

Trouble of Celebrities: Should I expand my business to other areas?

A study of means and success rate of celebrities investing on food service industry

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I. Background

In this era of extraordinary sophistication and versatility, more and more means of lives are offered to ordinary people, as well as to the celebrities. While we have more choices in our daily lives to spend wealth, more and more celebrities choose to use or invest their money in different ways, to “expand” their business [1]. Typically, they choose to invest on other people’s ideas, companies or even involve in direct business trade like commission agent for red wine, in order to earn profit. But under most cases such traditional film or TV celebrities know very few about the specialties in different areas, therefore reluctant taking such risk of investing something that they do not know very well. That is the exact reason why there are increasing celebrities choosing to invest and involve in food service industry [1], for they believe it is a low-tech industry that they could operate and they themselves will bring tons of potential customer. Such situation takes place in a developing country especially—China. As the Open and Reform policy executed by Chinese authority at the end of last century, more and more young Chinese Celebrities choose to change their ways of living by opening their own restaurants, having their own food or sauce product and investing on farmers and vegetable market. But what is the result of such investing? What are the factors influencing the success? [3] Since there is no such former research, the whole analysis and comparison is original and data is raw.

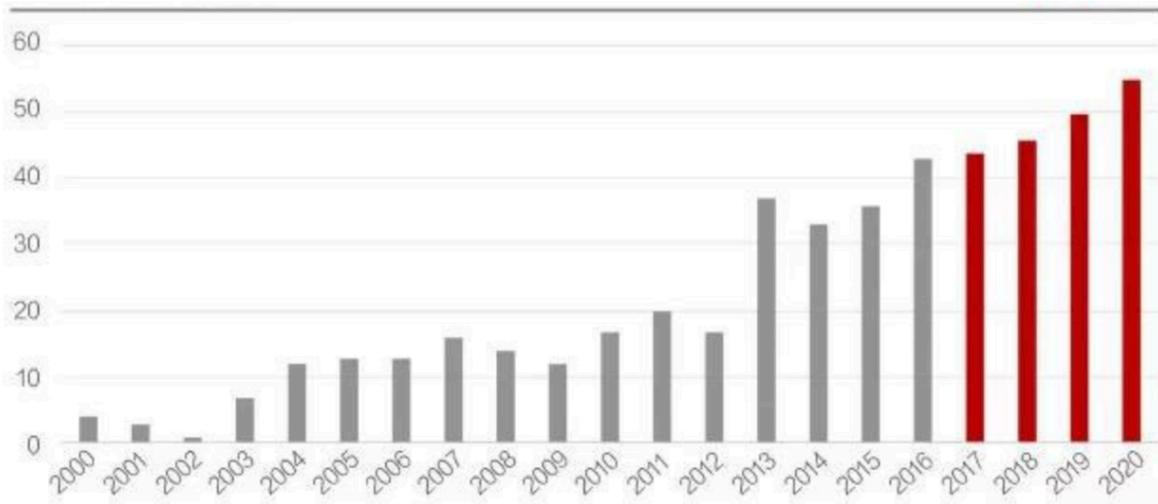
II. Introduction

In this paper, I will start by analyzing whether a celebrity should choose to invest on food industry or not, and then if one wants to expand his/her business to food service industry, what factors are paramount to success. The first part is modeled by game theory and the math model for second part basically relies on the data collected and compared in food service industry in China. Throughout the paper, most case-study happened in China and celebrities are traditional entertainment stars in film and TV show, who possess certain influence in society already by having their fans [1]. There however are many misperceptions as “celebrities have lots of money that won’t need to worry about the cost and they have enough resources to make the best decisions” [6]. The three basic facts about celebrity opening a restaurant in status quo [7]:

1. Celebrity restaurants generally think the first 4 months are the most difficult time for the celebrity restaurants.
2. in 2017, 78.9% of new celebrity restaurants take place in Shanghai and Beijing
3. in 2017, 68.9% of new celebrity restaurants receive a “mediocre” tag meaning that the price is medium level and the goodness of food is even more ordinary.

III. Tendency of celebrities opening up restaurant in China

There is a saying in China for celebrity to open a restaurant: “Easy to open quickly lose.” According to the official data about restaurants’ names in the web of Ministry of Commerce of the People's Republic of China, the data for annual increase number of celebrity restaurant are demonstrated below in the report[1]:

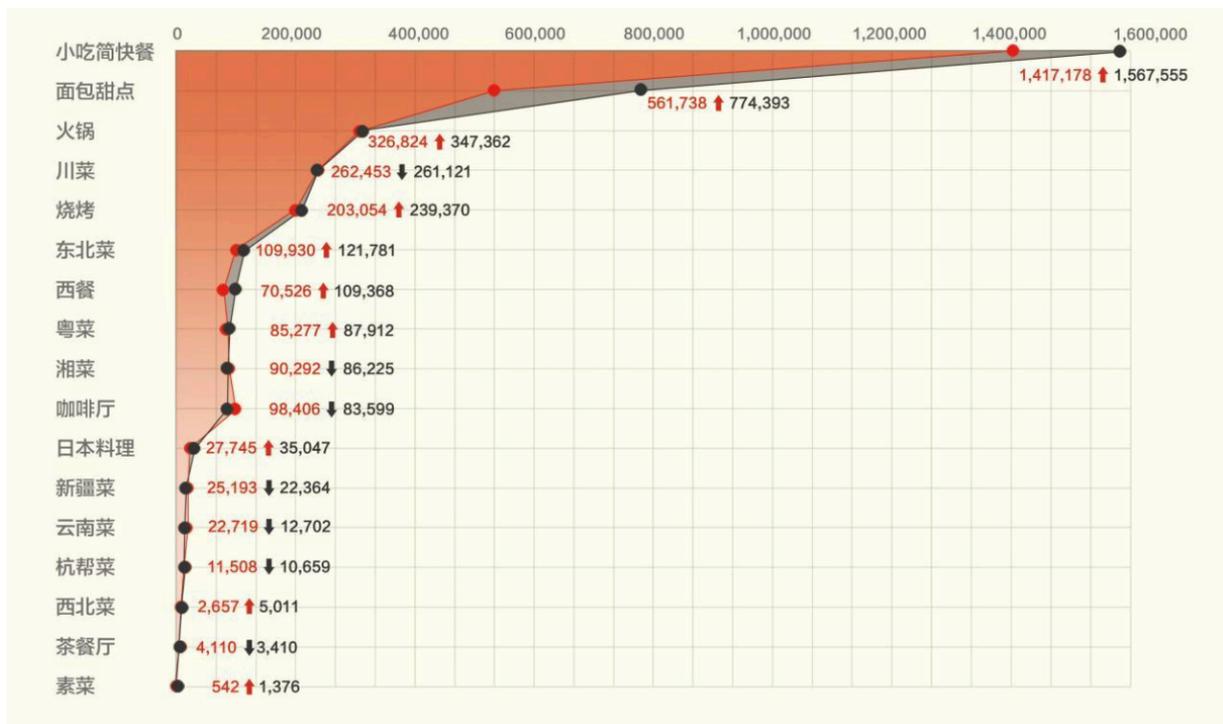


Since the year of 2017 is not over yet so the four red columns are future prediction by computer according to the number demonstrated in years before. As we can perceive from this form that starting from 2013, increasing celebrity restaurants are opened up every year. Here are the following-up researching form about development of each restaurant in 2016[4]:

Table 1 2016 New Celebrity Restaurants Analysis

Restaurant Type	Number of restaurants	Average annual revenue (million\$)	Average years of lasing in market	Annual bankruptcy	Industry average bankruptcy
Noodle	12	0.91	1.2	5%5	2.4%
Hotpot	9	1.22	2.7	22%	10.2%
Snack&fast food	19	1.05	1.8	10.2%	9%
Others	3	0.54	0.8	8.5%	6.5%

By comparing the form, we could draw the conclusion that the Hotpot becomes increasingly popular these years and becomes the number one most profitable type, as nearly 20 percent of daily revenue comes from Hotpot directly. The snack&fast food still occupies the most populated restaurants. However, the average annual bankruptcy for celebrity to open up a restraint is exceptionally higher than the industry average and the compounded rate of bankruptcy is even over 100%! The conclusion should be put into the big food-service environment in China. The following diagram is from “2017 Chinese Restaurants Report (White book)” by MeiTuan App [2]:



Pic 1: 2017 Chinese Restaurant Report (Red dot represents the number of this type of restaurant in 2016.1; Black dot represents the number of this type of restaurant in 2016.12)

As we can perceive from the form above, the food industry’s market is becoming increasingly competitive, along with the high rate of bankruptcy since more celebrities are more willing to invest in an asset-light strategy model, every decision in the process becomes paramount.

IV. Factors influencing success

A. Change of target population

Since as the celebrity himself possesses tons of potential customer as his own fans, the characteristics of flow of people of such restaurant becomes typical and similar to each other.

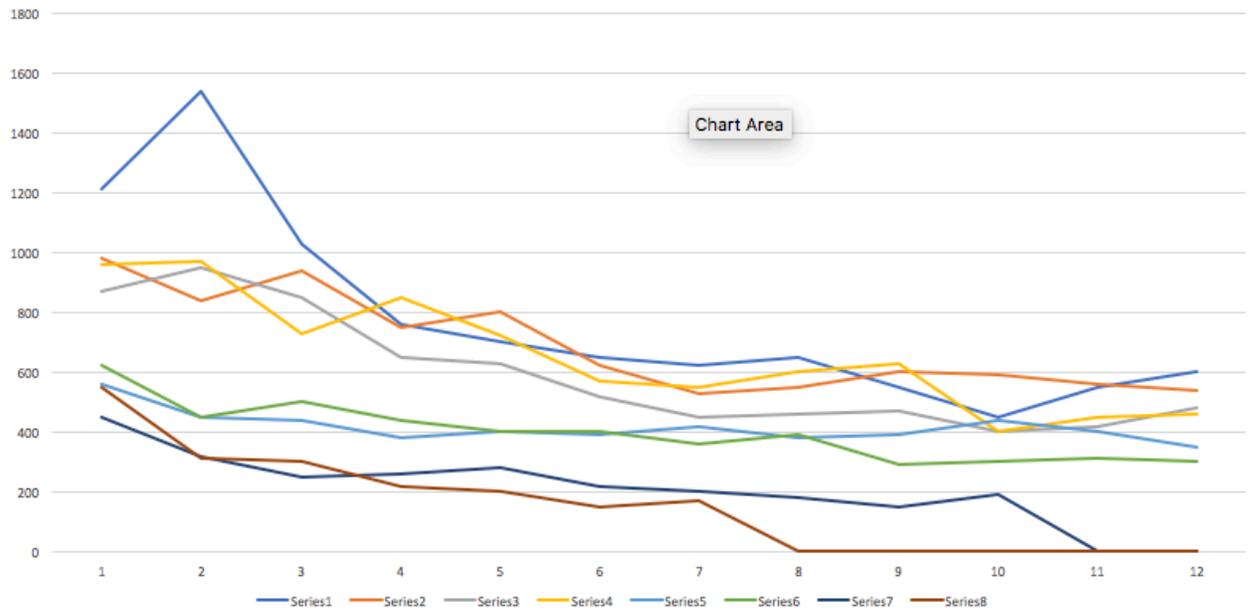
I pick 8 very typical celebrity restaurants, some of which are in very good status, some of which are not while the rest are bankrupt already. All those eight celebrities who open up the restaurants are very famous among China [5]. The table below shows the change of flow of people over a year:

Table 2 Flow of people per day average:

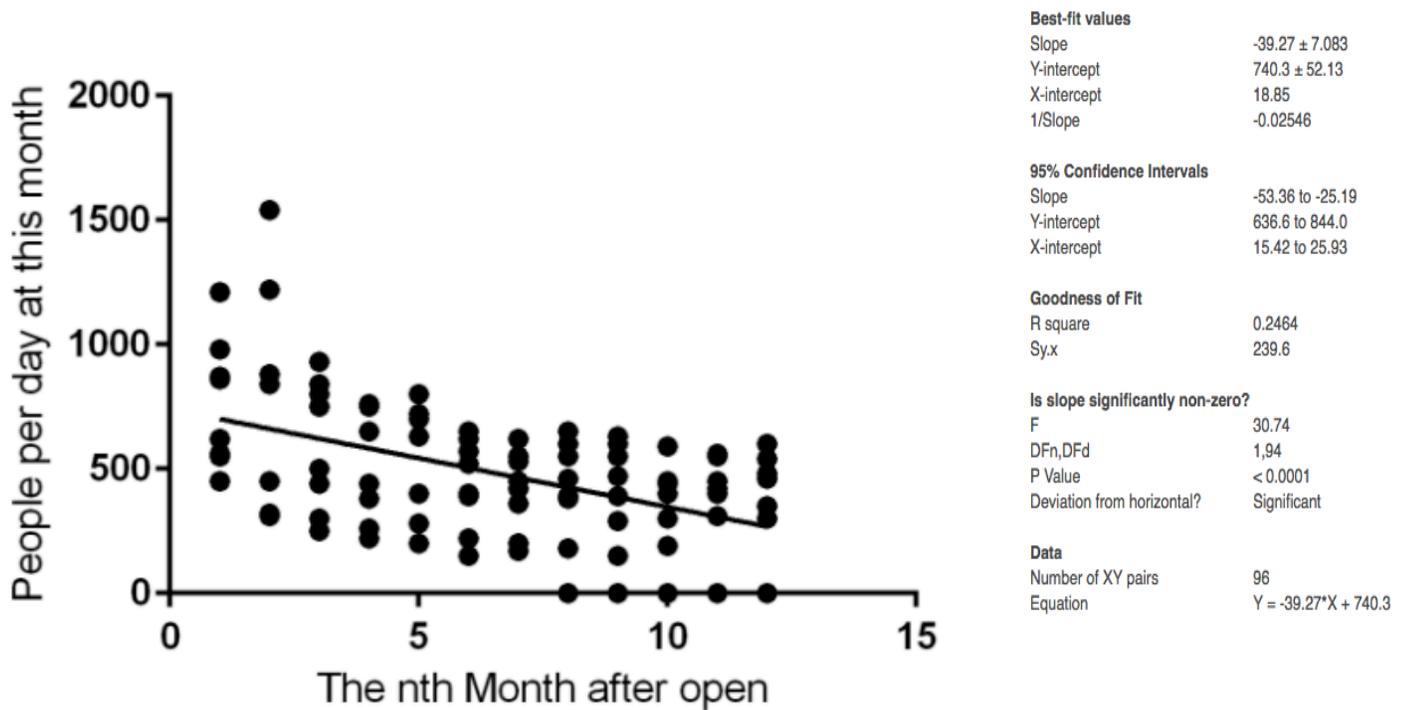
Type	Celebrity	1 st (month)	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	Status
Hotpot	Xue Zhiqian	1210	1540	1030	760	700	650	620	650	550	750	720	840	Popular
Noodle	Meng Fei	980	840	1240	750	800	620	530	550	600	590	560	580	Popular
Coffee	Wu Qilong	870	950	850	650	630	520	450	460	470	400	620	580	Popular

S&F	Wu zongxian	960	970	730	850	720	570	550	600	630	500	650	660	Averag
S&F	Yue YunPeng	560	450	440	380	400	390	420	380	390	440	400	350	Averag
S&F	Jay Zhou	620	450	500	440	400	400	360	390	290	300	310	300	Danger
Others	Han Han	450	320	250	260	240	270	120	80	50	90	0	0	Bankru
Hotpot	Angelababy	550	310	300	320	300	150	100	0	0	0	0	0	Bankru

People Flow Change



Result of running linear regression for relatively failed celebrity restaurants:

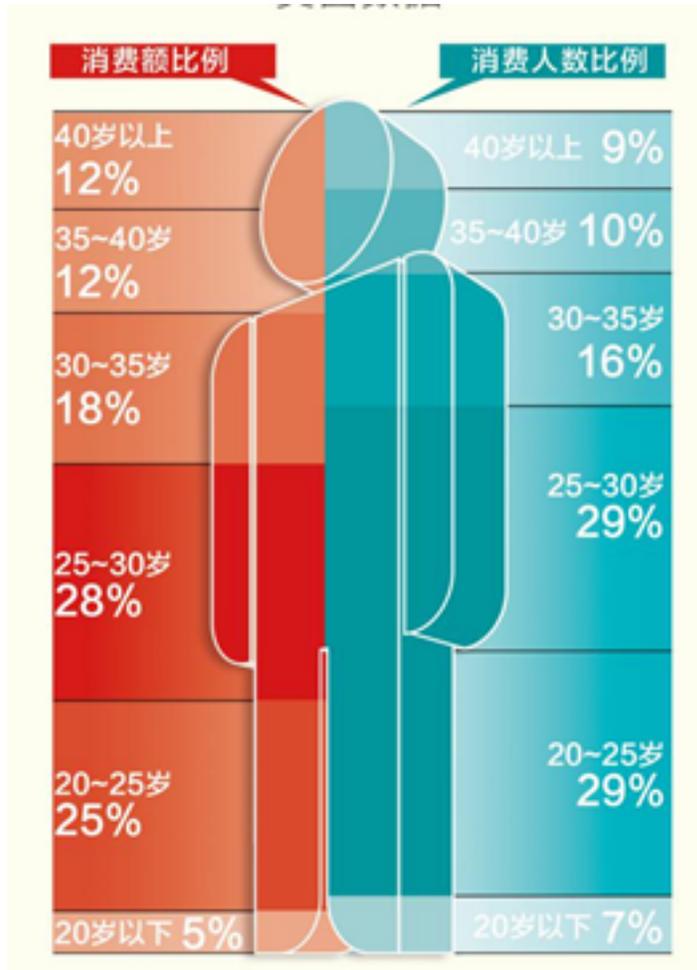


We could clearly perceive the change of population for the celebrity restaurants, as in the first two months, people especially fans tend to trust the restaurants and are willing to have food there, then the flow changes drastically in the following months depending on the feedback of previous customer and the general evaluation on the society to such restaurant. We separate the restaurants into two parts where one of which is relatively good ones, and the other is the failure ones. Comparing the data from good-status restaurants, we could see that the 6th to 10th is the “Death Period” by observing the drastic up and down of extremely unstable people’s flow. Then, we run the linear regression for those restaurants which are facing problems. The result of T-test shows that when the variable “nth month after open” is over 5.7 it becomes an influencing variable to the line representing the people’s flow. That suggest the drastic change of people actually take place since around sixth month and those restaurants who fail to

stabilize the people's flow and conquer the problem will lose their customers very soon, causing the failure quickly. During these months, restaurants will need to confront many risks and tasks in order to move forwards, and if they succeed, they will survive. Therefore, the celebrities should actually take advantage of the first two month's "hotness" but do not raise the limit of importing raw material too easily, instead paying attention to the potential loss of customers and increasing their restaurants' publicity after the sixth month to make the flow of people sustained afterward.

B. Location

Using the table2 as cases, we compare the city where those restaurants are in, and they are mostly Beijing, Shanghai and Guangzhou where the most three modern cities in China [3]. However, the huge population and high-standard of people's taste there does not always yield the best environment for a new restaurant, especially for the celebrity restaurant where flaws are more easily exposed and magnified. According to the "2017Report" By Meituan App, the national consumer structure is shown as [2]:



where the left shows different ages of people's contribution to consumption in percentage; the right is the different ages of people's population percentage. As we can see that the most influencing group of people are those in ages 20-45.

Therefore, analyzing the city's population structure and location as (simulated by Capital Asset Pricing Model):

CC stands for City Capacity (for another celebrity restaurant);

PR stands for Possible Population Ratio for the restaurant

$$\frac{\text{population}(\text{age}20 - \text{age}45)}{\text{wholepopulation}} \times 0.8$$

CAE stands for consumer's relative average capacity to eat

And FS stands for the people's food average standard in that city, depending on the number of stars people in that city give to Starbucks Coffee over 4 stars (out of 5).

Therefore, $cc = 75\% \times CAE \times PR + 25\%FS$

The ratio of CAE*PR and FS is 3:1 because of the results of general social phenomenon and the sensitivity test we run on this sample, as also for that CAE*PR and FS share the same fundamental units. By fulfilling the questionnaires asking them if the price of the restaurants or the quality of the food is more important, 78.4 percent of thousands of people in 57 cities researched indicate that they care more about the price because they actually have the psychological preparation to not eat for satisfaction for every meal, but to eat for the experience. For accuracy, the sensitivity test is run for the sample collected and calculated, indicating the result of CC is rather not sensitive to the change of the ratio between two variables. Therefore, the weight is designed as 75 percent versus 25 percent in order to calculate the CC representing each city's ability to thrive the new celebrity restaurants.

The Table 3 below shows and calculates the different city's index and yield the result that actually Nanjing, Hangzhou and Shanghai are the top three "most suitable city for celebrity to open a restaurant":

Table 3 the Result of City Comparison

City/index	CAE	PR	FS	CC(calculated)
Shanghai	0.399	0.5979	3.6/4	1.078921575
Guangzhou	0.444	0.7273	3.5/4	1.1171909

Beijing	0.442	0.6671	3.7/4	1.14614365
Nanjing	0.484	0.8333	3.7/4	1.2274879
Hangzhou	0.468	0.6914	3.7/4	1.1676814
Wuhan	0.471	0.7026	3.6/4	1.14819345
Chongqing	0.414	0.6991	3.9/4	1.19207055

City/competition	Hotpot	Snack&Fastfood	Noodle	Others
Shanghai	1874	2640	1546	1489
Guangzhou	1756	2975	1644	1468
Beijing	2209	2657	2247	1354
Nanjing	1264	2547	1647	2364
Hangzhou	985	2561	1886	1648
Wuhan	1504	1985	2015	2644
Chongqing	2102	1985	1500	1647

[8]

As you can see from the result, the actual most celebrity-restaurant friendly cities are Nanjing, Hangzhou and Chongqing. The main character of those cities are they are in their own stages of highly developing and demonstrate their high percentage of young-people population, high ability to consume and relatively flexible food standard. Comparatively, Shanghai as an international city, though with large market, actually lack of those important points for a restaurant to survive and thrive, along with extraordinary high restaurant competitiveness.

C. Price and publicity

What price level the celebrity restaurant should be in will also influence the success, which could be simulated in model of Game Theory. There are two level of analysis and game parts for celebrity restaurants. The first is that they need to face today’s tendency as more and more restaurants promote cheap food to attract people, so every day-low price strategy (ELPS) will become a dominant strategy, rather than High-Low price strategy (HLPS). Which side should celebrity restaurant stand for? Since the costs, tags and decorations of the celebrity restaurants make them impossible to have a low-price food, are celebrity restaurants not competitive at all at this point? Based on the paper published “Supermarket Pricing and Game Theory: The Presence of Wal-Mart” by Eugene Jones in The Ohio State University [9], we could draw the model from wal-market pricing and depict the restaurants payoff situation same with markets as Table 4

Table 4 the payoff matric of celebrity restaurant(i) to another other restaurant(j) in market

		Player j		
		Price Reduction (α_j)	In-Store Advertising/ Merchandising (δ_j)	Media Advertising -- FSI, R, T.V. & NP* (γ_j)
Player i	Price Reduction (α_i)	(α_i, α_j) $(\alpha_i \geq \alpha_j) \text{ or } (\alpha_i < \alpha_j)$	(α_i, δ_j) $(\alpha_i \geq \delta_j) \text{ or } (\alpha_i < \delta_j)$	(α_i, γ_j) $(\alpha_i \geq \gamma_j) \text{ or } (\alpha_i < \gamma_j)$
	In-Store Advertising/ Merchandising (δ_i)	(δ_i, α_j) $(\delta_i \geq \alpha_j) \text{ or } (\delta_i < \alpha_j)$	(δ_i, δ_j) $(\delta_i \geq \delta_j) \text{ or } (\delta_i < \delta_j)$	(δ_i, γ_j) $(\delta_i \geq \gamma_j) \text{ or } (\delta_i < \gamma_j)$
	Media Advertising -- FSI, R, T.V. & NP* (γ_i)	(γ_i, α_j) $(\gamma_i \geq \alpha_j) \text{ or } (\gamma_i < \alpha_j)$	(γ_i, δ_j) $(\gamma_i \geq \delta_j) \text{ or } (\gamma_i < \delta_j)$	(γ_i, γ_j) $(\gamma_i \geq \gamma_j) \text{ or } (\gamma_i < \gamma_j)$

* FSI is Free-Standing Inserts; R is radio; T.V. is television; and NP is newspaper.

Clearly that actually both sides of restaurants with proper promotion on sell attract different groups of people. The restaurant with ELPS is liked by person who wants quick food as “Merry

Picker” and HLPS will attract time-consumer which pays attention to the quality of the food and enjoys the process along with other special interest rather than finishing a task. As demonstrated in the paper that the comparison of long run and short run payoff [index][9] of both strategies in one market shows the necessity of existence of both strategies which yields the optimal Nash Equilibrium where no one actually wants to deviate from what they propose right now. Therefore, as a celebrity restaurants which already affords certain pressure and costs, it could just be pricy or relatively expensive to actually achieve the NE here, with weekly or monthly promotion. But which NE is better for the restaurants, the pure strategy or mixed ones? That connects to the second level of game theory as the game between customers and celebrity restaurants; Since when a celebrity involves into food industry, both the restaurants’ publicities and the celebrities’ are connected. The high price may cause the public accusation to the celebrity for “stealing” fans’ money and a fast food shop may jeopardize celebrities’ elegant images. How to balance and find the equilibrium? Game Theory Model is used here as a mean to discuss the possible strategy space. For celebrities, since they expand their business to food service, their possible payoff can be calculated by two parts, M (which stands for the profit) and R (which stands for the reputation). A reasonable price with expected good flavor will earn the celebrity both prime and money, however, unreasonable price or bad taste will easily influence the celebrities’ reputation and positive publicity, which may even cause more damage to celebrities. For consumers, we assume that their payoff depends purely on their evaluation according to the price and goodness of the restaurant. The payoff matrix of such general-sum game is demonstrated as, where the number used are showing the significance of influence to consumers and celebrities within each situation. They are not exact but showing the direction:

Table 5: General-Sum game theory payoff matrix for Consumers and celebrities

		Celebrities		
		High (p)	Medium (q)	Low (1-p-q)
Consumers	Goodness/Price			
	High	(2, 5M+2R)	(3, 4M+4R)	(3, -3M+7R)
	Medium	(1, 6M-R)	(4, 2M+3R)	(4, -2M+4R)
	Low	(-2, 8M-6R)	(2, 1M-2R)	(1, M+0R)

For the approximate result of representation, it can be calculated that in order to keep the payoff of choosing strategy goodness High, Medium and low yield same for consumers, equation

could be solved that the space strategy for celebrities are $\{\frac{2}{5}, \frac{1}{5}, \frac{2}{5}\}$, which is a pretty interesting result. When we think about a restaurant, presumably that a medium price will seem more acceptable for people to eat and enjoy the food since it does not cost that much. However, the mixed Nash Equilibrium space strategy for this matrix shows different. It actually suggests that a mixed of high and low price with little medium price will achieve Nash Equilibrium.

More interestingly, when we define the space strategy for celebrities as $\{0, 0, 0; \frac{1}{2}, 0, \frac{1}{2}; 0, 0, 0\}$, the outcome of celebrities' payoff is permanently over the payoff of original space strategy as for p, q and 1-p-q are between (1,0), meaning that the space strategy above is a correlated equilibrium for the celebrities to make price for their food in restaurant. Drastically different from what is perceived in the reality, a combination of high-price and low-price with relatively

medium good food will actually help the restaurants and celebrities to maximum their comprehensive payoff.

V. Fitting the Model: Case study of Meng fei's Chongqing Noodle Restaurant

In order to test the truthfulness and usefulness of our model, several cases will be analyzed and compared to see whether the development and the result of the celebrity restaurants fit our modelling. Due to the reasons explained before, lots of celebrity restaurants died and disappeared very quickly, while the most of rest of which refused to share their restaurant's information, limited data and cases here could be offered in recent years. But such status at least confirms the misperceptions either the public or the celebrity side has in opening a celebrity restaurant. As indicated in the subtitle, Meng fei's Chongqing Noodle is a very famous noodle restaurant opened in Chongqing, an emerging city in China[10]. Meng fei, the owner of the restaurants is a famous Talk Show MC in China who has lots of fans especially among young people. We contact the restaurants for providing data, but the new named manager does not have the data before, so we communicate about the people's flow during the first year of the noodle restaurant. And he depicted that in general, the people drop very quickly after the May.4th which is the end of Chinese Labor Day. And the situation is only appeased after Mengfei himself promotes the restaurant in TV show. The situation went to normal and became stabilized 3 months after. Afterwards, the noodle restaurants began expanding to all place in and out Chongqing, which thrived since then. In the perspective of the society, it's a success celebrity restaurant[11]. Compared to our model, the restaurant also fits our three conditions. The restaurant begins to increase promotion around 6th month after opening; the

place is Chongqing. The price of the noodle, according to the multi-news reported by different newspapers[11][10][12][13], could be cheap but could be expensive depending on what dishes you want to add in the noodle. That's the exact mixed strategy of combining expensive and cheap prices with HLPS[9]. There is no particular weekly promotion. Therefore, as illustrated above, the Mengfei's Chongqing Noodle Restaurants fits our model very well to become a success.

VI. Fitting the Model: Case study of Han Han's Nice Meeting You Restaurant

Another case study here is about the celebrity restaurant opened by the famous writer, F1 Racing Driver and film director Han Han in China. He is famous out of his vanguard novel and innovative ideas about the society. Therefore, he opened a traditional Chinese restaurant "Nice Meeting You" in Hangzhou[14]. Attracted by the name and the celebrity, the first two, even three months' people's flow are booming. However, the restaurant did not do anything for promotion afterwards and even kept his style of management after six months, when the people's population per day decreased 45 percent from last month same time. However, according to the news [15], the restaurant actually became better after one year and even started expansion. The price is exceptionally high and the place is around West Lake with very high rent. The restaurant uses Ever day High pricing strategy without promotion, which caused it to lost the most powerful consuming group analyzed before, even in the city Hangzhou. Despite the fact that this restaurant is in Hangzhou with good opening, the lack of mixed strategies and accurate promotions make it finally went down very quickly. The restaurant disappeared from the public vision after two years[16]. Another important factor causing such failure is the

scandal of the restaurant, as the kitchen is reported for hygiene problems: Mice [16] and the restaurant is fined and forced to close to solve the problem.

VII. Limitations and further development

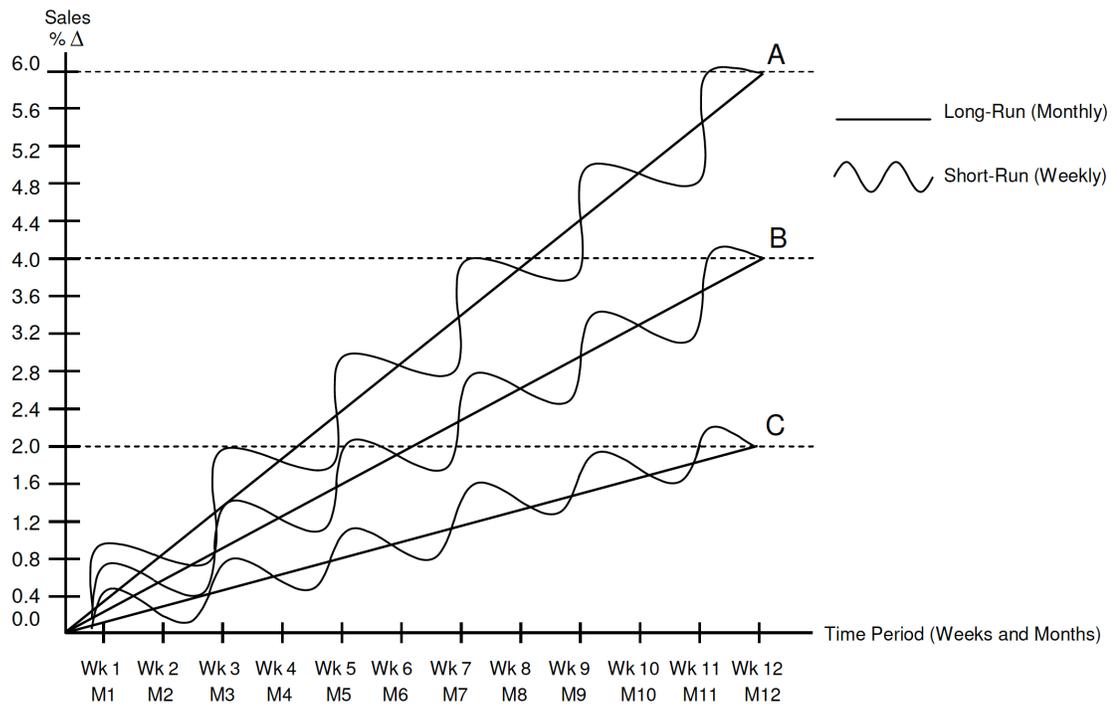
There are certain areas that this paper does not take into consideration. One of the most important factor is that more and more young people today choose to eat the delivered-food in China. Accompanied by the more and more perfect logistic system and people's increasing laziness, a restaurant just for deliver and its capacity of delivering food will also seriously affect its future. There are also other risks ∂ that this paper fails to perceive which is also one of most important factor. Such risk includes the scandal of celebrity itself and the scandal of the celebrity restaurant. As discussed in Case 2 Han Han's Nice Meeting You Restaurant, its restaurant has a very good start and development filling the model, but drastically went down because 7 branches or its restaurants were fined by multiple city government for the unsanitary kitchen and violation of regulations. Such exposure of scandals cause lethal damage both to Han Han himself and the restaurants, which finally bankrupted 3 years later [16].

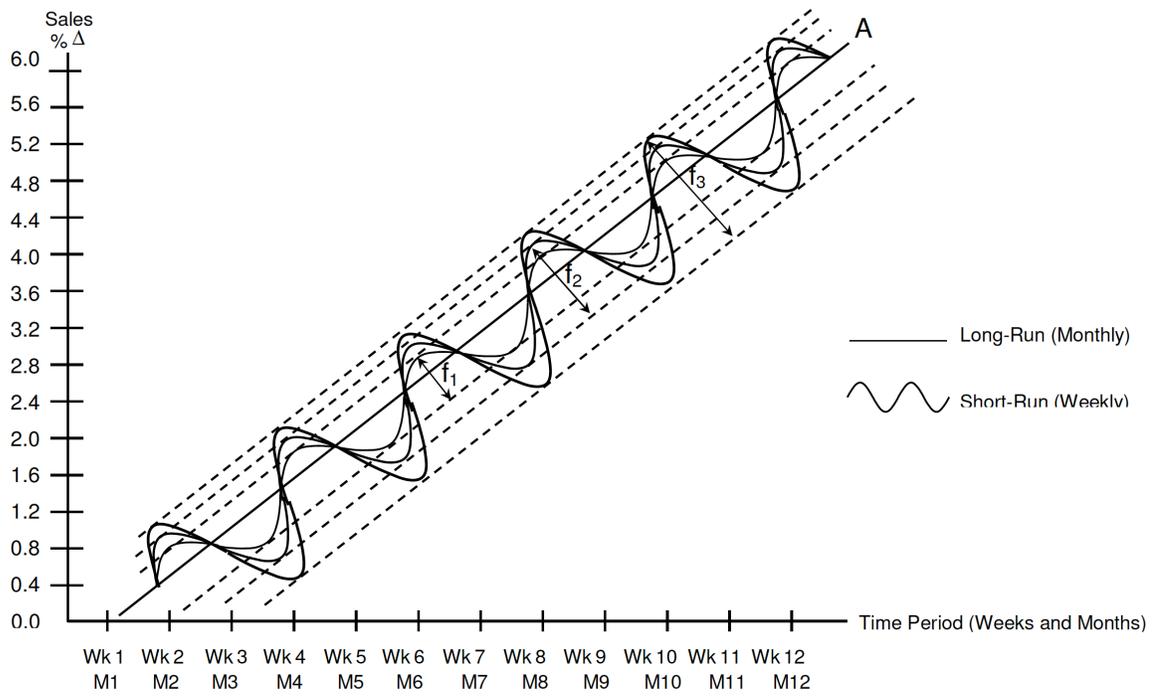
VIII. Conclusion

Taking all the factors and positions discussed in this paper into consideration, I could draw the conclusion in different aspects. First of all, the paper discussed the future market situation and competitiveness of the celebrity-restaurants market: "easy to open, quick to close" and the bankruptcy rate is fairly high. Therefore, the decision-making of whether to expand this

business needs to take certain amount of time. Secondly, there are actually lots of misunderstandings and misperceptions from the factors that will influence the possible outcome and success of the food business. One is that the most difficult part to keep the target consumers are not first two months, but the 6th to 10th months where the population flow goes down drastically and need serious publication and promotion to attract people. For the place to open a new restaurant, not the busiest city the best. In the opposite, the not internationally-recognized cities with serious localized flavor like in Nanjing, Hangzhou and Chongqing yields much greater successful rate. Finally, the pricing strategy is paramount for the celebrities in order to comprehensively gain from this expansion, both in money and in reputation, by combing the high-price food and low-price food with little intermedium ones. Such combination with fair food goodness will maximum the payoff of the Celebrities, rather than simply pricing the food in a “middle” way.

IX. Index





References

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