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SNP CASE STUDY

FEEDBACK DATA INSIGHT

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Executive Summary

Our group conducted qualitative and quantitative analysis of SNP's feedback to find insights for improvement and growth. Using sentiment analysis and word clouds, we were able to identify areas for improvement from customers with lower ratings including increased length of session, room size and equipment. We also built recommendations for new and existing customers by industry. Examples for new customers include T-Effective Meetings for internet companies, and T-Delivering Hard Feedback for Computer software companies. For existing customers, we found a strong demand for Communication and Leadership Skills across industries.

Background & Context

SNP communications is a leadership communications and training company with three lines of business: Content, Coaching, and Creative [1]. As one of its featured products, SNP's Coaching provides varieties of "audience-focused communication courses to develop executive presence, storytelling and leadership style" [2]. SNP serves numerous companies across industries through in-person training session for both groups and individuals. Feedback captured from these sessions gives SNP an opportunity to uncover key business insights. The company realizes the importance of making data-driven decisions to manage quality control, monitor relationship statuses, and identify growth opportunities.

In recent years, SNP transitioned from hard-copy surveys to digitized feedback questionnaires in order to better collect customers' feedback. This transition greatly improved overall efficiency by avoiding manual transcription and increasing consolidation of feedback. These digital forms include both quantitative and qualitative feedback, which gives SNP opportunity to gain more meaningful insights about each product. By comparing product scores over time, SNP can understand which product performs better and how overall satisfaction scores change.

However, there is a lot more that can be done with the qualitative data collected from these forms. There are multiple dimensions of customers' qualitative feedbacks including rating explanations, one-word description of courses, areas for future improvement, etc., all of which can contain valuable insights.

Analytical Approach

With the emergence of online platforms, traditional training companies face the threat of being replaced. However, on-site and in-person training still has a huge role to play, particularly for customized courses and high-level performance based trainings [3]. However, companies still need to have a comprehensive understanding of its customers in order to continuously improve. There are several approaches to do so. One approach is to measure results. Numbers cannot measure all the criteria of training products, but they can help companies see whether they are heading in the right direction [4]. Timely course feedback is a good way to gather information. Another approach is to ask customers what they really want to learn [5]. When training courses are designed, it is impossible to consider everyone's needs. Listening to what customers say will help companies to integrate current courses with any other creative and thoughtful suggestions from customers. The two approaches can be translated into quantitative data and qualitative data, which SNP expects to use in order to improve product quality.

Compared with quantitative data, qualitative data is more difficult to assess because of its unstandardized measurement. In recent years, many industries and companies began to use text mining to understand customers' satisfaction and needs. Text mining is the process of exploring and analyzing large amount of unstructured text data, usually by identifying concepts, patterns, topics, keywords, and other attributes [6].

Traditional businesses relied on surveys and focus groups to gain insight about customers' feedbacks. With modern technology, our group can harness the power of machine learning to extract meaning from text, and dive into opinions of customers. In this project, we will use qualitative analysis to assess the current customer feedback and use quantitative analysis to build a recommendation system for new and existing customers. Considering the lack of technical background of SNP employees, we present our deliverables to be easily understood and duplicatable. For example, all of the Python scripts will be packed into built-in functions. SNP only needs to call out the functions and make minor changes such as the file path to implement our methods, which will help them create business values in a sustainable way.

Qualitative Analysis of Course Feedback

By better utilizing qualitative data, SNP will be able to understand how to improve courses more efficiently. Feedback data for the question "What can we do to improve this program?" contains qualitative data on this subject. In order to filter out the targeted information, the feedback from customers who are not satisfied with the courses should be given more focus.

One existing score which indicates customer satisfaction level is "Please rate your overall satisfaction with the training", a rating ranging from 1 to 5. Since SNP enjoys a high recognition among most customers (93.5% of customers rated 4 or 5 for the courses), we believe conducting analysis to customers who did not give a rating of a 4 or 5 will better help us identify specific areas of improvements.

Sentiment Analysis

Aside from their overall rating, our group wanted to find another statistic that can measure their overall satisfaction based on their written responses. To do so, we utilized sentiment analysis,

which is a machine learned, multi-lingual analysis used to evaluate written or spoken language. It determines if the expression is positive, neutral or negative, and to what degree. The value of sentiment analysis is that for companies nowadays, “it isn’t enough to know what customers are talking about. You must also know how they feel.” [7]

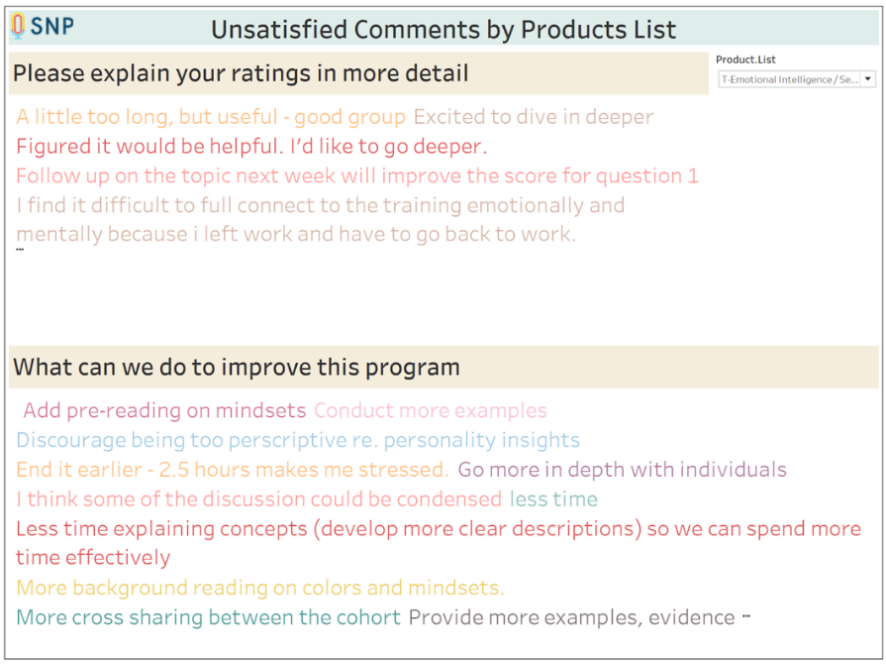
Our solution utilizes Amazon Web Service (AWS) Comprehend’s Sentiment Analysis paired with a Python API, i.e boto, to conduct sentiment analysis for comments about the rating (“Please explain your ratings in more detail”). The partial results of the analysis are as follows.

Key	Comments	Sentiment
68	Judy came up with a lot of great improvement points for me.	POSITIVE
69	Would love to have deeper dive into management styles and situations to use them	POSITIVE
70	I was able to gain additional clarity on being agile in different management styles and learned much more about areas of e	POSITIVE
71	It's hard with so little time to dig into individual manager needs. I'm not sure how it could be more tailored except to have r	NEGATIVE
74	I thought I was perfect in presenting. Totally eye opener, its important to go out of your personal comfort zone!	POSITIVE
75	I found the session to be collaborative, safe and engaging.	POSITIVE

Based on these results and the original feedback ratings, we created a class of customers categorized as “Unsatisfied” as our primary focus group. This group consisted of individuals with low overall ratings (1-3) or non-positive sentiment analysis results (negative or neutral). Specifically, we focused on their comments for “Please explain your ratings in more detail” and “What can we do to improve this program?”.

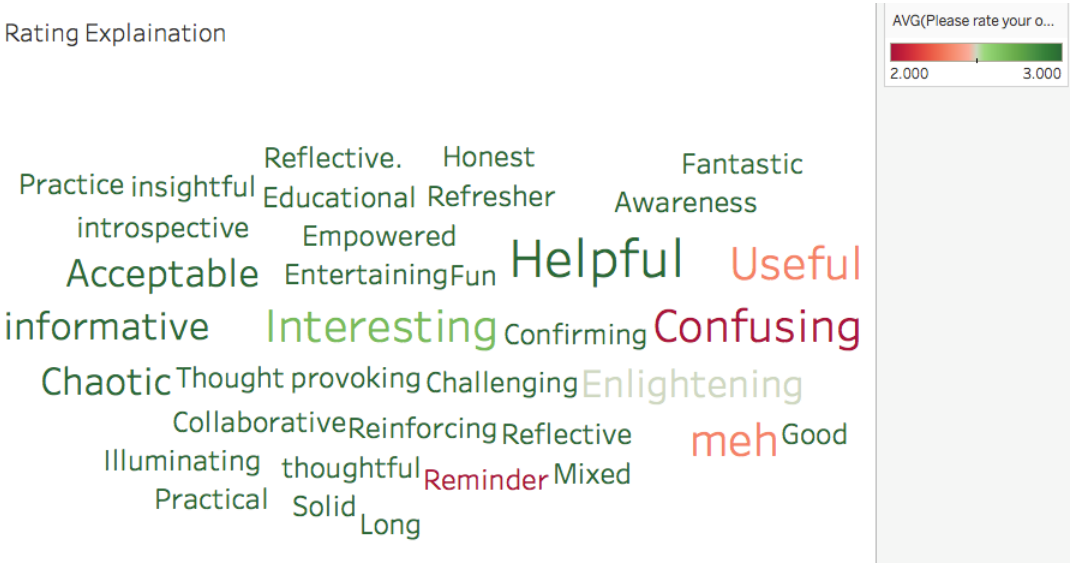
Course Improvement Analysis

The graph below shows a snapshot of the dashboard designed to present filtered comments of how to improve courses from “Unsatisfied” customers. Our analysis shows that students of the “T- Emotional Intelligence” course hope to 1) add pre-reading on mindsets; 2) conduct more examples; 3) have shorter sessions; 4) go more in depth with individuals etc. This kind of actionable feedback allows SNP to improve courses in detail quickly and efficiently.



Word Clouds

In addition, we also created a word cloud for responses to the question 'Please describe your experience in this class in one word' from students classified as "Unsatisfied". The word cloud provides a concise view on qualitative feedback. While most of the feedback is still generally positive, words like chaotic, long and confusing stand out and be further analyzed for potential improvements.



Recommendations Based on Quantitative Data

One of SNP's strategic goals is to expand its business by identifying new markets and opportunities. The recommendation system is designed to help SNP realize this goal by creating suggested courses for both **new customers** from specific industries, and **existing customers** based on prior feedback.

Course recommendations for new customers

Based on SNP's Customers' feedback analysis, the clients from different industries show different preference for courses based on their ratings. In order to uncover these preferences, we grouped all customers/companies into their respective industries (entertainment, internet, computer software, computer hardware, etc.).

Next, we aggregated the customers' numerical ratings from 'Please rate your overall satisfaction with the training', 'Expectations [Overall, how was your experience compared to your expectations coming into the class?]' and created an average score that was accessible and understandable. Based on this analysis, we are able to provide recommendations for the top 5 industries: internet, computer software, insurance, health care and e-learning. The results are as follow:

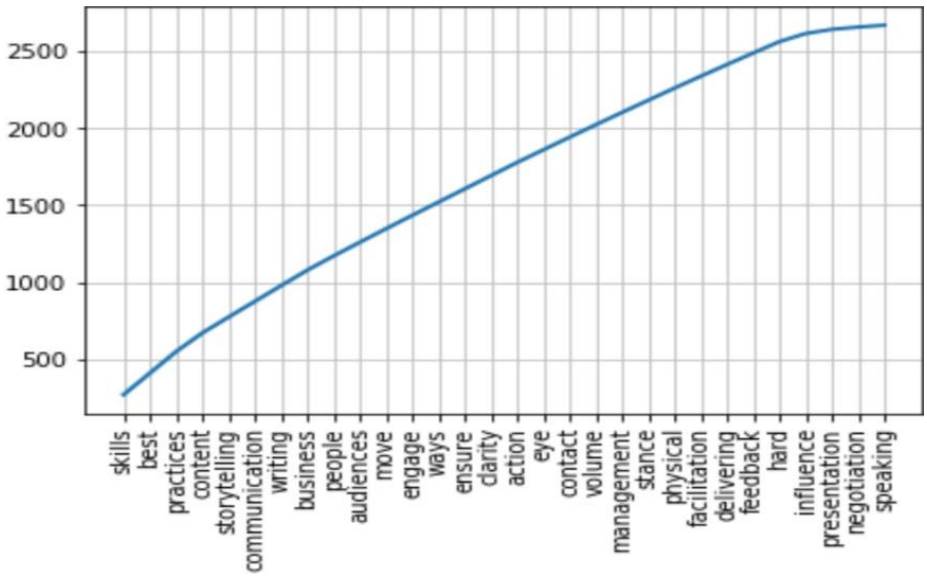
Industry	Product List	Total Average Rating
Internet	T-Effective Meetings	4.75
	T-Presentation Skills	4.64
	T-Time Management	4.59
	T-Insights Discovery	4.56
	T-Delivering Hard Feedback	4.48
Computer Software	T-Influence Without Power	4.79
	T-Presentation Skills	4.7
	T-Other	4.47
	T-Insights Discovery	4.33

	T-Offsite	4.03
Insurance	T-Other	4.37
	T-Emotional Intelligence/Self Awareness	4.01
	T-Combo	3.37
	T-Delivering Hard Feedback	3.1
Health Care	T-Insights Discovery	4.75
	T-Presentation Skills	4.67
	T-Working Well Together(Trust & Accountability)	4.66
	T-Delivering Hard Feedback	4.45
	T-Manager Mojo	4.4
E-Learning	T-Manager Mojo	4.24
	T-Influence Without Power	4
	T-Delivering Hard Feedback	3.99
	T-Getting the Work Done	3.86
	T-Working Well Together(Trust & Accountability)	3.75

Courses recommendations for existing customers

Based on conversations with SNP, we understand that many existing customers who have finished courses are still eager to learn more. This feedback is captured by the question ‘Going forward, what other skills are you interested in developing?’. Our group collected key words from these comments to analyze what customers still want to learn.

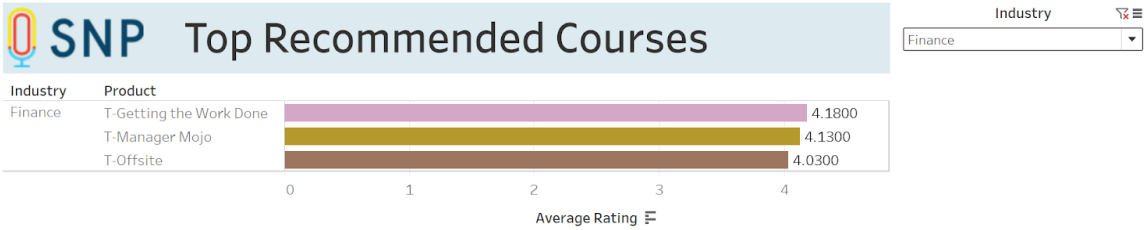
According to this analysis, if such desired courses exists, SNP can send customers emails of course recommendations. However, if such courses/skills do not currently exist, it could be an opportunity for SNP to potentially create a new products if there is enough demand. Once the courses is created, SNP can send emails to those customers have expressed interest in them. Our group used text analysis to help SNP identify some skills that customers are interested in learning. The graph below shows a list of the most frequently identified terms/skills, and the number of times each word was recorded.



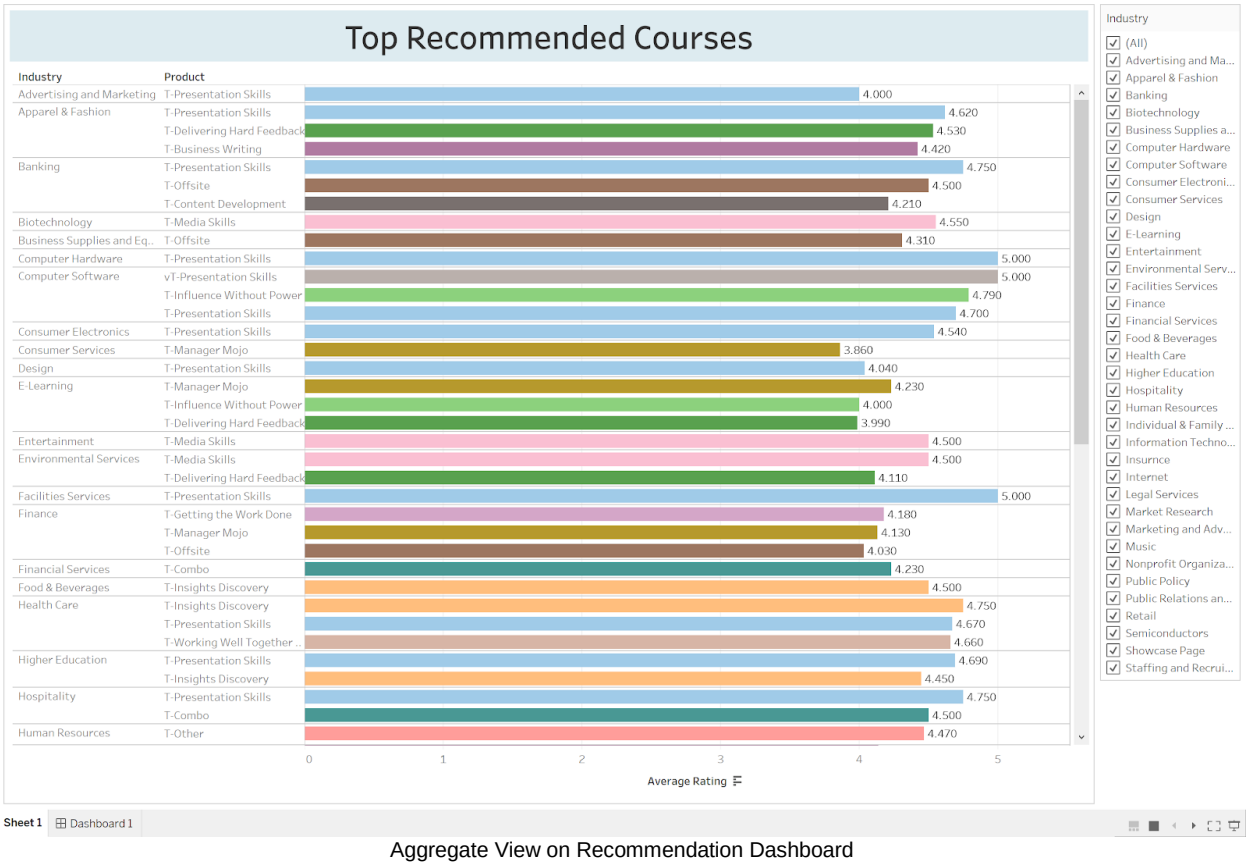
Based on this analysis, our group is able to provide the following recommendations for the top five industries: Aggregated table and Tableau Dashboard Screenshots

Industry	Skills in Demand	Recommendations
Internet	Presentation	Presentation Skills
	Influence	Influence Without Power
	Stance, volume, eye contact	Presentation Skills
	Writing	Business Writing
	Management	Manager Mojo, Managing Up, Project Management
Computer Software	Speaking	Conversation Skills, Phone Skills, Negotiation Skills
	Negotiation	Negotiation Skills
	Presentation	Presentation Skills
	Influence	Influence Without Power
	Feedback	Delivering Hard Feedback, Getting Feedback
Health Care	Leadership	Leader's Narrative, Influence Without Power
	Stance, volume, eye contact	Presentation Skills
	Writing	Business Writing
	Storytelling	None
	Influence	Influence Without Power
E-Learning	Communication	Conversation Skills
	Stance, volume, eye contact	Presentation Skills

	Management	Manager Mojo, Managing Up, Project Management
	Feedback	Delivering Hard Feedback, Getting Feedback
	Storytelling	None
Apparel & Fashion	Speaking	Conversation Skills, Phone Skills, Negotiation Skills
	Writing	Business Writing
	Storytelling	None
	Leadership	Leader's Narrative, Influence Without Power
	Meeting	Effective Meetings



Top Recommended Courses for companies in finance industry



Aggregate View on Recommendation Dashboard

Conclusion

Through this process, our group was able to identify areas of improvement and growth opportunities for SNP. Their current data contains an abundance of feedback, but it can be difficult to find the right insights. By utilizing a variety of tools like Python, Tableau, and AWS Machine Learning, we were able to uncover a deeper layer of insights beyond the traditional quantitative ratings of a course. However, to fully maximize the impact of these insights, this needs to be an iterative process. As this company grows, so will the amount of data being collected and the importance of continuously analyzing this new data. Therefore, it is crucial that they are able to understand at a high-level our analytical approach, the tools we have used, and how to replicate this analysis.

Apart from this report, our group is looking to provide a high-level tutorial on how to setup and load some of these tools including our Tableau dashboard and Jupyter Notebook. Simply executing the recommendations and improvements we have suggested will help the company in the short-term. However in the long run, the firm needs to be able to continuously test the validity of their data and recommendations. Our hope is that this project will be one of many steps that SNP will take to better understand and utilize their data to make more informed decisions about their business.

Reference:

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