How Restaurant Attributes Affect Customer Satisfaction: A Study Based on Sentiment Analysis, Neural Network Modelling and Kano Model Classification

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1. INTRODUCTION AND RESEARCH QUESTIONS

Customer satisfaction has long been recognized as an important indicator of restaurant profitability. If consumers have a positive attitude toward its service quality, business would retain more customers and make more profits[1]. Exploring the factors affecting customer satisfaction is of great im-portance for resources allocation optimization and customer satisfaction improvement for restaurant as well[2]. Thus, customer satisfaction in the catering industry has attracted a lot of attention both from researchers and practitioners. Kano model is effective in capturing non-linear relationship. Accordingly, the relationship between the attributes of restaurant and customer satisfaction could be divided into five categories, including one-dimensional relationship, attractive relationship, must-be relationship, reverse relationship, and indifferent relationship. Each corresponding attribute has a different impact on customer satisfaction[3]. For example, poor performance of must-be attributes would definitely lead to low customer satisfaction. But increase in the performance of must-be at-tributes would not bring higher customer satisfaction because they usually take the must-be attributes for granted. Therefore, understanding the category of attributes can identify influencing factors of customer satisfaction in a wise way. The research question is 1) How the various attributes of restaurant affect its customer satisfaction?

2. THEORY AND RESEARCH FRAMEWORK

This section describes the proposed framework which is consisted of sentiment analysis, neural network modelling and kano model classification as shown in Figure 1.
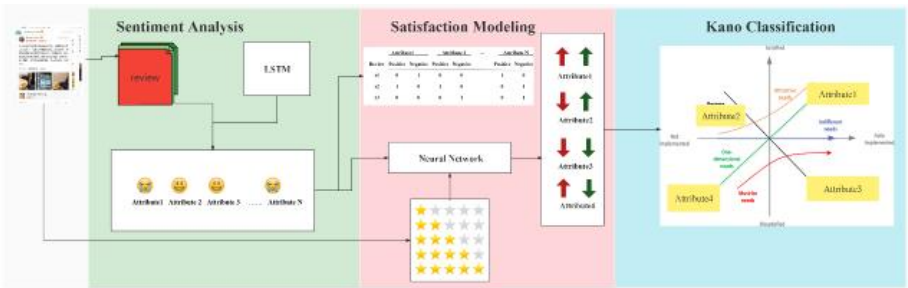

Figure 1. Research framework

3. RESULTS AND MAJOR FINDINGS

The results of Kano model classification are list in Table. Most of attributes be-long to one-dimension relationship, such as "Distance from the business district", "Waiter's attitude", "Price level", etc. They all have a linear relationship with custom-er satisfaction that the increase in these attributes will largely improve customer satisfaction. But if the performance of these attributes is not good, customer satisfaction will decrease proportionally. Only "serving speed" is labelled as a must-be attribute. It means that when the restaurant could serve the food in a timely manner, customers would have any negative comments. But if not the case, it will make the customers very unhappy. Therefore, the restaurant should pay much

attention to guarantee the quality of "serving speed". Attractive attributes include "waiting time" and "parking convenience". The absence of these attributes won't affect customer's dissatisfaction. But the fulfillment of them could largely enhance customer satisfaction. Therefore, the restaurant may try to make effort on these attractive attributes. Reverse attributes include "easy to find" and indifference attributes include "transportation" and "ambience". These three are not very related with customer satisfaction thus the restaurant may save effort on them.

Table 1. Weights of each attribute

Attribute	$w^{positive}$		Category
Transportation	0.00027496	0.00231703	Indifference
Distance from the business district	0.00986201	-0.01043371	One-dimension
Easy to find	-0.00813591	0.00817348	Reserve
Wait time	0.014292	0.03005956	Attractive
Waiter's attitude	0.07968552	-0.25355035	One-dimension
Parking convenience	0.01037645	0.00109737	Attractive
Serving speed	-0.01988516	0.05538633	Must-be
Level	0.02394627	-0.03960495	One-dimension
Cost effective	0.04329604	-0.05944266	One-dimension
Discount	0.04062787	-0.01910394	One-dimension
Decoration	0.02519204	-0.02484462	One-dimension
Noise	0.04907202	-0.02096099	One-dimension
Space	-0.00535662	0.00267455	Indifference
Cleanness	0.0034049	-0.09968126	One-dimension
Portion	0.025995	-0.04481082	One-dimension
Taste	0.23250425	-0.20692174	One-dimension
Look	0.03355601	-0.05764644	One-dimension

4. CONTRIBUTIONS

This study proposes a framework for understanding how restaurant attributes affect its customer satisfaction. A comprehensive investigation of sentiment analysis, customer satisfaction modeling and Kano model classification was conducted. This study could provide guidance for restaurants to best allocate its resources to achieve higher customer satisfaction. However, there are still some limitations. For instance, this study only focused on the positive or negative sentiment and ignored the valence of sentiment. Besides, the impact of demographic features on customer satisfaction was not considered, e.g., gender. Further study is highly encouraged.

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