypothesized that Crew's Cups should introduce a new type of class to address the high forced commitment level, for the faithful customer, this strategy might not achieve the intended effect. As we learned from the qualitative research, the high forced commitment level is not because of limited class varieties but a broken brand relationship. The brand should focus on enhancing brand affinity to reduce the unwillingness, rather than providing unnecessary extra class options.</p>
	Affirmative Commitment	<p>It is recommended to launch a new campaign to signal to its most loyal customers that it was getting back to its foundational values, and thus further boosting the affirmative commitment level—the factor that has the strongest positive relationship with the intent of purchase. The campaign should be authentic. And it is also a good idea to leverage instructors to deliver the brand's message, since many faithful customers now possess more trust towards instructors than the brand.</p>
Attached New Comers	Affirmative Commitment	<p>These new customers have shown a notably high level of affirmative commitment. When launching the new campaign, the Monk should also consider appeal to this segment. Although normative commitment, which is less crucial, ranks as the second most dominant commitment type in this group, the goal of the campaign is to shift more customers towards affirmative commitment.</p>

A group of six people are exercising on stationary bicycles in a gym. They are all smiling and appear to be engaged in a cycling class. The gym has a large window in the background showing a city skyline at night. A fan is mounted on the wall above the bikes.

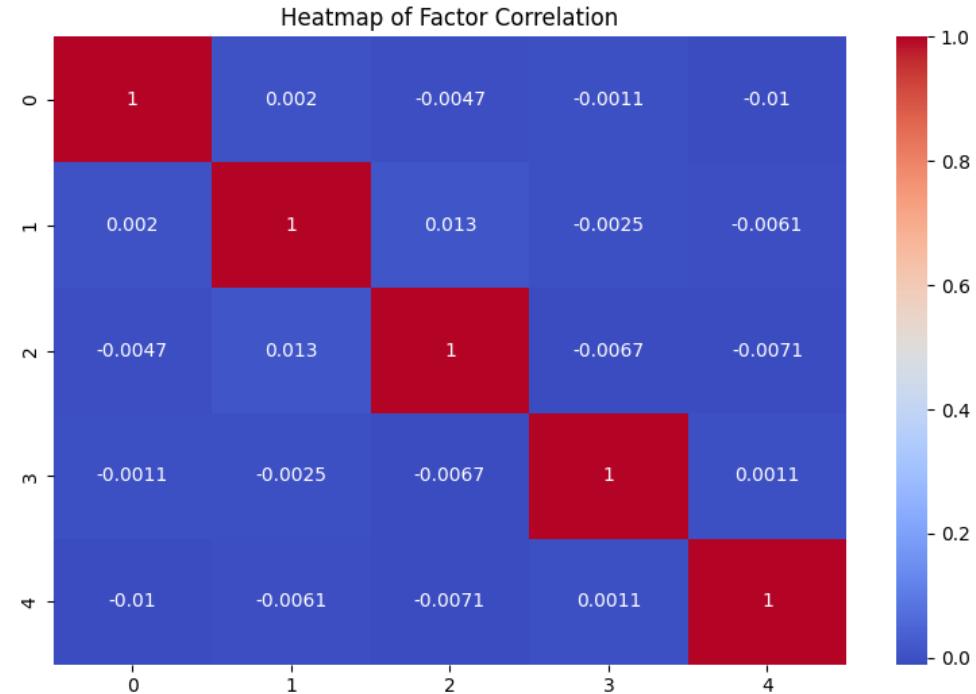
Thanks!

Appendix

Factor Analysis-Correlation Results



The attributes from same commitment type high correlate with each other, while attributes from different commitment type have a weak positive correlation relationship or even negatively correlate with each other. However, one exception is habitual attributes and economic attributes, which demonstrates a relatively higher correlation relationship (0.2-0.4).



I created a heat map to examine correlations among factors. It is obvious that each factor is distinct and unique from each other, exhibiting minimal correlation relationships.

Factor Analysis-Factor Loading Results

Unrotated Factor Loadings

	Factor1	Factor2	Factor3	Factor4	Factor5
a1	-0.07707	0.27624	0.74676	-0.04930	0.17676
a2	-0.22289	0.46464	0.81757	-0.00881	0.12021
a3	-0.32595	0.38280	0.66496	0.01745	0.07992
n1	-0.42030	-0.30326	-0.00274	0.46772	0.33992
n2	-0.56458	-0.38032	-0.02259	0.55128	0.43106
n3	-0.52082	-0.25578	-0.03559	0.48148	0.30256
e1	0.60092	-0.33929	0.11658	-0.21350	0.41905
e2	0.67655	-0.35145	0.13696	-0.27038	0.50897
e3	0.66406	-0.29460	0.10974	-0.20951	0.42280
f1	0.34284	0.68302	-0.26779	0.29656	0.19996
f2	0.39338	0.75753	-0.31033	0.30318	0.21846
f3	0.51453	0.57985	-0.23994	0.21969	0.26880
h1	0.57702	-0.26674	0.28136	0.45467	-0.30581
h2	0.66177	-0.22666	0.28470	0.50176	-0.33731
h3	0.68840	-0.16716	0.25434	0.40745	-0.23207

Varimax Rotation Factor Loadings

	Factor1	Factor2	Factor3	Factor4	Factor5
a1	-0.0257	0.0294	0.0936	0.8142	-0.0207
a2	0.0324	-0.0267	-0.0973	0.9678	-0.0241
a3	-0.0193	-0.0816	-0.1828	0.8116	0.0500
n1	-0.0929	-0.0274	-0.0507	0.0033	0.7687
n2	-0.1351	-0.0844	-0.0739	-0.0044	0.9606
n3	-0.0914	-0.0818	-0.1587	0.0048	0.7881
e1	-0.0078	0.1533	0.8227	-0.0636	-0.0807
e2	0.0130	0.1338	0.9494	-0.0470	-0.1021
e3	0.0525	0.1764	0.8429	-0.0624	-0.1193
f1	0.8793	0.0328	-0.0496	0.0093	-0.0829
f2	0.9739	0.0256	-0.0437	-0.0039	-0.1159
f3	0.8520	0.0882	0.1585	-0.0251	-0.1400
h1	-0.0121	0.8746	0.1292	-0.0286	-0.0315
h2	0.0533	0.9544	0.1287	-0.0314	-0.0682
h3	0.1164	0.8453	0.2154	-0.0181	-0.1076

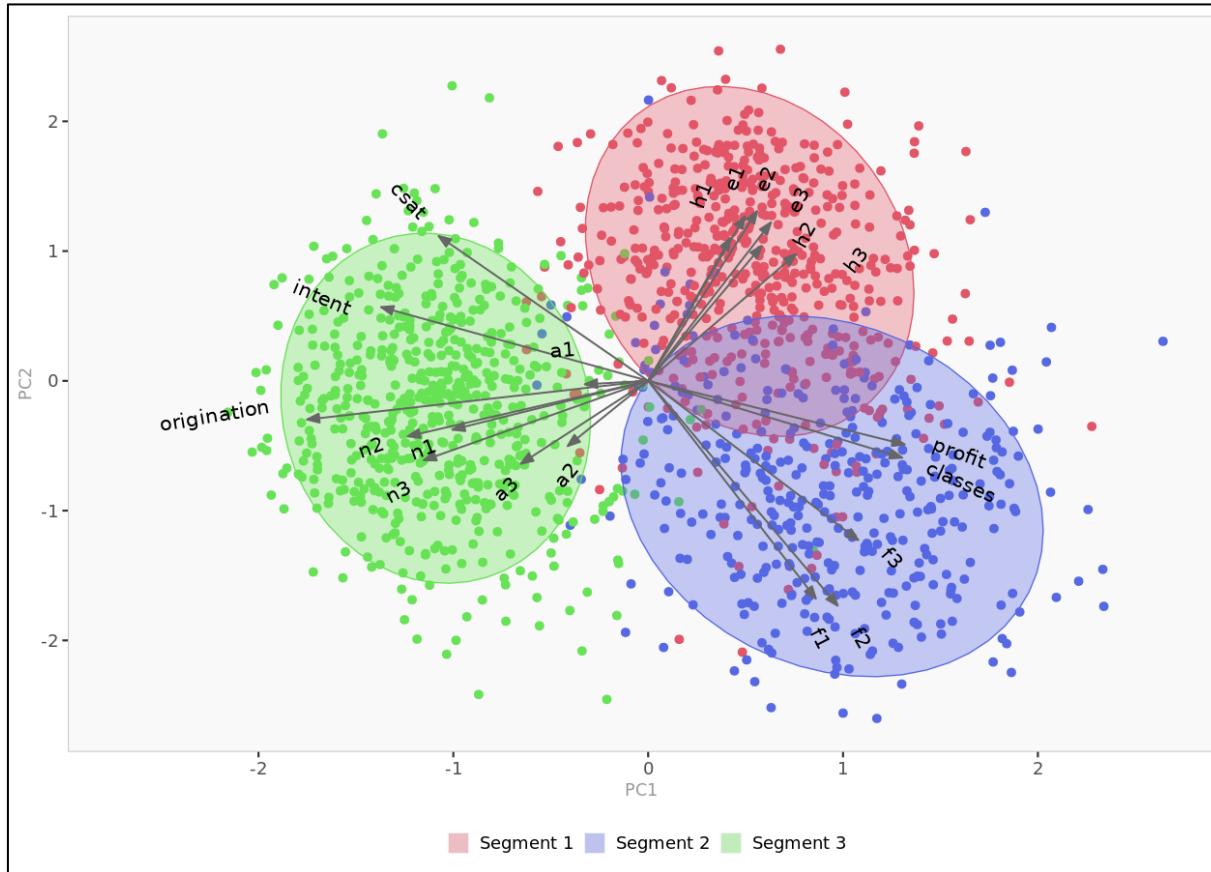
Examine the loading pattern to determine the factor that has the most influence on each variable. Loadings close to -1 or 1 indicate that the factor strongly influences the variable. Loadings close to 0 indicate that the factor has a weak influence on the variable. While the unrotated factor loadings are not clear enough to interpret, Varimax rotation simplifies the loading structure. The rotation loading result makes the factors more clearly distinguishable and easier to interpret.

Factor Analysis-Validation Results

```
Cronbach's alpha for Factor 1: 0.8955306088582418
95% CI for Factor 1: [0.886 0.904]
Cronbach's alpha if 'a1' is dropped: 0.8907503678217641
Cronbach's alpha if 'a2' is dropped: 0.7810166326692691
Cronbach's alpha if 'a3' is dropped: 0.8750356376429205
Cronbach's alpha for Factor 2: 0.8864822417434757
95% CI for Factor 2: [0.876 0.896]
Cronbach's alpha if 'n1' is dropped: 0.8809586277638408
Cronbach's alpha if 'n2' is dropped: 0.7656999617432703
Cronbach's alpha if 'n3' is dropped: 0.8580397088084879
Cronbach's alpha for Factor 3: 0.9210877136935101
95% CI for Factor 3: [0.914 0.928]
Cronbach's alpha if 'e1' is dropped: 0.913335182384764
Cronbach's alpha if 'e2' is dropped: 0.8420058269709016
Cronbach's alpha if 'e3' is dropped: 0.897412285578387
Cronbach's alpha for Factor 4: 0.9321936708714791
95% CI for Factor 4: [0.926 0.938]
Cronbach's alpha if 'f1' is dropped: 0.9134541449088709
Cronbach's alpha if 'f2' is dropped: 0.8592768355052154
Cronbach's alpha if 'f3' is dropped: 0.9294605931461661
Cronbach's alpha for Factor 5: 0.9319177614554051
95% CI for Factor 5: [0.926 0.938]
Cronbach's alpha if 'h1' is dropped: 0.9154531682884555
Cronbach's alpha if 'h2' is dropped: 0.8683826670963144
Cronbach's alpha if 'h3' is dropped: 0.9209522003428625
```

Here is a full Cronbach alpha result. The result is run by the pingouin package in Python. As we can see from the python output, not only the Cronbach's alpha for each factor remains high, if we drop any factor measures, the Cronbach alpha decreases. Therefore, all the measures of factors should retain.

K-means Analysis-Principal Component Analysis visualization



PCA reduces the dimensionality of the data by finding new variables, called principal components, that are uncorrelated linear combinations of the original variables and that capture the maximum variance in the data.

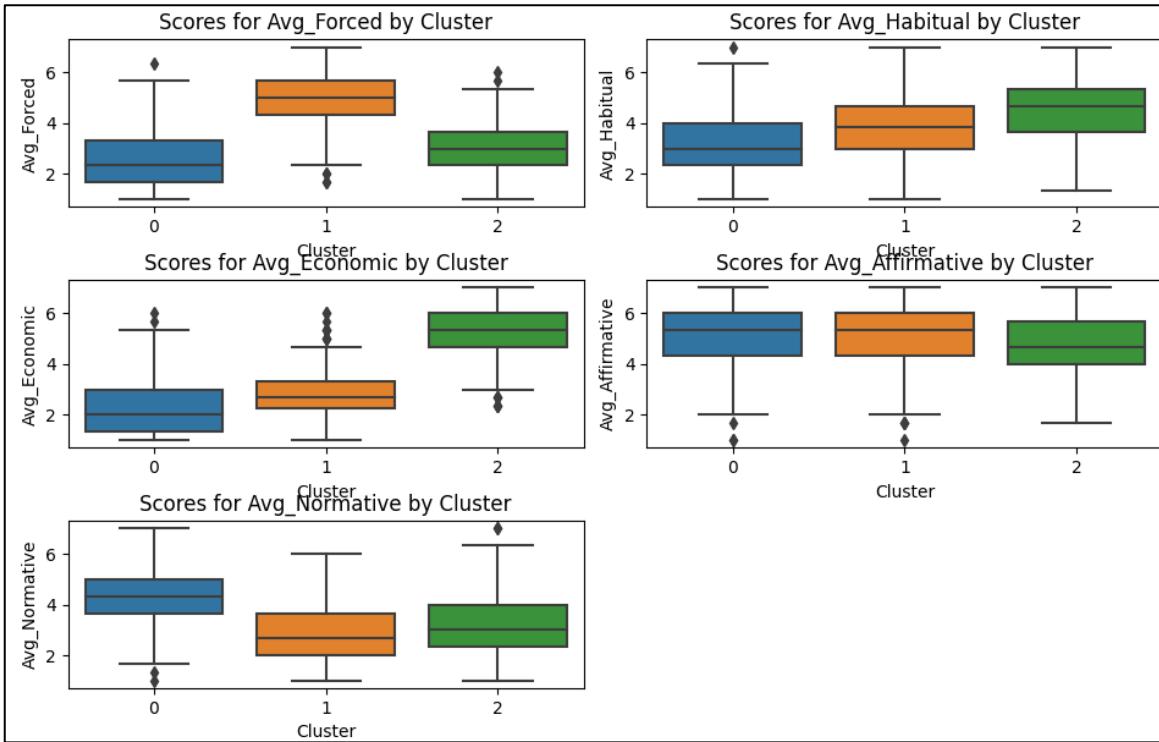
Segment 1 (Red): This cluster is characterized by high scores on PC1 and relatively lower scores on PC2. The variables that project strongly on PC1 in this segment seem to be “e1-3” and “h1-3”, which could imply that habitual and economic commitment are dominant in defining this segment.

Segment 2 (Blue): This cluster has lower scores on PC1 and is more spread out along PC2. The dominant variables for this segment appear to be ‘f1-3’, classes and profit. This indicates that forced commitment are dominant in this segment.

Segment 2 (Green): This cluster has lower scores on PC1 and is more spread out along PC2. The dominant variables for this segment appear to be ‘f1-3’, classes and profit. This indicates that forced commitment are dominant in this segment.

K-means Analysis-Segment commitment level difference

The Boxplot that reflect the commitment differences across segments



ANOVA Test for each segment

```
[5 rows x 27 columns]
ANOVA result for Avg_Force:
sum_sq      df      F      PR(>F)
C(Cluster) 1367.013609  2.0  677.297622  3.313127e-210
Residual   1510.723873 1497.0  NaN      NaN

ANOVA result for Avg_Habitual:
sum_sq      df      F      PR(>F)
C(Cluster) 487.365813  2.0  199.879602  1.151823e-77
Residual   1825.065224 1497.0  NaN      NaN

ANOVA result for Avg_Economic:
sum_sq      df      F      PR(>F)
C(Cluster) 2476.689260  2.0  1271.81289  1.482197e-323
Residual   1457.605851 1497.0  NaN      NaN

ANOVA result for Avg_Affirmative:
sum_sq      df      F      PR(>F)
C(Cluster) 43.537730  2.0  15.358486  2.496917e-07
Residual   2121.823084 1497.0  NaN      NaN

ANOVA result for Avg_Normative:
sum_sq      df      F      PR(>F)
C(Cluster) 584.525906  2.0  253.562028  1.455304e-95
Residual   1725.485650 1497.0  NaN      NaN
```

Linear Regression Analysis

	Parameter	Standard deviation	P-value
Intercept	-397.1021	42.8553	0.0000
csat	0.1532	0.0380	0.0001
origination	0.1981	0.0212	0.0000
classes	-0.0018	0.0010	0.0827
profit	0.0001	0.0001	0.1743
Avg_Force	-0.1491	0.0283	0.0000
Avg_Habitual	0.1192	0.0206	0.0000
Avg_Economic	0.0858	0.0181	0.0000
Avg_Affirmative	0.1319	0.0238	0.0000
Avg_Normative	0.0368	0.0214	0.0850

Besides classes and forced commitment, all the other variables positively influences intent of purchase. How to interpret the model—take csat as an example—by increasing 1 unit of csat, the intent of purchase will increase 0.1532. If we take 0.05 as p-value threshold, csat, origination, forced, habitual, economic, and affirmative are statistically significant predictors for intent to purchase. However, in this project we would like to take 0.1 as the threshold, since we are dealing with consumer behavior.

	Values
R-squared	0.53
Adjusted R-squared	0.53

'R-squared', is a number that indicates the proportion of the variance in the dependent variable that is accounted for using the independent variables. In this model, 53% of variance is explained by the regression model.