

The factors of food additives exceed bid affect customer's attitudes

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Abstract

Purpose – The aims of paper is analysis customer's attitudes when they found the food additives exceed bid in the food after the Sanlu milk power scandal.

Design/methodology/approach–This study is based on Sanlu milk power scandal, and the questionnaire survey asking customers attention food safety. A total of 420 questionnaires were distributed in Nanning City, China. But only 400 qualified questionnaires could be analyzed, and used T-test, One – Way ANOVA, Correlation and Multiple Regression.

Findings - Results that there are a common concern among consumers about the food safety when they found food additives exceed bid after bought the food. According with the research, customer requirement quality of food is increasingly in market and customer has cognitive ability about risk perception when they bought food. Moreover, social factors, internal factors and food risk have affect to customer's attitudes when they bought the food in the future.

Recommendations – According to the objective of this study which the social factors, internal factors and food risk affect customer's attitudes. This gives recommendations for company and government to improve their action and attitude to affect the customer buying daily food attitudes.

Keywords: Food safety, Food additives, Food risk, Customer's attitudes

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Introduction

In China, exceeding food additives in food products has become a major public concern for food safety. In September 2008, China was shocked by the tainted milk scandal. Since then, the confidence level of consumers regarding food quality and safety has steadily dropped, and food safety has become a great significant issue in China. Such as, the scandal of Sanlu milk powder has more melamine-tainted and melamine is a kind of material of chemistry, which can cause urinary system to generate stones. Quickly, the melamine incident spread from Sanlu Company to all other domestic dairy companies, which negatively impacted the Chinese dairy market for a long time. The tainted milk scandal has increased consumer perceptions of food safety risk and concerns for food safety.

All the people know food is vital to human survival and development of the basic and important one of the material, food quality related to people's health and even life safety. With Chinese economic conditions has improved, and with the level of people's living standards have also risen, more people have higher request in food quality and safety. After Sanlu milk powder scandal, food safety problems became a greater concern. Food safety is a common issue worldwide, it does not only exist in China, each country have this problem and it does not matter whether it is in developed countries or developing countries and along with the progress of the society and the development of long-term and human coexistence (Chen, 2011). Nevertheless, China is prone to tainted milk scandal because this country has her own characteristics to add, with which they worsen the issues of exceeded food additives.

In conclusion, food additive beyond, excessive used by producers, the food quality caused by now doesn't pass, so that consumers of food safety problems have all kinds of misunderstanding. According this research can investigate

undergraduates' purchase perceived and family purchasing behavior. In addition, if the company, producers and government has knowledge, morals and a good policy management of food safety, it will affect satisfaction and confidence of customers. The important is can affect social stability.

Literature review

Literature in this study includes demographic, social factors, internal factors, food risk and customer's attitudes.

Demographic

Zhou and Wang (2011) points to consumers' personal characteristics refers to their age, gender, education level, family income and family structure and the consumer has higher education degree and high income will require higher food safety standards. Their finding the traditional socio-economic factors such as income, prices of products and lifestyle influence consumers' behavior (Caswell, 1998; Henson & Northen, 1998). Proper age is critical for many customers buying behavior. Age carries with it culturally defined behavioral and attitudinal norms (Henry, 2000). Education influences what one can purchase by partially determining one's income and occupation. It can affect a person's idea, or other people buying decision (Zhang, 2006). Income is a major factor in people's ability to buy product or use a service (Capon & Hulbert , 2001).

Social factors

Shao (2012) pointed out that the factors influence customer's attitude toward food safety not only culture factor, social values, but also include political factor and social information environment.

Fujitake (1968) think the information environment is distinguished from the natural environment of the social environment directly or indirectly control the members of a society behavior of symbols, and it mainly through the interpersonal

relationship to social hint of environment. Shao (2012) also pointed out that make the standard information environment not only transfer positive government information, and at the same time transfer other industry information, such as, food safety, health and education. Information environment can affect authenticity and objectivity of information, customer's obtain different levels of information will affect customers attitudes and purchase behavior after food safety incident (Zhou & Wang, 2011)

The government action is a kind of administrative behavior, and is regarding the enterprise, individual, behavior and with mandatory. On behalf of the government of the state administrative department behavior is the managers (Zhang, Kong, Yang & Luo, 2004). The government's action has influence consumer's purchase attitude. Because confidence of consumer to government from the after food safety incident, the attitude and ability of government' action to strike illegal food. If consumers have higher confidence to the government, food quality and safety concerns will not last long (Zhou & Wang, 2011).

Internal factor

Internal factors is the thing itself inherent elements, and also play the decisive role of things more causes and conditions, caused the main reason for the things to mobilize all positive factors (Web & Max, 1970). Food quality can be defending in a number ways. Different role will making the distinguishing definition. Typical actors participating in the valuation of food quality are food producers, government, marketing people and consumers (Lien, 1989). Satisfaction is consumer's true response. It is a judgment that a product or service feature or the product or service itself, providing a pleasurable level of consumption-related true, including levels of under or over-fulfillment (Oliver, 1997). Knowledge is an individual in specific environment, to solve concrete problems to use when using

information, the strategy, action way, or even the deal with the problem of feelings and tendencies, the faith in many aspects such as comprehensive performance (Truck, 2003). Production specifications is common international of silkworm food production advanced management method, it is in the food production process in ensuring food with high completeness of good production management system (Yang et.al, 1998). Producers have different levels of attitude will produce a different production action. Each producer realizes enterprise profit, increase accumulation; expand production, in order to meet the needs of the consumers (An & Ren, 2009).

Food risk

Extensive studies have been explained the source of food risk from communication for information and risk perception (Yeung & Morris, 2001). The analysis of the factors that influence customer's attitudes when food safety event was been exposures, they found different reactions of media to the food scandal (Zhou & Wang, 2011). Verbeke and Ward (2001) analyzed level of consumption meat in Belgium in 1995 to 1998. The analysis report was reflected that on TV imposed a negative influence customer consumption of beef but promoted the consumption of pork. The latest shows that risk perception and customer's attitude have relationship. Because risk perception and purchase behavior are causally linked: the former is an important explain variable of the latter (Yeung & Morris, 2001). The research pointed out customer refrained from food perceived to contain more food additives in order to reduce health risks. This study highlights the importance of risk perceptions in customer's attitudes and purchase behavior (Eom, 1994).

Customer's attitudes

Allport (1935) thinks that attitude is one kind of psychological and neural readiness, it through the experience to organize, to influence personal response to the situation. The customer's attitudes include believe, feeling and behavior.

Conceptual framework

This framework is a reflection the impact of consumer behavior factors, through the analysis of the unfavorable factors. Is created to propose to food additives exceed bid of food in order to explore demographic characteristic, social and internal factors, food risk affect to customer's attitude in customer buying daily food.

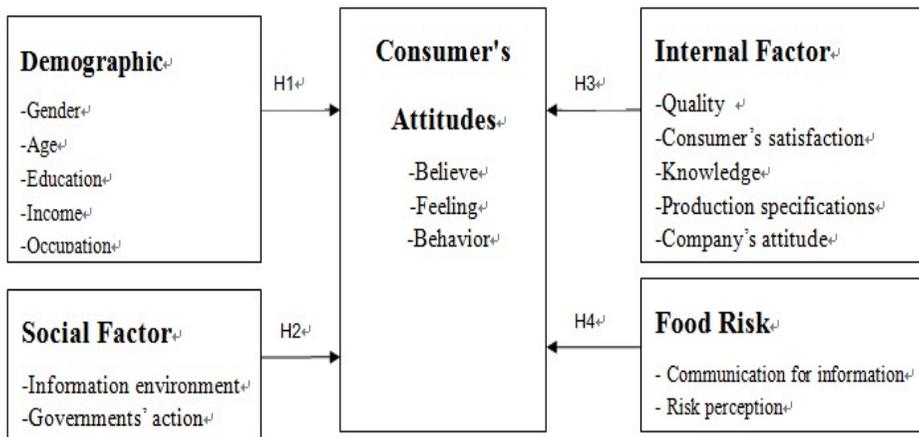


Figure 1: Conceptual framework of the research

Methodology

Population and sample

The population was distributed by the researchers personally to 420 customers in Nanning City, China. But only 400 qualified questionnaires could be analyzed, the error is about 4.6%

Research Instrument

In this study, the questionnaire is designed in English and Chinese as the research instrument to accomplish the research's objective combine from conceptual framework is demographic, social factors, internal factors, food risk, and customer's attitude. All the questionnaires were measured used five point Likert scale, T-test, ANOVA and multiple regression analysis and hypothesis testing. By using ANOVA analysis, the customer demographic has influence to customer's attitude and regression analysis; relationship with independent and dependent can be analyzed.

In addition, the other important measure is reliability analysis from use Cronbach's alpha model for this study. The ideal reliability value general requirements of new measuring tool reliability value in the 0.7 above; many science researchers have use the comparative mature tools in more than 0.8 (Ebel, 1951).

Data analysis

Analysis the collection data by used the statistic analysis to explain the frequency and percentage of the demographic factors of the respondent. The second used T-test, ANOVA (One-way Analysis of Variance). The ANOVA is a used to test hypotheses about differences between two or more means. The last, used Multiple Regression to explain relationship between the social factors, internal factors, food risk and customer's attitudes.

Result

The result of study showed that gender was including male and female. There are total 186 respondents (46.5%) are male and 214 respondents (53.5%) were female, the proportion of each group is almost balance; the majority of age respondents are between 20-29 years old (57%); the most of educations respondents are bachelor degree has 288 respondents (72%); most occupation of respondents is private officer 43%; respondent majority in the group of respondent is between

2001-6000RMB (66%) and the large group is respondent's family are 3-4 persons 64.5%.

Table 1: Analyses of gender have significant affect on customer's attitudes by using T-test.

	Gender	N	Std. Deviation	Std. Error Mean
Customer's attitudes	Male	186	.43455	.03186
	Female	214	.42778	.02924

Table 1 showed the Std. Deviation of male is 0.43455 was more than female with Std. Deviation is 0.42778.

Table 1.2: Independent Samples T-test in gender and customer's attitudes

	Levene's Test for Equality of Variances		t-test for Equality of Mean	
	F	Sig.	T-test	Sig. (2-tailed)
Customer's attitude	.669	.414	.690	.491
Equal variances assumed				

Significant level = 0.05

From the table 1.2 showed the t value is 0.690, and the Sig. (2-tailed) value is 0.491 which is more than the level of significant or the alpha level ($\alpha=0.05$) for the hypothesis test.

Table 2: Analysis of demographic characteristic has significant affect on customer's attitudes by ANOVA.

Variable	Customer's attitudes	
	statistic	Sig.
Age	1.250	0.291
Education	2.085	0.102
Occupation	1.892	0.095
Income	0.169	0.917

Significant level = 0.05

From the table 1 showed, the demographic characteristic used the ANOVA test. However, all the significant value of demographic is more than 0.05; it means the factors of demographic have not influence customers attitudes.

Table 3: Result of hypothesis between social factors and customer's attitude from respondents by regression analysis.

Dependent Variables ^๑	Believe ^๑				Feeling ^๑				Behavior ^๑						
	Model ^๑	Unstandardized ^๑ Coefficients ^๑		t ^๑	Sig ^๑	Unstandardized ^๑ Coefficients ^๑		t ^๑	Sig ^๑	Unstandardized ^๑ Coefficients ^๑		t ^๑	Sig ^๑		
		B ^๑	Std. Error ^๑			Beta ^๑	B ^๑			Std. Error ^๑	Beta ^๑			B ^๑	Std. Error ^๑
(Constant) ^๑	2.346 ^๑	.240 ^๑	.๑	9.771 ^๑	.000 ^๑	3.078 ^๑	.207 ^๑	.๑	14.854 ^๑	.000 ^๑	3.142 ^๑	.209 ^๑	.๑	15.007 ^๑	.000 ^๑
IE ^๑	.173 ^๑	.040 ^๑	.215 ^๑	4.391 ^๑	.000 ^๑	.041 ^๑	.034 ^๑	.061 ^๑	1.216 ^๑	.225 ^๑	.020 ^๑	.034 ^๑	.029 ^๑	.584 ^๑	.560 ^๑
GA ^๑	-.020 ^๑	.052 ^๑	.019 ^๑	-.383 ^๑	.702 ^๑	.031 ^๑	.045 ^๑	.034 ^๑	.675 ^๑	.500 ^๑	.129 ^๑	.046 ^๑	.141 ^๑	2.830 ^๑	.005 ^๑
R ^๒ =.047 Adjust R ^๒ =.042 SEE=.5757 F=9.570 Sig=.000 ^๑				R ^๒ =.005 Adjust R ^๒ =.000 SEE=.49713 F=.984 Sig=.375 ^๑				R ^๒ =.144 Adjust R ^๒ =.021 SEE=.50199 F=4.212 Sig=.015 ^๑							

Significant level = 0.05

The table 3 shows that customer buy daily foods shows the relationship between social factors and customer's believe, considered with Adjusted R Square value, it shown the value at 0.042 (4.2%). Thus, the reasonable multiple regression equation for customers believe is 2.346+0.173 information environment (IE) -0.020 government's action (GA).

As can be see the table 3, the relationship between social factors and customer's feeling. But the sig value is 0.375 and it means that sig. value is higher the level of alpha ($\alpha = 0.05$) for the hypothesis. So, the null hypothesis is accepted. The regression equation of the analysis of variance and coefficient of regression testing all has the extremely significant level, indicating that they have statistical significance. Thus, unstandardized equation can be obtained feeling =

3.076+0.041(information environment) +0.031(government's action).

The table 3 shows that, they were relationship between social factors and customer's behavior. Considered with sig value is 0.015 and adjusted R²is 0.016, it means they have1.6% relationship, the null hypothesis is rejected. The social factors are influence to customer's behavior. Thus, the reasonable linear regression equation for behavior of customer's attitudes: behavior=3.142+0.020(information environment) +0.129(government's action).

Table 4: Result of hypothesis between internal factors and customer's attitude from respondents by regression analysis.

Dependent Variables ^๑	Believe ^๑					Feeling ^๑					Behavior ^๑				
	Unstandar-ardized Coefficients ^๑		Standardized Coefficients ^๑	t ^๑	Sig ^๑	Unstandar-ardized Coefficients ^๑		Standardized Coefficients ^๑	t ^๑	Sig ^๑	Unstandar-ardized Coefficients ^๑		Standardized Coefficients ^๑	t ^๑	Sig ^๑
	B ^๑	Std. Error ^๑	Beta ^๑			B ^๑	Std. Error ^๑	Beta ^๑			B ^๑	Std. Error ^๑	Beta ^๑		
(Constant) ^๑	2.127 ^๑	.329 ^๑		6.472 ^๑	.000 ^๑	1.959 ^๑	.278 ^๑		7.052 ^๑	.000 ^๑	1.683 ^๑	.274 ^๑		6.136 ^๑	.000 ^๑
Q ^๑	.046 ^๑	.059 ^๑	.040 ^๑	.779 ^๑	.437 ^๑	.097 ^๑	.050 ^๑	.100 ^๑	1.950 ^๑	.052 ^๑	.193 ^๑	.049 ^๑	.195 ^๑	3.912 ^๑	.000 ^๑
CS ^๑	.221 ^๑	.041 ^๑	.274 ^๑	5.446 ^๑	.000 ^๑	.118 ^๑	.034 ^๑	.173 ^๑	3.433 ^๑	.001 ^๑	.017 ^๑	.034 ^๑	.025 ^๑	0.506 ^๑	.613 ^๑
K ^๑	-.001 ^๑	.059 ^๑	-.001 ^๑	-.021 ^๑	.983 ^๑	.041 ^๑	.047 ^๑	-.045 ^๑	.862 ^๑	.389 ^๑	.172 ^๑	.047 ^๑	.188 ^๑	3.678 ^๑	.000 ^๑
PS ^๑	-.012 ^๑	.055 ^๑	-.011 ^๑	-.212 ^๑	.832 ^๑	.061 ^๑	.047 ^๑	.069 ^๑	1.307 ^๑	.192 ^๑	.079 ^๑	.046 ^๑	.087 ^๑	1.709 ^๑	.088 ^๑
CA ^๑	.015 ^๑	.049 ^๑	.016 ^๑	.301 ^๑	.763 ^๑	.074 ^๑	.041 ^๑	.094 ^๑	1.805 ^๑	.072 ^๑	.044 ^๑	.041 ^๑	.055 ^๑	1.076 ^๑	.283 ^๑
	R ^๒ =.077	Adjust R ^๒ =.065	SEE=.56871	F=6.533		R ^๒ =.077	Adjust R ^๒ =.065	SEE=.48065	F=6.560		R ^๒ =.131	Adjust R ^๒ =.120	SEE=.47459		
	Sig=.000 ^๑					Sig=.000 ^๑					Sig=.000 ^๑				

Significant level = 0.05

As can be see the table 4, the relationship between internal factors and customer's believe. The sig. value is less than 0.05, and adjust R²at 0.065 (6.5%). The internal factors is affected customer's believe. The variance that can predict the constant is internal factors. Thus, the reasonable linear regression equation for customer's believed is: believe=2.217 + 0.046quality (Q) + 0.221customer's satisfaction (CS) - 0.001knowledge (K) - 0.012production specification (PS) + 0.015company's attitude (CS).

From the table 4 shows the relationship between internal factors and customer's feeling. The sig. value is below than 0.05, too, and considered with

adjust R²value at 0.065, it means they have 6.5% relationship, is very small. it means that internal factors are influence to customer's feeling. Thus, the reasonable multiple regression equation for feeling regarding customer's attitude is: feeling=1.959 + 0.097quality (Q) + 0.118 customer's satisfaction (CS) + 0.041knowledge (K) + 0.061production specification (PS) + 0.074company's attitude (CS).

According to the table 4, it shows the relationship between internal factors and customer's behavior, considered with adjusted R²value, it shows the value at 0.120 (12%). The internal factors are affected customer's behavior, the variance that can predict the constant is internal factor. Thus, the reasonable multiple regression equation for customer's behavior is: behavior=1.683 + 0.192 quality (Q) + 0.157customer's satisfaction (CS) + 0.017knowledge (K) + 0.079 production specification (PS) + 0.044company's attitude (CA).

Table 5: Result of hypothesis between food risk and customer's attitude from respondents by regression analysis.

Dependent Variables ^a	Believe ^b				Feeling ^c				Behavior ^d			
	Unstand-ardized ^e Coefficients ^f	Standardized ^g Coefficients ^h	t ⁱ	Sig. ^j	Unstand-ardized ^e Coefficients ^f	Standardized ^g Coefficients ^h	t ⁱ	Sig. ^j	Unstand-ardized ^e Coefficients ^f	Standardized ^g Coefficients ^h	t ⁱ	Sig. ^j
	B ^k	Std. Error ^l	Beta ^m		B ^k	Std. Error ^l	Beta ^m		B ^k	Std. Error ^l	Beta ^m	
(Constant) ⁿ	2.423 ^o	.294 ^o		8.235 ^o .000 ^o	2.485 ^o	.246 ^o		10.113 ^o .000 ^o	2.055 ^o	.240 ^o		8.548 ^o .000 ^o
CFI ^p	.091 ^o	.052 ^o	.089 ^o	1.737 ^o .083 ^o	.113 ^o	.044 ^o	.131 ^o	2.599 ^o .010 ^o	.150 ^o	.044 ^o	.170 ^o	3.512 ^o .000 ^o
RP ^q	.029 ^o	.059 ^o	.025 ^o	.499 ^o .618 ^o	.101 ^o	.049 ^o	.103 ^o	2.049 ^o .041 ^o	.247 ^o	.048 ^o	.248 ^o	5.119 ^o .000 ^o
	R ² =.009 Adjust R ² =.004 SEE=.58680 F=1.881 Sig=.154 ^r				R ² =.033 Adjust R ² =.028 SEE=.49002 F=6.881 Sig=.001 ^r				R ² =.107 Adjust R ² =.103 SEE=.47936 F=23.802 Sig=.000 ^r			

Significant level = 0.05

As can be see the table 5, the relationship between food risks and customer's believe, although adjusted R²value at 0.004 (0.4%), but the sig. value is more than

0.05. It means that food risk is not influence to customer's believed. Thus, the reasonable multiple regression equation for believe of customer's attitudes is: $\text{believe} = 2.423 + 0.091 \text{communication for information} + 0.029 \text{risk perception}$.

From the table 5 shows that the relationship between food risk and customer's feeling, adjust R^2 value at 0.028 (2.8%). It means that food risk is influence to customer's feeling. Communication for information (CFI) shown that beta is 0.113 and the beta of risk perception (RP) is 0.131, it means communication for information (CFI) affect customer's feeling more than risk perception (RP). Thus, the reasonable multiple regression equation for customer' feeling is: $\text{feeling} = 2.485 + 0.113 \text{communication for information (CFI)} + 0.101 \text{risk perception (RP)}$.

According to the table 5, it shows the relationship between food risk and customer's behavior. The sig. value is below alpha level ($\alpha = 0.05$) and adjust R^2 value at 0.103 (10.3%), it means that food risk are influence to customer's feeling. The sig. of CFI and risk perception RP is less than 0.05, and the beta value is 0.170 and 0.248. It means CFI affect customer's behavior more than RP. Thus, the reasonable multiple regression equation for customer's behavior is: $\text{behavior} = 2.055 + 0.150 \text{communication for information (CFI)} + 0.150 \text{risk perception (RP)}$.

Conclusion

Whether customer's gender, age, education, occupation and income has different, will not affect the consumer concerns to food quality safety. Because food is human survival and development of the basic and important one of the material, the quality of food good or bad will affect human's health. Producers should accord with the consumer's requirement to improve food quality, in order to achieve food quality standards. Government should strengthen to food company management; strengthen the attack illegal production food company. The government should work to detection according to standard revision consummates unceasingly and

need to testing technology constantly to high technology, high speed development.

Discussion

The research finding social factors influence to the customer's attitudes. The market has a more perfect information environment; consumer can be easier to more rapid acquisition information. Information environment also affects consumers to purchase attitude. The government to strengthen the management of inspection of food, strict food quality requirements, can let producers pay attention to food safety and quality of food production change of attitude, at the same time also can let consumer to the government in the food safety management on confidence.

The research finding internal factors influence to the customer's attitudes. Quality is the key point of food, it is good or bad will influence consumers' health of body and mind. Satisfaction of consumers from benefits in product performance and experience with the product or communications about the product may be the product or service has level of quality. If something fails to meet to expectations, a negative effect may occur, and if performance happens to exceed our expectations, we are satisfied and pleased (Kotler and Clarke, 1987).

Food safety information will influence consumers' attitudes and purchase intention. In the resent food market situation, consumers to acquire not optimistic information to buy food with not trust attitude, buying food risk unceasingly is also increasing.

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