

# DATA MINING AND TACTICS FOR SUSTAINING BUSINESS DEVELOPMENT

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## ABSTRACT

Technology has offered various approaches to facilitate analysis of statistical data, such as visual statistical analysis system and data mining. The underlying philosophy of the data analysis empowers data analysts to concentrate on statistical thinking and leave the computational burden to computers. The former offers interactive graphical interface and the latter provides various tools to disclose patterns of big data so as to build models for credit scoring, customer relationship management, consumer behaviour and so on. However, both are sometimes over-emphasized in the development of the models without justifying statistical results in line with the content, context and historical background of business data. For example, Traditional Chinese Medicine companies and Hong Kong-style Café have long history and culture in Hong Kong linking with stakeholders in their business. So, the models which have been developed merely by data mining tools may not be reliable or practical to address non-statistical questions inherent in business problems. As such, the author attempts to develop tactics for sustaining business development of Hong Kong-style Café beyond using data mining but incorporating marketing strategies.

**Key Words:** SWOT analysis, object value system, Hong Kong-style café, statistical methodology

## INTRODUCTION

Hong Kong was under great influence of Western culture; Hong Kong-style Café is an example. The cafés offer western food packaged in Hong Kong style, such as egg custard tarts, pineapple buns, pantyhose tea (brewed in pantyhose instead of traditional tea sock), yin-yang (a mix of coffee and tea) at affordable prices; therefore, working class go there for meals. In addition, the cafés are located in busy areas, which is again good for people to have chitchat with their friends. Hong Kong-style Cafés have long history and culture in Hong Kong. Some of the cafés could not sustain their business and closed down eventually but some are constantly expanding their business. To understand these two extreme business situations, it is quite common to adopt data mining approach. But, data mining may not provide practical and exhaustive solution to non-statistical questions that are inherent in business problems, especially without taking into account of the history of café and culture in Hong Kong linking with stakeholders in the café business. As such, this paper attempts to develop tactics for sustaining business development of Hong Kong-style Café beyond using data mining.

## STATISTICAL METHODOLOGY

### Data Collection and Data Validation

A questionnaire-based survey on public perceptions of Hong Kong-style Café was reported by Ching and Chung (2011). The survey was conducted by interviewing people on the streets near bus stops or train stations in Hong Kong. Through a personal interview approach, it was feasible to elaborate difficult and in-depth questions, to achieve a higher response rate and to

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facilitate communication between an interviewer and interviewees in order to gather more accurate and genuine responses given by interviewees.

The survey data was inputted into computers and was checked to ensure the data was properly and correctly inputted. The data was finally validated and no missing data, meaningless data range, data inconsistency or undefined data codes were found.

### **Exploratory Data Analysis**

According to the research report (Ching and Chung, 2011), out of 333 survey respondents, 56% were males and 34% were females, respectively. Most of the respondents were from working class. More than 70% of the respondents were below the age of 40. About 16%, 18%, 22%, 24%, 12%, 3%, and 5% dined at Hong Kong-style cafés for 0, 1, 2-3, 4-5, 6-7, 8-9, and 10 times or more each week. About one-third of the respondents dined at the café for once per week or less because they mostly found cafés dirty and inconvenient relating to service hours and café's location, poor services, expensive and disgusting food and/or limited choices of food. Apart from these reasons, they preferred dining at Chinese, Western, Japanese, Vietnamese or Thai restaurants because they found the food hygienic and of good taste there as well as better restaurant services and good environment.

On the other hand, 219 (66%) of the respondents dined at the cafés more frequently, i.e., twice or more per week because the cafés were at convenient location, and provided long service hours, speedy services, inexpensive and delicious food, and/or a variety of food. In addition, they were under peer pressure and were attracted by café advertisement. Evidently, there was a great contrast in the reasons for not or seldom dining at Hong Kong-style Café. Among the 219 frequent café diners, about 22%, 48%, 24%, 14%, and 9% had breakfast, lunch, afternoon tea, dinner and midnight snack, respectively. About 17%, 63%, and 20% spent \$25 or below, \$26-\$35, and \$36-\$45 respectively. Their most favorite drinks are lemon drinks (i.e., lemon was added to tea, water, Ribena or Coke), pantyhose tea, coffee, Ovaltine, yin-yang, soft drinks, chocolate, red bean ice, Horlicks, watercress honey drink, with 23.3%, 22.8%, 10.5%, 8.7%, 8.2%, 6.9%, 5.9%, 5.5%, 5.0%, and 3.2%, respectively. Their most favorite dishes are rice (fried rice, baked rice or steamed rice); noodle (fried noodle, baked noodle, instant noodle or noodle with soup); pasta (spaghetti and macaroni), and others (i.e., bread, congee and snacks) with 42%, 32.4%, 14.6%, and 11%, respectively. When they were asked to give satisfaction ratings: from 1 to 5 (1 for very dissatisfied, 2 for dissatisfied, 3 for neutral, 4 for satisfied and 5 for very satisfied) to items relating to food and café, they gave 3.8, 3.7, 3.7, 3.5, 3.3, 3.4, and 3.4 to the efficiency of processing food order, the food quality, the food taste, the food hygiene, the food price, the café hygiene, and the café services respectively.

The frequent café diners were also asked to choose the most favorite eatery for dining, assuming that the food prices were more or less the same. About 24%, 21%, 14%, 13%, 11%, 10%, 5%, and 2% of them chose Western fast food chain, Hong Kong-style café, Eastern and Western restaurant, Western restaurant, Japanese restaurant, Eastern restaurant, Eastern fast food shop, Chinese restaurant, and Thai/Vietnamese restaurant respectively. They preferred other eateries to Hong Kong-style café because of personal preference (39%), better food taste (31%), better environmental hygiene (15%), better food hygiene (8%), better environment and interior design of eatery (6%), and others (1%). They were asked to express which factors relating to food and café were important to a good eatery using scores: 1 to 5 (1 for least important, ... , and 5 for most important), they gave 4.17, 4.12, 4.04, 4.03, 3.97, 3.88, 3.81, 3.6, 3.41, and 3.02 to the food quality, the food taste, the food variety, the food hygiene, the food price, hygiene of and services provided by the eatery, the food quantity, the efficiency of processing food order, and eatery decoration respectively. Apparently, the first five items were important factors for a good eatery.

To sum up, people who seldom dined at Hong Kong-style café preferred Chinese, Western, Japanese, Vietnamese or Thai restaurants because of food hygiene, good food taste,

good services, and good restaurant environment. On the other hand, the frequent café diners were generally satisfied with Hong Kong-style café but they would rather choose eateries other than Hong Kong-style café if no difference in food prices, mainly because of personal preference, better food taste, better environmental hygiene, better food hygiene, better shop environment and design. The keen competitor of the café is Western fast food chain. The quality, taste, variety, hygiene, and price of food are important factors for a good eatery, whereas the hygiene, services, food quantity, and decoration of an eatery as well as the efficiency of processing food order were relatively less important.

### Statistical Tests

This research investigated the factors that might be related to the frequency of dining at the Hong Kong-style café by conducting Chi-square tests (Ching and Chung, 2011). The test ( $\chi^2(6, n = 333) = 14.510, p = 0.024$ ) shows statistical evidence to support the relationship between the frequency of dining at the café and genders of café diners, indicating that male respondents dined at the café more frequently than female did. Similarly, statistical evidence ( $\chi^2(6, n = 333) = 26.282, p < 0.0001$ ) substantiates the relationship between the frequency of dining at the Hong Kong-style café and the ages of café diners, revealing that the respondents aged 18-40 dined at the café more frequently than any age groups.

The paper further studied the factors that might be related to the quality, quantity, and hygiene of food provided by Hong Kong-style café by conducting Chi-square tests (Ching and Chung, 2011). The test ( $\chi^2(3, n = 333) = 26.282, p < 0.0001$ ) shows statistical evidence to support the relationship between the quality of café food and genders of café diners, indicating that female respondents appreciated the food quality more than male did. Another statistical test reveals statistical evidence ( $\chi^2(4, n = 333) = 42.926, p < 0.0001$ ) to support the relationship between the quantity of café food and genders of café diners would also exist, revealing that female respondents appreciated the food quantity more than male did. Similarly, statistical evidence ( $\chi^2(3, n = 333) = 30.231, p < 0.0001$ ) substantiates the relationship between the hygiene of café food and genders of café diners, revealing that female respondents appreciated the hygiene of café food more than male did.

### Data Mining

To gain insights into the survey data, the research adopted data mining approach by using the Enterprise Miner of Statistical Analysis System ((Ching and Chung, 2011). The research built a logistic regression model,  $p_i = \frac{1}{1 + e^{-z_i}}$  where  $z_i = \beta_1 + \beta_2 x_2 + \dots + \beta_i x_i$ . By using the regression estimates:  $\beta_1, \beta_2, \dots, \beta_{20}$ , scenario analysis could then be performed to yield the probability ( $p_i$ ) of dining at Hong Kong-style café under given age group, gender, and occupation of the survey respondent by substituting different values of  $x_i$ .

$x_2 = 1$  if the respondent aged 26-35, and 0 otherwise;

⋮

$x_5 = 1$  if the respondent aged 56 or above, and 0 otherwise;

$x_6 = 1$  if the respondent was female, and 0 otherwise;

$x_7 = 1$  if the respondent was a clerk, and 0 otherwise;

$x_8 = 1$  if the respondent's occupation was construction-related, and 0 otherwise;

$x_9 = 1$  if the respondent's occupation was education-related, and 0 otherwise;

$x_{10} = 1$  if the respondent's occupation was finance-related, and 0 otherwise;

$x_{11} = 1$  if the respondent's occupation was housewife, and 0 otherwise;

$x_{12} = 1$  if the respondent's occupation was IT-related, and 0 otherwise;

⋮

$x_{20} = 1$ , if the respondent's occupation was trade-related, and 0 otherwise.

Tables 1, 2 and 3 summarize the probability of male and female survey respondents dining at Hong Kong-style cafés at least twice a week by age groups and three geographic regions of Hong Kong, i.e., Hong Kong Island, Kowloon and New Territories. The probability of respondent aged 56 or older dining at the cafés in Hong Kong Island for at least twice per week is the highest, attaining 99.7%–100% irrespective of their gender or occupation. This finding is unconvincing as almost all males or all females aged 56 or older are frequent café diners, if adopting highest probability as criterion for illustrating who are frequent café diners as plausible. Furthermore, this implies that neither the occupation nor gender of a survey respondent could predict the probability of dining at the cafés. Nevertheless, if not adopting this criterion, more persuasive results could be found; the probability of male respondent aged 26–35 dining at the cafés in Hong Kong Island for at least twice per week is the highest, attaining 72%–100% irrespective of their occupation. 100% probability refers to the respondents working in the industry of construction or education. Interestingly, the probability of young male professionals aged 26–35 dining at the cafés is much higher than their older counterparts aged 46–55 (i.e., 80% vs 12.7%). Similarly, the probability of female respondent aged 26–35 dining at the cafés in Hong Kong Island for at least twice per week is the highest, attaining 23.6%–100% irrespective of their occupation. 100% probability refers to the respondents working in the industry of construction and education. Surprisingly, these male or female frequent café diners aged 56+ were students achieving 100% probability; this sounds odd. The female survey respondents show more probability variations than their male counterparts.

**Table 1: The probability of dining at Hong Kong-style café in Hong Kong Island at least twice a week<sup>2</sup>**

| Occupation       | Male respondents |     |       | Female respondents |     |       |
|------------------|------------------|-----|-------|--------------------|-----|-------|
|                  | 26-35            | ... | 56+   | 26-35              | ... | 56+   |
| Clerk            | 72.0%            |     | 99.9% | 23.6%              |     | 99.7% |
| Real estate      | 76.1%            |     | 99.9% | 27.8%              |     | 99.8% |
| Service industry | 87.3%            |     | 99.9% | 45.4%              |     | 99.9% |
| Transportation   | 89.1%            |     | 99.9% | 49.6%              |     | 99.9% |
| Professional*    | 95.5%            |     | 100%  | 71.8%              |     | 99.9% |
| IT               | 99.3%            |     | 100%  | 94.4%              |     | 100%  |
| ⋮                | ⋮                |     | ⋮     | ⋮                  |     | ⋮     |
| Construction     | 100%             |     | 100%  | 100%               |     | 100%  |

Final Report of Higher Diploma in Business Analysis Project, Hong Kong Institute of Vocational Education, p.81 and p.83.

\*Professional occupation: doctors, lawyers, accountants, engineers, etc.

<sup>2</sup> Notes: The table is summarized from Ching, H.L. and Chung, W.M. (2011) *The model for sustaining the business growth of eastern and western restaurants*.

The probability of male respondent aged 56 or older dining at the cafés in Kowloon for at least twice per week is the highest, attaining 85.5%–100% irrespective of occupation (see Table 2). The probability of female respondent aged 56 or older dining at the cafés in Kowloon for at least twice per week is the highest, attaining 89.1%–100% irrespective of occupation. These findings are implausible as most males or females aged 56 or older are frequent café diners, if adopting the same criterion. But, if ignoring this criterion, the probability of male respondent aged 26–35 dining at the cafés in Kowloon for at least twice per week is the highest, attaining 62%–100% irrespective of their occupation; this sounds meaningful. Similarly, the probability of female respondent aged 26–35 dining at the cafés in Kowloon for at least twice per week is the highest, attaining 69.2%–100% irrespective of their occupation. 100% probability refers to male or female respondents working in the industry of IT. Interestingly, the probability of young male or female professionals aged 26–35 dining at the cafés is much higher than their older counterparts aged 46–55. Surprisingly, these male or female frequent café diners aged 20–29 were retirees achieving 89.5%–92.10% probability. This scenario sounds odd as assuming very young retirement.

**Table 2: The probability of dining at Hong Kong-style café in Kowloon at least twice a week<sup>3</sup>**

| Occupation       | Male respondents |     |       | Female respondents |     |       |
|------------------|------------------|-----|-------|--------------------|-----|-------|
|                  | 26-35            | ... | 56+   | 26-35              | ... | 56+   |
| Real estate      | 62.0%            |     | 85.5% | 69.2%              |     | 89.1% |
| Professional*    | 78.8%            |     | 93.1% | 83.7%              |     | 94.9% |
| Clerk            | 87.0%            |     | 96.0% | 90.2%              |     | 97.1% |
| Transportation   | 92.9%            |     | 97.9% | 94.7%              |     | 98.5% |
| Service industry | 93.9%            |     | 98.2% | 95.5%              |     | 98.7% |
| Construction     | 97.6%            |     | 99.3% | 98.2%              |     | 99.5% |
| ⋮                | ⋮                |     | ⋮     | ⋮                  |     | ⋮     |
| IT               | 100%             |     | 100%  | 100%               |     | 100%  |

The probability of male and female respondent aged 26–35 dining at the cafés in New Territories for at least twice per week is the highest, attaining 19.7%–100%, and 13.1%–100% respectively, irrespective of their occupation (see Table 3). This finding is informative as being indicative of café dining varies greatly among occupations. Simply saying, male or female professionals aged 26–35 were less likely to dine at Hong Kong-style café in New Territories as compared to other occupations. 100% probability refers to the respondents working in service industry, irrespective of their genders.

<sup>3</sup>The table is summarized from Ching and Chung (2011). *The model for sustaining the business growth of eastern and western restaurants*. Final Report of Higher Diploma in Business Analysis Project, Hong Kong Institute of Vocational Education, p.86 and p.88.

\*Professional occupation: doctors, lawyers, accountants, engineers, etc.

**Table 3: The probability of dining at Hong Kong-style café in New Territories at least twice a week<sup>4</sup>**

| Occupation       | Male respondents |     |       | Female respondents |     |       |
|------------------|------------------|-----|-------|--------------------|-----|-------|
|                  | 26-35            | ... | 56+   | 26-35              | ... | 56+   |
| Professional*    | 19.7%            |     | 0.6%  | 13.1%              |     | 0.3%  |
| Real estate      | 55.5%            |     | 2.7%  | 43.5%              |     | 1.7%  |
| Clerk            | 81.7%            |     | 9.1%  | 73.3%              |     | 5.8%  |
| IT               | 84.5%            |     | 10.9% | 77.0%              |     | 7.0%  |
| Transportation   | 98.1%            |     | 53.5% | 96.9%              |     | 41.5% |
| ⋮                | ⋮                |     | ⋮     | ⋮                  |     | ⋮     |
| Service industry | 100%             |     | 100%  | 100%               |     | 100%  |
| Construction     | 100%             |     | 99.9% | 100%               |     | 100%  |

Among the three geographic regions, more interesting results arise in survey respondents dining at the cafés in New Territories, the probability of café dining varies greatly among occupations, especially in older age group, 56+ (i.e., 0.3% or 0.6%). The probability of male or female respondents who are professionals dining at the cafés in New Territories for at least twice per week is lower than those dining in Hong Kong Island or Kowloon. Moreover, the industries diners work, and diners' age could be used as two meaningful indicators for classification.

As can be seen, there are risks in using data mining tools. It might mislead those business analysts who are without extensive knowledge of data handling and interpretation but strictly adopting pre-specified rules or criteria. Interpretation here means to interpret data as evidence (Royall, 2000), where the evidence is of statistical nature (Kolsgen, 1996). In addition, the surveyed data is not exhaustive as not having perceptions of people who seldom take bus or train rides, for instance, car drivers. Hence, business analysts must understand how the results are derived and what they are representing; and must also be aware of the capability and incapability or limitations of data mining tools.

Furthermore, data mining cannot provide exhaustive analysis and does not address non-statistical questions. For example, why did the survey respondents seldom or frequently dine at Hong Kong-style café? Why did they prefer restaurant to the café? What are the factors related to the quality, quantity, taste, and hygiene of food provided by the café? Apparently, data mining cannot fulfill as being “usefulness”, “novelty” “simplicity” and “generality” in Kolsgen (1996). To attempt questions like these, business analysts should incorporate exploratory data analysis and conduct statistical tests. The analysts must look more closely at the hidden relation of data and possess an understanding of business context from which the problem arises so as to make recommendations or devise business tactics.

## BUSINESS MODEL

The study adopted stratified sampling (Ching and Chung, 2011). One sample of Hong Kong-style café was drawn from each of these three stratas: Hong Kong Island, Kowloon and New

<sup>4</sup> The table is summarized from Ching and Chung (2011) *The model for sustaining the business growth of eastern and western restaurants*. Final Report of Higher Diploma in Business Analysis Project, Hong Kong Institute of Vocational Education, p.91 and p.93.

\*Professional occupation: doctors, lawyers, accountants, engineers, etc.

Territories. Out of 42 sampled Hong Kong-style cafés, 64%, 31%, and 5% occupied floor area less than 500 ft<sup>2</sup>, 501-1000 ft<sup>2</sup>, and 1001-1500 ft<sup>2</sup> respectively. About 35%, 17%, 30%, 6%, and 12% of the cafés provided 11-20, 21-30, 31-40, 41-50, and more than 50 seats respectively. Approximately 9%, 36%, 24%, 19%, 10%, and 2% of the cafés employed 3, 4, 5, 6, 7, and 8 waiters/waitresses. About 12%, 50%, 26%, 7%, and 5% of the cafés employed 1, 2, 3, 4 and 5 cooks. Most of the cafés were small. About 74% of the cafés provided food delivery services, whereas 26% did not. Interestingly, Ching and Chung (2011) built two linear regression models; one showed that the café should employ 0.004 waiters/waitresses for each additional square-foot floor area of the café with an intercept, 2.88; and another model revealed that the café should hire 0.002 cooks for each additional square-foot floor area of the café with an intercept, 0.88. These two models could be adopted for reference if businessmen make plans to open a new Hong Kong-style café or expand existing café business because the sampled cafés have run their business for a number of years.

Some Hong Kong-style cafés have expanded their business rapidly and built up their café chain. They are adopting modern management to improve café environment, food quality and hygiene as well as the services towards customer oriented. They utilize resources and have better quality control by setting up a food factory to do all food preparation and subsequently deliver the food to their café chain and cook. This can reduce cost as getting a better deal from bulk purchase of food and paying less shop rental for taking up smaller floor area. They mainly promote their food and services by advertisement (Lau and Chan, 2005).

### **BUSINESS TACTICS**

Although some Hong Kong-style cafés have business expansion, some do close down. This alerts us to the importance of tactics for sustaining business development, so it is necessary for performing SWOT analysis to identify the strengths, weaknesses, threats, and opportunities with the aid of exploratory data analysis. The strengths of Hong Kong-style cafés which are convenient café location, long service hours, speedy services, inexpensive and delicious food, and/or a variety of food, are quantifiable terms appreciated by their diners. As such, the diners purchase café services on the basis of rational decision in terms of their utility (Consoli, 2010; McCormick, 1997), thereby the strengths could be more easily enhanced. The cafés can take the opportunities of expanding their service channels, such as food courts in shopping centers, cafeterias in cinemas or sports stadiums or food booths in train stations. In addition, another opportunity is to offer café food in different food packaging, for instance, meal boxes.

The weaknesses are poor food hygiene and café environment that annoyed the survey respondents. The diners made their choices on the purchase of café services for affordable food prices. So if no price differentials, the treats refer to café diners may switch to other eateries, such as Chinese, Western, Japanese, Vietnamese or Thai restaurants for more superior qualities in terms of better food taste, services and environmental hygiene.

In addition, a relatively higher percentage of survey respondents chose Western fast food chain as compared to Hong Kong-style café. The food chain run by large companies provides superior food quality, services, food consistency and interior decoration as compared to the café (Lau and Chan, 2005). Hence, the food chain is a keen competitor which poses a threat to the café.

To address the issue of weaknesses and threats, food hygiene and café environment could be easily improved but consumers' bad perception of Hong Kong-style cafés is not easily altered to make purchase decision. However, it would be viable to develop a theoretical basis in accordance with the synthesis of design and marketing perspectives by taking a look at what values Hong Kong-style café food offers. It is therefore favourable for defining the functional value, symbolic value, sign value as well as exchange value of Hong Kong-style café food on the basis of Jean Baudrillard's Object Value System (1996).

The functional value of the food which refers to filling up our stomach is consistent with the strengths of Hong Kong-style cafés identified by the exploratory data analysis. Frequent diners (the survey respondents) are working class in Hong Kong (Ching and Chung, 2011). They are busy and industrious for earning money to buy food and build their shelters. They are anxious about fatness and constipation, and are also concerned about having little fiber in their intake of food (Chung and Hau, 2005). So, if Hong Kong-style café food could have plentiful dietary fiber so as to stimulate bowel movement for removing waste material and toxic substances from human bodies. People are more health conscious of excessive intake of salt, oil and sugar for several reasons. Excessive intake of salt is highly associated with cardiovascular disease. High consumption of sugar or oil can lead to obesity (Healthy Diet, 2015; Hong Kong action's on salt, oil and sugar intake, 2015; Campbell, Johnson and Campbell, 2012). High salt and sugar content in café food were commonly found and the food is greasy. As such, less amount of salt, oil and sugar should be put in café food while maintaining its taste and price. The exchange value is so characterized by nutrition of the café food that other food does not normally address their health concern.

The symbolic value of Hong Kong-style cafés should be appreciated by café diners as “sociable”, closely linking with venues for social and business occasions or networking in addition to eatery. That is probably why the survey respondents expressed the concern of environment of Hong Kong-style cafés. Unfortunately, poor environment is the weakness of the café that should be averted so as to implement regular clean-up schedule and to monitor the environment. The aromas of pantyhose tea, Yin-yang, egg custard tarts and pineapple buns are unique and conspicuous that should be maintained and spread; the aromas can give stimulus and a memory recall of one's experience (Consoli, 2010), for example, linking with the episode of having meals with parents in cafés in one's childhood.

Lifestyle and consumption is a part of culture because the ways people spend their money is an indication of constructing and preserving their identity (Mathews, 2001). For example, people seldom visited Lai Chi Kok Amusement Park but they were shocked when the park was to be pulled down. It is simply because the park is a part of Hong Kong culture they want to preserve. The café market could be sustained because of its uniqueness, i.e., Hong Kong culture – a blend of Western and Chinese cultures that other food cannot offer. To promote café business it would be better to arouse the sign value of the café to fulfill their desires (Consoli, 2010). However, customers would not buy products with outdated packaging design as not suiting their contemporary lifestyle and taste (Chong, Lam and Yu, 2006; Mathews, 2001). So a design should offer beyond aesthetically pleasing packaging but creating value (Heskett, 2002) which here refers to the sign value. The design as a cultural artifact is tied together with contemporary lifestyle and taste and a set of meanings they define beyond meeting their needs and expectations while preserving Hong Kong culture – the privilege of dining at the cafés. As such, the treats of Hong Kong-style cafés could be overcome.

The perceptions which influence consumer purchase decision are linked to the emotions and feelings of the diners (Consoli, 2010). It would be better to change the perceptions of Hong Kong-style café diners as striving to improve café design in terms of its logo and environment so as to offer a joyful dining experience in the cafés. A café logo should be designed to establish successful link to Hong Kong culture. In addition, the design of café environment including services should provide a direct link of café food from which diners derive its superficial meaning. If diners can appreciate functional value, exchange value, symbolic value as well as sign value, they would find the café highly different from the traditional ones.

## CONCLUSION

Ideally, the aim of using data mining tool is to empower business analysts to concentrate on statistical thinking and leaving the computational burden to the computers, but some business

analysts may have lax criteria for accepting a solution as plausible. Exploratory data analysis, statistical tests, statistical models and SWOT analysis can supplement data mining to give a fuller picture of the café business so as to devise practical business tactics. To enhance the competitiveness of café business development, the first tactic aims at expanding their service channels and offering café food in different food packaging. The second tactic focuses on fulfilling the nutritious needs of café diners by providing dietary fiber in the food; and retaining the quality, quantity, taste and prices of food as well as the efficiency of processing food order. The third tactic is to draw diners' attention to preserving Hong Kong culture. The last tactic is to arouse positive emotions in diners in the ways that wanting to fulfill their desires. All these tactics are devised within the context of design in the way that creating value; anticipating changes; and contributing innovative ideas (Heskett, 2009).

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