INFLUENCING FACTORS OF CUSTOMER SATISFACTION OF FRESH E-COMMERCE COLD CHAIN LOGISTICS SERVICE QUALITY OF SF EXPRESS

Yanjun Liu, Chayanan Kerdpitak
Suan Sunandha Rajabhat University, Thailand
Email: chayanan.ke@ssru.ac.th

ABSTRACT

In recent years, China's fresh electricity market has developed rapidly, the market transaction volume has climbed year by year, from 2010 to 2017, in a short period of 8 years of China's fresh electricity market trading scale has increased 350 times, by the end of 2018 fresh electricity market trading scale has successfully exceeded 200 billion yuan. But the fresh electricity business logistics service quality problems are increasingly prominent, due to the quality of logistics service problems resulting in customer complaints and customer bad reviews phenomenon is common, which not only restricts the rapid development of the logistics industry, but also to the development of the fresh electricity business industry has brought serious obstacles. Therefore, the logistics service quality of the graduate fresh e-commerce industry has a very important theoretical and practical significance for the logistics industry and the fresh e-commerce industry.

This paper uses the combination of literature research and empirical research to study the quality of fresh electricity business logistics service. First, the literature and concepts of fresh electricity logistics service quality are summarized, and the service quality theory, logistics service quality theory and customer satisfaction theory, based on a dimensions of visibility, freshness, responsiveness, guarantee, convenience, according to the initial evaluation index system design questionnaire survey, after the statistical analysis software: reliability analysis, validity analysis, correlation analysis, factor analysis, Adjusted R^2= 85.8%. Including the following aspects, the factors influencing the customer satisfaction of the cold chain logistics service quality of Shunfeng Express Co., Ltd.'s fresh e-commerce are freshness (Beta=0.385), responsiveness (Beta=0.119), supportability (Beta=0.386), and convenience (Beta=0.147). The factor that does not affect customer satisfaction is visibility (Beta=-0.063).

Keywords: Logistics service quality, fresh e-commerce, cold chain logistics, customer satisfaction

INTRODUCTION

The most significant advantage of e-commerce is that e-commerce greatly simplifies business processes, effectively reduces operating costs, e-commerce improves the speed and accuracy of information exchange between enterprises, reduces the cost of both sides of the transaction, improves efficiency, and helps to establish a good customer relationship. These many benefits of e-commerce must be truly realized by means of effective logistics mode and logistics management. Based on reliable and efficient logistics operation can ensure the advantages of e-commerce.

According to the China Commercial Industry Research Institute (2018) released the "2018-2023 China fresh electricity market scale and development prospects analysis report" shows that from 2010 to 2017, a short 8 years of China's fresh electricity market trading scale increased nearly 350 times. Among them, 2016-2017 fresh electricity business market ushered

in the reshuffle period, a large number of small and medium-sized fresh electricity market encountered layoffs, transformation, bankruptcy or mergers and acquisitions, but fortunately, SF, Ali, jingdong and other industry giants did not stop, but a bold model innovation, for the fresh electricity business market continues to add vitality. By the end of 2018, the trading scale of fresh electricity business market has successfully exceeded 200 billion yuan, but in the face of the sea level of retail consumption market demand, the current penetration rate of fresh electricity business industry is less than 8%, the future of fresh electricity market and a large market blank waiting to be excavated and developed. Although the future development prospects of fresh electricity cannot be reckoned with, but due to fresh products have seasonal, regional, easy to damage characteristics, lead to fresh electricity industry in the face of opportunities are also facing severe challenges, a large number of fresh electricity enterprises in the process of operation, suffered losses, even insolvent out of the market. According to the survey, in more than 4000 domestic fresh electricity business enterprises, 88% of enterprises are in the loss state, only 4% of enterprises to maintain break-even, and only 1% of enterprises to achieve profits, the remaining 7% of enterprises are in a huge loss (affect the key dimension of fresh electricity business enterprises profit and loss, see Table 1). Scholar Xie Zhenyu (2015) believes that the main reasons for the task of such an embarrassing situation of fresh electricity business enterprises are: logistics service quality is not high, the quality of fresh products is uneven, high operating costs, capital chain fracture, and so on, among which the quality of logistics service problems have become a serious obstacle to the rapid development of fresh electricity business.

Figure 1 The key dimension affecting the profit and loss of fresh e-commerce enterprises
Source: Xie Zhenyu (2015)

In recent years, with the continuous penetration of e-commerce, logistics industry has made great development, but the performance of fresh electricity logistics it is difficult to satisfy, due to customer complaints and logistics service quality problems customer bad review, Xue Jingjing think (2019) investigate the main reasons are: our country logistics refrigeration technology backward, low information level, cost control, backward infrastructure, high

transportation damage rate, this not only restricts the logistics industry service level, also brought serious obstacles to the development of fresh electricity industry. At present, the academic community on the fresh electricity business logistics service quality of this segment of the research is relatively little, fresh electricity business enterprises also lack of effective standards to evaluate the quality of logistics service. Therefore, the use of scientific methods and theoretical models, from the perspective of customers to study how to improve the service quality of fresh electricity business logistics, to promote the healthy sustainability of fresh electricity business industry and logistics industry development of far-reaching significance.

LITERATURE REVIEW

Fresh e-commerce business

Fresh e-commerce is fresh products e-commerce, refers to the use of e-commerce online sales of such as fresh fruits, vegetables, fresh meat and other fresh products. The existing fresh e-commerce seven modes include: comprehensive e-commerce platform, logistics e-commerce, food suppliers, vertical e-commerce, farm direct selling, offline supermarket, community 020, among which the more mainstream comprehensive e-commerce platform, logistics e-commerce, vertical e-commerce, offline supermarket and other four kinds.

Zhao Ping, Xie Yang (2019) to take JINGdong Home, stay radish as an example, based on the closed-loop SICAS theory analysis of consumer behavior oriented fresh e-commerce 020 business model realization path. Zhang Xumei, Liang Xiaoyun, Chen Xu, Deng Zhenhua (2019) to "I kitchen" as the case study object, based on rooted theory analysis of "I kitchen" for product service value-added fresh electricity 020 business model to create path elements, combining with the value chain theory, from the value discovery, value creation, value realization three dimensions to build the product service value-added fresh electricity 020 business model path. Liu Zheng, Yu Mingyang, Chen Sijing, Zheng Xingyou (2019) through the small and medium-sized fresh electricity business enterprise business model innovation and evaluation system research on the availability of born fresh products and its positioning is the core of the fresh electricity business enterprise business model. Guo Mengqian, Huang Lin (2020) to Ding Dong buy vegetables as an example, from the value proposition, value transmission, value realization of three dimensions of the community fresh electricity business model targeted analysis, summed up its advantages and facing the adjustment, for the community fresh e-commerce model to provide constructive suggestions. Li Yongjian (2020) in the article "epidemic fresh electricity business opportunities, problems and countermeasures: online new economic perspective" through the epidemic before and after the data comparative analysis, to find the development of fresh e-commerce problems, and provide corresponding countermeasures. Yao Jinghui, Liu Ruijia, Wang Kai, Liu Junhao (2020 in view of today's fresh electricity business "the last kilometer" distribution problems, explore the fresh "the last kilometer" main distribution service mode benevolence. Li Yaohua, Zhang Youqian, Tan Wang (2020) through the analysis of the development dilemma of fresh electricity business, proposed to take the road of community development, to create characteristic agricultural products, to solve the last kilometer distribution problem and to create a "T+1" distribution mode and other methods to find fresh electricity business outlet. Open ping, LanHongJie, Wu Xiaoxu (2020) in the outbreak of the new champions league on community buying new retail factors research on the characteristics of community group: unlike the general spell buy electricity, community group to recruit community community to a certain extent can reduce the cost of customers, at the same time relying on the strong online connection can get higher order rate.

Cold chain Logistics

Cold chain logistics is an important part of the logistics industry, but also the bottleneck restricting the development of fresh electricity business industry. Foreign scholars' research on cold chain logistics mostly focuses on the preservation technology, logistics distribution and other issues. Bogataj et al (2005) points out that distribution delays and temperature changes in the cold chain logistics process will affect the stability of food. The research of Joshi et al (2011) is divided into three stages. The first stage determines the specific indicators and weights of the performance evaluation, and in the second stage, a company is selected to evaluate its cold chain logistics performance, and finally suggestions for improving the cold chain logistics according to the evaluation results. Wohlrab et al (2012) points out that the last kilometer of distribution is the last paragraph of e-commerce logistics distribution, at which the goods need to be delivered to the designated address or the consignee's pick-up point. Refiner Jedermann et al (2014) believes that in most cases, food waste and decay are caused by improper logistics management, and proposes to use wireless sensors, communication systems and gas sensors to solve them.

Customer satisfaction

Customer satisfaction plays an important role in the actual combat marketing, and more and more enterprises evaluate the quality of the product or service with the customer satisfaction index. The concept of customer satisfaction was first proposed by Cardozo in 1965, proving experimentally that both the customer efforts to obtain the product and the expectations of the product directly affect customer satisfaction. Later, the scholars conducted in-depth research on customer satisfaction, and put forward different definitions and theoretical models.

METHODOLOGY

The research design of the following research is based on quantitative research where it is mainly emphasized on evaluating the numerical and figures. Henceforth, the following study reflects on an objective view rather than a subjective. The data collection is conducted by gathering primary data rather than secondary data. The instrument utilized for collecting the primary data is the questionnaire 348 survey where the statements in the survey are designed with the help of the literature. The questionnaire survey consisted of the closed-ended questionnaire in which it was primarily based on the Likert scale which has a range from 1 – 5. The value 1 represents ‘Strongly disagree’ whereas the value 5 indicates’ Strongly Agree’. The main focus of the study was to evaluate the effect of learning and knowledge on improvising Transformation Enterprises. The context in which the study is being conducted is on the employees of Logistic company. The targeted individuals for the study were particularly the employees. Sampling technique and sample size the main focus of the study is mainly emphasized towards understanding the influence of learning and knowledge on improvising job performance in the company; therefore, the targeted sample that is relevant for the study where insights carry the most worth value are the employees that are working in the company sector. Since the study mainly emphasized gathering data from employees; therefore, not every individual had a similar chance of being selected. Thus, the sampling technique falls under non-probability sampling which is considered that the chance of selecting an individual for a sample is unequal. Moreover, the sample size selected by the researcher for data collection is 380 questionnaires. 348 of; 348 surveys were appropriately filled by the targeted responses. Hence, the response rate on the questionnaire survey was 100 %. The complete data of the 348

samples were investigated and analyzed to determine whether learning and knowledge have an influence over the Logistics Enterprises in the company. Method for analysis of data the questionnaire survey has provided the data in numerical and figures; therefore, the data analysis is conducted through the use of path model where a path model is used.

RESULTS

This study explores the influencing factors of Customer satisfaction service quality of cold chain logistics of SF Express. and put forward relevant suggestions. We used a quantitative study approach. The instrument used in the study was a questionnaire survey. Data were collected with a sample group of 348 samples. Details are as follows:

The results of Level of opinion about visibility, freshness, responsiveness, security and convenience, respectively (Independent variables). And customer satisfaction (dependent variables).

Table 1 The level of opinion about the factors affecting the overall

Descriptive Statistics				
	Mean	Std. Deviation	level	Rank
Visibility	4.30	.728	High	3
Freshness	4.28	.671	High	5
Responsiveness	4.29	.663	High	4
Security	4.30	.664	High	2
Convenience	4.32	.690	High	1
Total	4.30	.633	High	

From Table 1, the mean and standard deviation of the level of opinion regarding the factors affecting Customer satisfaction are both at high levels on the overall side, with the mean value at the higher levels being 4.30 From each variable, we found that the highest mean was convenience with mean of 4.32, at high level, followed by security, mean of 4.30, at high level, and the lowest was freshness with mean of 4.28, at high level.

Regression analysis

Before the regression analysis, this paper has conducted descriptive analysis and mean analysis, the analysis results are ideal, and the analysis of the regression analysis can be completed among the variables. According to the number of independent variables, regression analysis can be divided into two categories, one uniary regression analysis and the other multiple regression analysis. The functional expression relationship between the independent and dependent variables can be divided into linear regression analysis and nonlinear regression analysis. All the regression analyses in this study were a linear regression analysis. First, the

factor variables of the six variables are unified into the new variables by calculation through data processing, and then the linear regression is used to test each hypothesis. The final results are shown in Table 2 below:

Table 2 Model summary

Outresults of the effect between the dependent variables and all independent variables by

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.927[a]	.860	.858	.25324	1.900

a. Predictors: (Constant), convenience, freshness, visibility, security, responsiveness

b. Dependent Variable: Customer satisfaction

regression analysis, it was found that the adjusted R^2=0.858, meaning that the effect of the five independent variables are convenience, freshness, visibility, security, and responsiveness on Customer satisfaction, can have an 85.8% effect. The Durbin Watson data is 1.900, around 2, meeting the criteria, and no pseudoregression phenomenon in Eq.

Table 3 ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.443	5	26.889	419.275	.000[b]
	Residual	21.933	342	.064		
	Total	156.375	348			

a. Dependent Variable: Customer satisfaction

b. Predictors: (Constant), convenience, freshness, visibility, security, responsiveness

*Significant at 0.05 level

From table 3 above, the regression model was significant, and Sig.=.000[b], F =419.275, corresponding to a p-value <0.05. It indicates that at least one independent variable showed a linearly positive correlation for Customer satisfaction. The investigators will then analyze the extent of the influence of the respective variable and the dependent variable.

Table 4 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.070	.094		.743	.458
	visibility	-.058	.036	-.063	-1.589	.113
	freshness	.385	.048	.385	8.074	.000
		.121	.057	.119	2.107	.036
	security	.390	.051	.386	7.684	.000
	convenience	.143	.038	.147	3.750	.000

a. Dependent Variable: Customer satisfaction

*Significant at 0.05 level

The results show that Adjusted R^2=85.8% in the Customer satisfaction factors of the cold chain logistics service quality of SF Express Co., Ltd.LTD. Including the following aspects, the factors affecting SF Express Co., Ltd.LTD. Cold chain logistics service quality Customer satisfaction are freshness (Beta=0.385), responsiveness (Beta=0.119), security (Beta=0.386), convenience (Beta=0.147). The factor that does not affect Customer satisfaction is visibility (Beta=-0.063). It can be written as a regression equation as follows:

$\hat{Y}$=-0.063(x1) +.385(x2) +.119(x3) +.386(x4) +.147(x5)

Therefore, according to the standardized regression coefficients between the various variables, the post-test Customer satisfaction model is shown in the following Figure 1.

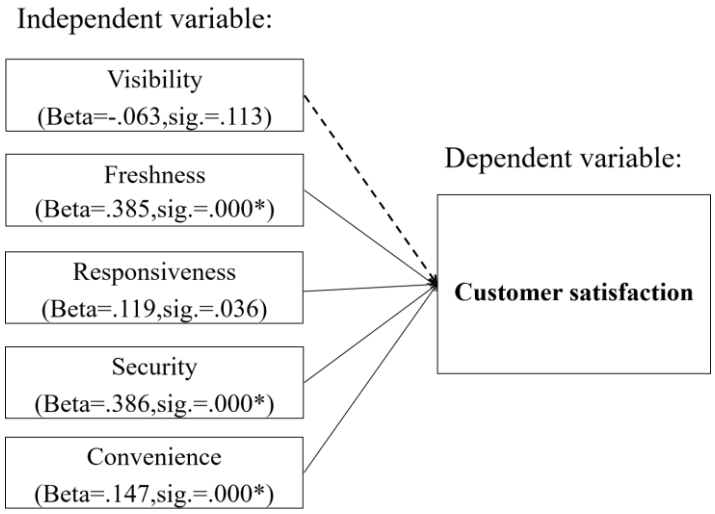

Figure 2 Research framework after verification

CONCLUSION

Multiple Regression analysis.

Outresults of the effect between the dependent variables and all independent variables by regression analysis, it was found that the adjusted R^2=.858, meaning that the effect of the five independent variables are convenience, freshness, visibility, security, and responsiveness on Customer satisfaction, can have an 85.8% effect. The Durbin Watson data was 1.900, around 2, meeting the criteria, and no pseudoregression phenomenon in Eq.

The regression model was significant, and the Sig.=.000[b], F =419.275, corresponding to a $p<0.05$. It indicates that at least one independent variable showed a linearly positive correlation for Customer satisfaction. The investigators will then analyze the extent of the influence of the respective variable and the dependent variable.

The results show that Adjusted R^2=85.8% in the Customer satisfaction factors of the cold chain logistics service quality of SF Express Co., Ltd.LTD. Including the following aspects, the factors affecting SF Express Co., Ltd.LTD. Cold chain logistics service quality Customer satisfaction are freshness (Beta=0.385), responsiveness (Beta=0.119), security (Beta=0.386), convenience (Beta=0.147). The factor that does not affect Customer satisfaction is visibility (Beta= -0.063).

REFERENCES

Xie Zhenyu. (2015). Agricultural e-commerce station to the tuyere 100 billion market to take off. *Farm Products Market Weekly*, (11): 48-51.

AiyingRong, Renzo Akkerman, Martin Gmnow. (2011). An optimization approach for managing fresh food quality throughout the supply chain. *International Journal of Production Economics*, 131:421-429.

Gong Tan fei, Zhang Liang, Bi Jianping, Ban Hui. (2014). Analysis and enlightenment of the operation mode of fresh electricity business at home and abroad. *Shopping mall modernization*, (27): 27-30.

Jeh-NanPan, NguyenHTN. (2015). Achieving customer satisfaction through product-service systems. *European Journal of Operational Research*, 247(1):179-190.

Jiang Huan. (2016). Research on the influence of B2C fresh e-commerce service quality on customer loyalty [D]. Anhui University of Finance and Economics.

Li Fengchao, Gao Dapeng and Han Chao. (2008). Customer-oriented Logistics Service Quality Model Construction and Its Enlightenment. *Value Engineering*, 27 (6): 70-72.

Milorad Kilibarda, Svetlana Nikolicic, Milan Andrejic. (2016). Measurement of logistics service quality in freight forwarding companies: a case study of the Serbian market. *International Journal of Logistics Managemen*t, 39(5)168-176.

Ning Lianju, leap Chunxiao, Xiao Haihong. (2014). On online consumer customer satisfaction influencing factors. *Northeastern University Science* (Social Science Edition), 16 (1): 32-37.

Shukla M, Jharkhar S. (2013). Agri-fresh produce supply chain management: a state-of-the-art literature review. *International Journal of Operations & Production Management*, 33(1):114-158.