

# **The Choice Behavior in Fresh Food Retail Market: A Case Study of Consumers in China**

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*The supermarket and the wet market are two major fresh food retail models in China. While the supermarket is competitive in food safety and quality, a wet market has the advantage of providing fresher food in a cheaper and more convenient way. There are already some studies on the factors which influence Chinese consumers' decisions between supermarkets and wet markets. Further efforts are needed to make so that we may know more about the relationship between frequency arrangements by the consumers and the way they make their shopping choices. Based on the utility theory, this paper probes into the utility differences between the services provided by the supermarket and the wet market. Then it discusses the essential condition of consumers' utility maximization and explains the frequency difference by comparing their different prices offered by the supermarket and the wet market prices.*

## **INTRODUCTION**

Fresh food is generally defined as the primary agricultural products which have not been deeply processed. It includes vegetables, fruits, meat, aquatic products, etc. Chinese consumers used to purchase fresh foods and cook them at home, and the traditional place where they purchase fresh foods is from the wet market. Since the reforming and opening-up policy, more and more new business models from west countries have been introduced into China. Supermarket, as a new fresh food retail model, was introduced into China in the middle of 1990's. From then on, both wet market and supermarket have been coexisting in the market.

Nowadays, people are beginning to have a higher demand for the quality of life, which gradually reveals the drawbacks of wet markets such as lack of sound management mechanism, insecure quality of fresh food and unprotected consumer rights. Meanwhile, both the operating and sanitary conditions of the wet market are far from consumers' satisfaction. By contrast, the supermarket makes up for the shortcomings of the wet market. That is why the number of people purchasing fresh food in supermarkets is proportionately increasing year by year. Under the promotion of the government, there arises a nationwide upsurge of "transforming wet markets to supermarkets." However, it should be noted that, in reality, not all consumers purchase fresh food in supermarkets, and the wet market has not been completely replaced by the supermarket, which adequately justifies the rationality of the existence of the wet market. Therefore, we need

to analyze the reason for the coexistence of both the two retail formats from the perspective of their own characteristics and the consumers' demand.

Both the supermarket and the wet market have their own characteristics. Chinese consumers often have their own frequency arrangement at going to one place more often and the other less. Empirical researches have revealed that lots of factors such as income, the quality of fresh food, education, age of consumers, and shopping time, influence Chinese consumers' choice between the supermarket and wet market (Hu & Yu, 2003; He, 2005; Chen, 2006). Specifically, food safety, quality assurance, freshness of fresh food, brand reputation, packing, saving shopping time, and the distance of the consumer's residence from the supermarket are the main factors that attract Chinese consumers to purchase fresh food from the supermarket (Zhou, Lu & Gen, 2003). The degree of shopping convenience and the price of fresh food are the key factors influencing a consumer's decision making (Huang, 2004).

All these empirical researches have disclosed the existence of frequency difference, but they lack explanations on why and how each consumer makes their decision and what the frequency difference means to the consumers. According to existing researches, market demand is the process through which individuals choose their preferred goods and services composition (Samuelson and Nordhaus, 1999). The frequency arrangement of Chinese consumers choosing different fresh food retailing business models is also a process of choosing preferred services composition.

The purpose of this paper is to explain the reasons why Chinese consumers make different frequency arrangement based on the utility theory and existing empirical researches, which may contribute to the consumer behavior analyzing. The research results would likely provide some useful suggestions to the government and the marketers in terms of the realization of the Chinese consumer's welfare maximization.

## **THE UTILITY DIFFERENCE BETWEEN SUPERMARKET AND WET MARKET**

Utility is the subjective enjoyment or usefulness, which people get from consuming goods or services (Samuelson and Nordhaus, 1999). The utility satisfaction, which the fresh food retailing business models bring to the consumer, includes two aspects. On the one hand, the fresh food, which are sold in the supermarket and Wet market, could bring to the consumers the satisfaction of maintaining life and obtaining nutrient substances; on the other hand, the service of the retailing formats will bring to the consumers different utility satisfaction too, which includes the fresh degree, quality safety, variety, packaging, brand reputation, shopping environment, saving shopping time, etc. This paper emphasizes the utility satisfaction of service.

The service of supermarkets and wet markets bring different utility satisfaction to the consumer. The business scale of a supermarket is bigger than the stallholders in the wet market, and its prophase investment (sunk cost) is much more, and its opportunity cost of selling poor-quality fresh food is much higher, so the supermarket is the ideal distribution channel for selling the organic agricultural products, the green agricultural products and the harmless agricultural products. Compared with the wet market, the supermarket has the brand competition advantage. However, the scale of each stallholder in the wet market is relatively smaller, so they have more time to "care" about their goods; meanwhile, the price of fresh food in wet markets is lower, and the velocity of turnover is faster, therefore, the fresh food in the wet market looks fresher. Some empirical researches have proved that the supermarket has the advantages of quality safety,

brand credit, shopping environment, and the wet market has the advantages of higher fresh degree and variety (Zhou, 2003; He, 2005; Feng, 2008).

Therefore, from what has been discussed above, it is obvious that that the supermarket could meet the consumer utility of quality safety (this sense of security derives from brand credit) and shopping environment, whereas the wet market could meet the consumer utility of freshness and variety.

## THE ESSENTIAL CONDITION OF CONSUMER UTILITY MAXIMIZATION

According to the analysis above, the economic framework used to derive the empirical model assumes that the consumer choice in fresh food reflects the utility function as follows:

$$U(x) = \alpha_0 + \alpha_1 * Price + \alpha_2 * Freshness + \alpha_3 * Variety + \alpha_4 * Safety + \alpha_5 * Convenience + \alpha_6 * Environment \quad (1)$$

It is also assumed that the budget for fresh food in every family (Y) remains unchanged in a certain period, the price of fresh food in the supermarket is  $P_s$ , and the price of fresh food in wet market is  $P_w$ ; moreover,  $P_s > P_w$ . Meanwhile, every consumer couldn't affect the price alone. Under this condition, the rational consumer will make their total utility ( $u(x)$ ) maximize.

$$\begin{aligned} \max u(x) &= u(f_s, f_w) \\ s.t. P \cdot X &\leq Y \end{aligned} \quad (2)$$

$f_s$  means the frequency of consumer purchasing fresh food in the supermarket during a certain period;  $f_w$  means the frequency of consumer purchasing fresh food in the wet market during a certain period;  $P$  means the price of fresh food;  $X$  means the quantity of fresh food that consumers demand.

Generally, each consumer just chooses one place (the supermarket or the wet market) to purchase the fresh food every time, the marginal utility of the consumer choosing the supermarket is  $\frac{\partial u}{\partial s}$ , the marginal utility of the consumer choosing the wet market is  $\frac{\partial u}{\partial w}$ , therefore:

$$\frac{\frac{\partial u}{\partial s}}{\frac{\partial u}{\partial w}} = \frac{P_s}{P_w} \quad (3)$$

This means that the essential condition of consumer utility maximization is the ratio of marginal utility of supermarkets to wet markets equaling the ratio of fresh food price in supermarkets to the price in wet markets.

## THE UTILITY EXPLANATION OF CONSUMER'S CHOICE DIFFERENCE

During a certain period, the total quantity of each family's demand for fresh food is  $X$ , the budget is  $Y$ . So  $X \cdot P \leq Y$  or  $P \leq Y/X$ .  $P$  means the highest price acceptable to a consumer. It can be seen from this formula that the highest price that a consumer can accept is proportional to the consumer's budget, when the consumer's total demand for fresh food is unchanged. Therefore, the frequency difference could be explained by the comparison of different price.

### The Acceptable Price is Less Than or Equals to $P_w$

Consumers have no choice but to purchase fresh food in the wet market or plant or breed some by themselves when his /her acceptable price is less than or equal to the price in the supermarket. Due to the restriction of budget, this kind of consumers has to abandon the utility of quality safety and shopping environment which the supermarket could bring them, and turn to pursue the utility maximization of quantity. According to the empirical researches done by Hu & Yu (2003) in Peking, when the consumer's average monthly income is less than RMB ¥1000, they just care about the price and they have no way but to choose the lower price site.

### The Acceptable Price is Less Than or Equals to $P_s$ and More Than $P_w$

With consumers' income increasing, the budget that they use to purchase fresh food will be enhanced. At this time, consumers can take an overall consideration of such factors as the utility of quality safety, shopping environment, freshness and variety. They will make a decision between the supermarket and the wet market. Under this circumstance, their frequency arrangement will follow the principle that the ratio of marginal utility of the supermarket to the wet market equals the ratio of fresh food price in the supermarket to the price in the wet market. In other words, the marginal utility which the consumer spends every one dollar in the

supermarket or in the wet market is equality, according to  $\frac{\partial u / \partial c}{P_c} = \frac{\partial u / \partial n}{P_n}$  equation. At

this time, the consumer's utility maximization is able to realize.

In fact, the frequency arrangement of every consumer purchasing in the supermarket or in the wet market is different. Here, this difference could be illustrated by the consumer preference difference and the consumption characteristics of fresh food.

Firstly, when the consumer's preference is freshness, or among all the utility satisfaction, the

utility of freshness ranks first. According to  $\frac{\partial u / \partial c}{P_c} = \frac{\partial u / \partial n}{P_n}$  equation, the marginal utility

of freshness that the consumer spends every one dollar to obtain in the wet market equals the marginal utility of quality safety and shopping environment which consumer spends the same money to obtain from the supermarket. To this kind of consumers, more time to purchase fresh food in the wet market and less to the supermarket will make their utility maximized.

Secondly, since the quality safety of fresh food has both the attributes of search goods and experience goods (Nelson, 1970). Namely, after long-term and repeated consumption, consumers could distinguish the partial quality difference according to their experience, such as the correlation degree between quality with the appearance, the color, the odor and the hardness-

softness, as well as the fresh degree, the content of juice, the taste etc. After the long-term experience accumulation, if the consumers hold more knowledge about the quality safety of fresh food than ordinary consumers do, they prefer to choose the wet market to meet their partial utility of quality safety depending on their stronger resolution ability. According to the principle of the marginal utility equality, experienced consumers (older consumers) could satisfy their utility of the freshness, utility of the variety and utility of the partial quality safety by choosing the wet market more. This kind of consumers makes their utility maximal by means of this arrangement. The empirical researches show that age is negatively correlated with “the degree of purchasing in supermarkets” (the regression coefficient is -0.259,  $P < 0.05$ ), the older people prefer to purchase fresh food in Wet market (He, 2005).

Thirdly, with the enhancement of consumers’ education level, consumers would pay more attention to the quality safety and the shopping environment. For this kind of consumers, the utility of quality safety and the shopping environment rank first. According to the principle of the marginal utility equality, consumers, with higher education level, prefer to choose the supermarket to make their utility maximization. The empirical researches show that the consumer’s education level has positive correlation with “the degree of purchasing in the supermarket” (the regression coefficient is 0.360,  $P < 0.01$ ) (He, 2005). With other variables being equal, the rise of every grade of the consumer education, may raise the probability of his/her choosing the supermarket by 74% (Hu, 2003).

Fourthly, when the consumer pays more attention to the shopping convenience, he /she prefers to choose the nearest retail form (site). Therefore, the distribution of different retail forms in a certain region will influence the consumer’s decision-making. According to the empirical researches, the distance of the consumer’s residence from the supermarket has a great impact on the sales of fresh food in the supermarket (Zhou, Lu & Gen, 2003). When the distance of the habitation to the supermarket reduces one meter, the probability of the consumer purchasing fresh food in the supermarket will raise 0.3 % (Hu, 2003).

### **The Acceptable Price is More Than $P_s$**

When the consumers’ income gets to a certain extent, namely, their budget for fresh food is more than ordinary consumers, their utility rank is different. With their income increasing, consumers will pay more attention to the quality safety of fresh food and the shopping environment and this kind of utility maximization could be well satisfied from going to the supermarket. Empirical research shows that the average monthly income is more than YMB ¥8000, consumers pay almost no attention to the price, they pursue the high quality of fresh food and the convenience and comfort of shopping (Hu & Yu, 2003).

The quality safety of fresh food Means more attributes of credence goods, such as no antibiotic, no hormone, no residual pesticide and no genetically modified component. The cost of the consumer judging these attributes is much higher too. So, in most cases, it is impossible for costumers to judge these attributes of the fresh food. To the high-income consumers, it is a rational choice for them to repose their food safety guarantee on the brand and credit of supermarket.

## **THE IMPLICATION AND MANAGERIAL SUGGESTIONS**

At present, whatever frequency arrangement consumers choose in going to the supermarket or going to the wet market, they have to abandon some utility satisfaction. For example, while consumers get the utility of fresh degree in the wet market, they will have to lose the utility of quality safety and shopping environment at the same time, and vice versa.

With the steady increase of the living standard, consumers in Mainland China are focusing more attention on their life quality and life value, so their demand for the quality safety, fresh degree, variety and shopping environment is becoming higher. In order to upgrade Mainland Chinese consumers' total utility satisfaction level, some methods should be taken.

### **Supermarket Should Be Encouraged to Connect with Production Base of Fresh Food Directly**

The empirical researches show that the proportion of consumers who choose the supermarket is just 62 %, although 76% people believe the fresh food in the supermarket is safer, the proportion of consumers who choose the supermarket is just 62 % ( Feng, 2008). It reveals that lots of people's quality safety utility hasn't been satisfied from the supermarket.

The main reason for lots of consumers to choose the wet market to buy fresh food is the higher price of fresh food in the supermarket, which is caused by the intermediate links in circulation. In fact, many supermarkets do not have their own production base; have not built their own supply chain system, and have been purchasing from wholesale market like the stallholders in the wet market. Thus, the supermarket loses its price advantage because of their higher operating cost. In order to make more low-income consumers to satisfy their utility of the quality safety and shopping environment, the supermarket should be encouraged to reduce their intermediate links in circulation, and build their own production bases and supply bases, to reduce the price of fresh food. Meanwhile, the lower price is beneficial to the increased velocity of turnover of fresh food, and finally to the achieved goal of improving the fresh degree.

### **Strengthen the Fresh Food Quality Monitoring of Supermarket**

As is mentioned above, utility is the subjective enjoyment or usefulness. The supermarket possesses the advantages of brand and credit. If the quality problem exists in the supermarket, not only the brand and credit of the supermarket will be affected, but also lots of consumers who pay more attention to the quality safety will have no place to go. So the government should strengthen the quality monitoring of the supermarket, and establish the market competition mechanism of fresh food retail terminal, moreover, the supermarket should concentrate their efforts on their supply chain monitoring and internal quality management.

The consumers in Mainland China have low awareness of quality safety (Feng, 2008). Therefore, in order to enhance the utility satisfaction degree of Chinese consumers in quality safety, the authenticity of quality certification information should be guaranteed, and the propaganda work of food safety knowledge should be strengthened.

### **Promoting the Retail Formats Reform Reasonably**

If the quality safety and shopping environment of the wet market are improved, consumers who choose the wet market would get a total utility upgrade too. This is the original intention that the government promotes the "transformation of the wet market to the supermarket". But the process of "transforming the wet market to the supermarket" should be determined by the



market; meanwhile, some measures should be taken to enhance the quality safety level of the wet market.

## CONCLUSIONS

There are different utility satisfactions when consumers purchase fresh food. Only if all utility could be met, the consumers' utility maximization will be realized. The supermarket and the wet market have their own advantages, and therefore bring different utility satisfactions to consumers. Consumers have to make their utility maximization by the different frequency arrangement under the condition of budget constraint.

Enhancing the customer utility is very significant to both the supermarket and the wet market, because it is not only a determinant of their benefit maximization, but also a determinant of their competitiveness.

The fresh food retail formats reform is continuing in China. Local governments impel this process. The investments in "transforming the wet market to the supermarket" are mainly used in infrastructure improvement. The enhanced operating cost of the stallholders in the new wet market will finally result in the higher price of fresh food. However, the slower income growth rate will bring about more low-income groups and their utility satisfaction content will decrease gradually. As a result, finding more ways to raise the income of Chinese consumers is the other way to enhance the utility satisfaction of consumers.

This paper explains the consumer's frequency arrangement according to the service utility of the supermarket and the wet market provided to the consumer. As we know from the empirical researches, the service of the supermarket and the wet market provides lots of utility satisfaction, this paper just analyzes parts of them, the others such as the packing, saving shopping time, and varieties are not included. A comprehensive analysis that includes all the factors is the next aim of continuing study. On the other hand, because the consumer behavior is a psychological process, more psychological analytical approaches should be used in future research. At first, a psychometric measuring scale should be designed to measure the consumer's will in choosing fresh food retail format, and the principal component analysis should be used to analyze the factors influencing consumers' selection of the fresh food retail format. Moreover, the structural equation modeling could also be used to validate the utility equation in this study.

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