INVESTIGATING KEY ANTECEDENTS OF LOGISTICS SERVICES QUALITY TOWARDS CUSTOMER SATISFACTION AND LOYALTY AMONG ECOMMERCE: A CASE STUDY OF HOME APPLIANCE RETAILING DELIVERY IN CHINA

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ABSTRACT

The purpose of this study is to explore the relationship among online logistics service quality (OLSQ), service price (SP), customer satisfaction (CS) and loyalty (LY) in B2C ecommerce retailing. Furthermore, the study established eight dimensions to evaluate and analyze the relationship among online logistics service quality. Drawing upon a sample of 435 respondents and worked within the framework of structural equation modeling (SEM). Finally, the result indicated that OLSQ, SP statistically influenced CS. Similarly, there is a significant positive relationship between OLSQ and LY, CS and LY.

Keywords: *online logistics service quality (OLSQ), service price (SP), customer satisfaction (CS) and loyalty (LY)，Structural Equations Modeling (SEM)*

บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อที่จะสำรวจความสัมพันธ์ระหว่าง คุณภาพการบริการโลจิสติกส์ผ่านทางออนไลน์ (OLSQ) ราคาของสินค้าบริการ (SP) ความพึงพอใจของลูกค้า (CS) และความจงรักภักดี (LY) ในช่องทางการพาณิชย์อิเล็กทรอนิกส์ระหว่างผู้ประกอบการไปยังผู้บริโภค อีกทั้งการศึกษานี้ใช้แปดตัวแปรเพื่อประเมินผลและวิเคราะห์ความสัมพันธ์ของคุณภาพบริการโลจิสติกส์ผ่านทางออนไลน์ และได้ใช้กลุ่มตัวอย่างจากผู้ตอบแบบสอบถามจำนวน 435 ราย โดยใช้โมเดลสมการโครงสร้าง (SEM) ผลจากการศึกษาชี้ให้เห็นว่า OLSQ และ SP มีอิทธิพลอย่างมีนัยยะสำคัญทางสถิติต่อ CS และ ในทางเดียวกัน OLSQ และ CS ก็มีความสัมพันธ์เชิงบวกต่อ LY

คำสำคัญ: คุณภาพการบริการโลจิสติกส์ผ่านทางออนไลน์ (OLSQ) ราคาของสินค้าบริการ (SP) ความพึงพอใจของลูกค้า (CS) และความจงรักภักดี (LY) โมเดลสมการโครงสร้าง (SEM)

[1] **Received May 2, 2021; Revised May 12, 2021; Accepted May 20, 2021**
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INTRODUCTION

Based on previous empirical study, majority of researchers have verified there is significant positive relationship between logistic service quality and customer satisfaction. Customer satisfaction is influenced by logistic service quality, and customer satisfaction leads to loyalty as well (Mentzer, Flint, Tomas & Hult, 2001; Saura, Frances, Contri & Blasco, 2008; Zheng, 2008; Soh, Chin & Wong, 2015). Nevertheless, there are few studies significant positive relationship between logistic service quality and loyalty (Zheng, 2008; Huang Kuo & Xu, 2009; Murfield, Boonne, Rutner & Tomas, 2017). The findings above essentially underline that logistics service quality is in relation with customer satisfaction and loyalty.

To sum up, the problem is that China's B2C home appliance logistics still have gaps to fill according to current situation. Customers are not satisfied with the logistics service providers. Furthermore, the current studies on the appliance logistics in B2C e-commerce are less, thus, it is significant and meaningful to do further study on appliance logistic. Delivery performance and shipping fee are concerned with online shopping experience. So, this study seeks to know and identify which OLSQ variables are mostly like to effect China B2C appliance customer satisfaction and loyalty，and evaluate how service price to influence customer satisfaction from price perception. Hence, the outcome of this research could provide some recommendations for the development of the B2C home appliance industry.

The major contribution of this study regarding theoretical significance is to provide part of literature regarding customer satisfaction survey with online shopping in China, which will lay the groundwork for the future in-depth research on the implication of logistic service quality and service price impacting customer satisfaction and loyalty in ecommerce logistic context. On the other hand, the study provides important practical significance. The result will figure out the factors impact on customer satisfaction and classified by importance. Thus, it will help the firm to understand which factors mostly impact on satisfaction so as to find effective solution and improve their logistics service. The study benefits the related firms who are in B2C home appliance industry and other industry online retailers.

LITERATURE REVIEW

The purpose of this study is to provide an overview of the relevant literature in order to collect the secondary data of this study.

Logistics Service Quality (LSQ)

For logistic service quality, the most traditional and original theory is the 7Rs (Perreault & Russ, 1974) based on time and place utility. The core of 7Rs theory is that companies can deliver right goods to the right place at the right time, in the right quantity and good condition, along with appropriate prices and accurate information (Perreault & Russ, 1974). Logistics service traditionally was paid more attention on physically observable operational attributes. As a result, it was in conformity with the marketing literature and related theories which gave more importance to understanding and measuring tangible or observable attributes such as inventory, delivery time and the no defect products (Novack, Langley & Rinehart, 1995).

Regarding the traditional theory, Mentzer, Gomes and Krapfel (1989) primarily developed the concept of logistics service quality (LSQ). They believed that logistics service quality involved two factors: physical distribution service (PDS) and marketing customer service (MCS). Mentzer, Flint and Kent (1999) reviewed PDSQ study conducted by Bienstock, Mentzer and Bird (1997) and defined PDSQ is an essential part of development logistic service quality concept. With an integral logistic focus, Mentzer et al. (1999) provide a multidimensional model, termed as LSQ.

Effort to validate and refine LSQ, Mentzer et al. (1999) took more customer-based approach than traditional operational-based approach. The traditional concept is based on observable operational attributes, such as time, place utilities. However, business environment has changed; the traditional concept can't well express value created by logistic.

Therefore, LSQ research is not only consistent with traditional service quality study, but also should involve delivery staff, ordering procedure, and order discrepancy handling etc., who directly affect customer perception on logistic service quality. Logistic service quality created customer-based foundation for a better definition and measuring customer perception (Mentzer, Flint & Tomas, 2001).

Service Price (SP)

According to Zeithaml (1988), price is the sum of the value exchanged by the customer to obtain the benefits of the product or service. Price is a main element for customer to choose the service provider and purchase, which has great impact on customer's satisfaction judgements regarding service (Herrmann, Xia, Monroe & Huber, 2007). Anderson, Fornell and Lehmann (1994) investigated how customer expectation, quality, and price to affect customer satisfaction and profitability in marketing area. The study highlight price is fundamental variable for customer satisfaction, because customer will consider price whenever consumers evaluate the value of an acquired service (Anderson et al., 1994).

Rao, Goldsby, Griffis and Iyengar (2011) provide a new concept of electronic logistic service quality (e-LSQ) and proposed price is limitation factors to providing high quality service. Abundant study indicated that perceived price and objective price are important factors to assess service quality. If the price is too high, customers will choose other competitors. And if the price is too low, it will cause customer assume logistics service quality is not high or can't reach their expectation (Razak, Nirwanto & Triatmanto, 2016).

While, the research conclusions on the relationship among price, quality, customer satisfaction are not consistent. Bauer, Falk and Hammerschmidt (2006) believes that the inconsistency is due to the different business types and industrial involved in each study.

The study believe that price is an important factor that customers attach great importance to, and ignoring the price factor may be one of the reasons for the inconsistency of previous study results. Therefore, while discussing the influence of service quality on customer satisfaction, it is necessary to analyze the role of service price towards on customer satisfaction.

Customer Satisfaction (CS)

Oliver (1993) proposed that customer satisfaction reflects the customer's overall buying perception, which builds on all past purchase experiences. Satisfaction is a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance or outcome in relation to his or her expectations (Anderson, Fornell & Lehmann, 1994).

On the other hand, from the perspective of specific transactional customer satisfaction, customer satisfaction is an experience result coming from purchasing products or service (Howard & Sheth, 1969). However, from the perspective of cumulative customer satisfaction process, researchers argued that customer satisfaction is an evaluation after whole consuming behavior process.

Anderson and Narus (1990) argued that customer satisfaction is to evaluate the difference between the expected quality and the perceived quality before the purchase behavior occurs. It is motivation for companies to invest in improving customer satisfaction. If the performance falls short of expectations, the customer is dissatisfied. If the performance matches the expectations, the customer is satisfied. If the performance exceeds the expectations, the customer is highly satisfied or delighted. Anderson et al. (1994) believed the better service quality they can provided; the higher satisfaction is.

Whether the customer is satisfied after purchase/buying or not depends on the product's or service performance in relation to the buyer's expectations. High satisfaction or delight creates an emotional bond with the brand or services, not just a rational preference (Bowen & Chen, 2001).

Customer Loyalty (CL)

Generally, loyalty was defined to be favorable toward on a brand and repeat purchase based on high customer satisfaction (Dick & Basu, 1994). 0liver (1999) defines brand loyalty as “a deep commitment to repeated purchases or repeat visits to a product or service in the future, although due to the impact of the environment and the market’s influence, behavior will change. It is well acknowledged that attitudinal loyalty and behavioral loyalty are two main dimensions to measure loyalty (Bloemer & Kasper, 1995).

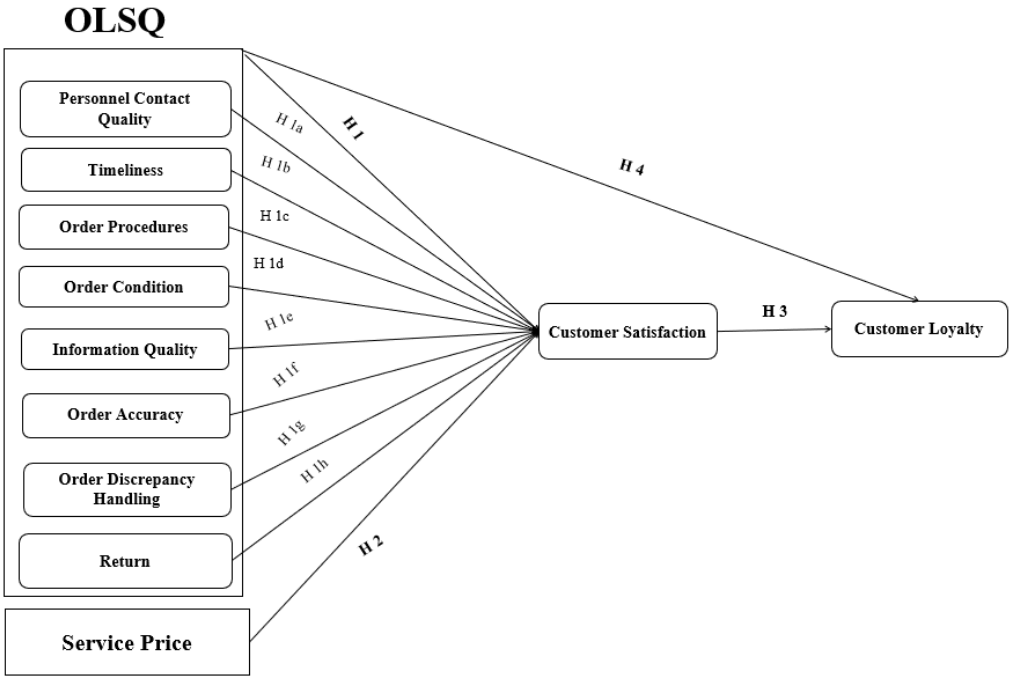
Customer satisfaction is attitude on the product or service whether meets customer’s expectation, while loyalty is behavior to repeat purchase or maintain the relationship (Oliver, 1993). Sivadass and Baker-Prewitt (2000) argued that customer satisfaction ultimately leads to customer loyalty. Customer loyalty is considered to be a key factor in the long-term viability of a brand. A loyal customer is seen as a competitive asset. The research conducted by Heskett, Jones, Loveman, Sasser and Schlesinger (2011) to briefly explain the relationship between satisfaction and loyalty. The more satisfied is, the more loyalty is.

As we all know there is fierce completive in B2C context. According to Grant and Philipp (2014), customer loyalty is derived from satisfaction, and the key to e-commerce success. Therefore, it is major issues that must be addressed for online retailer to maintain a competitive advantage. Accordingly, satisfaction and loyalty are critical to make business successful.

CONCEPTUAL FRAMEWORK

The paper develops a framework that incorporates research on logistics service quality and customer satisfaction theory so as to understand how logistics service quality will influence customer satisfaction and customer loyalty, a framework was established as given in figure 1.

Figure 1: Conceptual Framework



Hence, the four hypotheses proposed in the study are the following.

H1: There is significant relationship between online logistic service quality and customer satisfaction at B2C home appliance online logistic.
H2: There is significant relationship between service price and customer satisfaction at B2C home appliance online logistic.
H3: There is significant relationship between customer satisfaction and customer loyalty at B2C home appliance logistic.
H4: There is significant relationship between online logistic service quality and customer loyalty B2C home appliance logistic.

METHODOLOGY

The study applied quantitative data collection techniques which includes five points Likert scale as well as category scale so as to accomplish this study goal. It is going to use sample survey technique, which is more likely to involve low cost, less time, efficient and representative sample from target population (Zikmund et al., 2003). The study developed a self-administered questionnaire to collect primary data. In this research, quantitative questions are used which includes five-point Likert scale as well as category scale, because it can describe and predict some

phenomenon and prove the accuracy of researcher's assumption. Consequently, the research design follows three steps for the sample procedure by Zikmund (2003): (1) judgment sampling; (2) quota sampling; (3) convenience sampling. The details of sampling methods are explained as following.

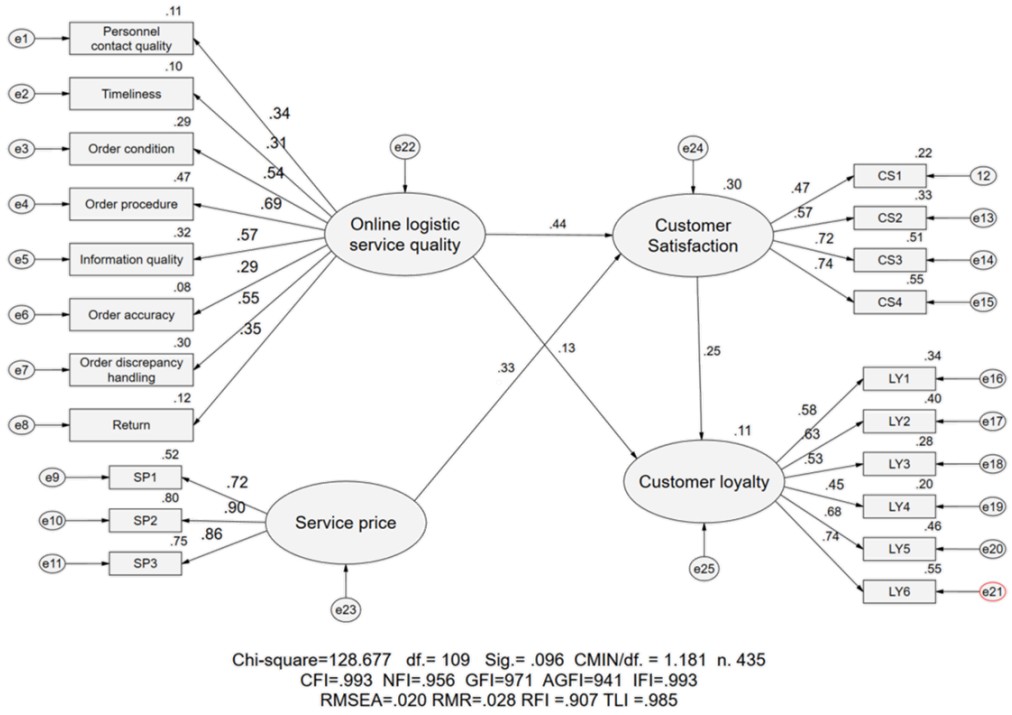
The researcher decides to gather data from customers who actually bought home appliance more than once from Suning.com in Xi'an city. In Order to collect more data, two channels are applied to delivery questionnaire through website survey and paper questionnaire. The study collected 460 survey in total from online 260 and offline 200 during the year 2020, 435 of which are usable data. Descriptive research approach is employed to describe demographic factors, and apply SPSS statistical analysis software to analyze the result of questionnaires collected. Structured Equations Modeling (SEM) was employed for analyzing the relationship between the independent variables and the dependent variable.

The research was conducted to test the reliability of questionnaire. The data was analysis by SPSS version 22 statistical analysis software. And the result of Cronbach's Alpha value for each variable is 0.865 of OLSQ, 0.624 of SP, 0.788 of CS and 0.755 of CL.

RESULTS OF THE STRUCTURAL MODEL

Figure 2 displays the path diagram resulting from SEM analysis using AMOS statistical software with MLE as the estimation technique.

Figure 2: Structural Relations and Coefficients for the Base Model



Note: GFI = .971; RMSEA = .020; NFI = .956; IFI = .993; TLI = .985; CFI = .993; R2 for CS is .30; R2 for CL is .11.

The baseline comparison indices obtained are GFI = .971; NFI = .956; IFI = .993; TLI = .985 and CFI = .993. RMSEA value of .020, indicating a good model fit (Ho, 2006).
To test the hypothesized relationship between OLSQ, SP, CS and CL, the researcher relied on standardized estimates and R square values obtained in the path analysis and corresponding p – value as shown in Table 1.

Table 1: Standard Regression Weight of Any pair of Based Model

	Causal Model	Standard Regression Weight	R Square value	P – value	Result
1.	OLSQ □ CS	.442	.194	.000	Support at P < .01
2.	OLSQ □ CL	.134	.018	.045	Support at P < .05
3.	SP □ CS	.328	.108	.000	Support at P < .01
4.	CS □ CL	.250	.625	.000	Support at P < .01

Source: Author

Hypothesis 1: There is significant relationship between online logistic service quality and customer satisfaction at B2C home appliance online logistic.

The relationship between OLSQ and CS was examined and the results showed that H_1 is supported since the p value was significant (p<.01). The Standard Regression Weight is 0.442 and the Squared Multiple Correlation (r^2) value of .194 indicates that 19.4 percent of variance of CS is accounted for by the influence of OLSQ. The baseline comparison indices obtained are GFI = .903; NFI = .862; IFI = .931; TLI = .908 and CFI = .929. RMSEA value of .046 indicates a good model fit (Ho, 2006).

Most of the previous empirical studies on the relationship between OLSQ and CS found that there was a statistically significant positive correlation between the two variables (Menzer et al., 2001; Saura et al., 2008, Huang, Kuo & Xu, 2009; Xing et al., 2010; Lin et al., 2016). So, the results of this study are consistent with the previous literature.

Hypothesis 2: There is significant relationship between service price and customer satisfaction at B2C home appliance online logistic.

The relationship between SP and CS was examined and the results showed that H_2 is supported since the p value was significant (p<.01). The Standard Regression Weight is 0.328 and the Squared Multiple Correlation (r^2) value of .108 indicates that 10.8 percent of variance of CS is accounted for by the influence of SP. The baseline comparison indices obtained are GFI = .903; NFI = .862; IFI = .931; TLI = .908 and CFI = .929. RMSEA value of .046 indicates a good model fit (Ho, 2006). There is a significant relationship between SP and OLSQ. The finding is aligned with Rao et al. (2011) who found SP positively influenced OLSQ in online retailing.

Hypothesis 3: There is significant relationship between customer satisfaction and customer loyalty B2C home appliance logistic.

The relationship between CS and CL was examined and the results showed that H_3 is supported since the p value was significant (p<.01). The Standard Regression Weight is 0.250 and the Squared Multiple Correlation (r^2) value of .625 indicates that 62.5 percent of variance of CL is accounted for by the influence of CS. The baseline comparison indices obtained are GFI = .903; NFI = .862; IFI = .931; TLI = .908 and CFI = .929. RMSEA value of .046 indicates a good model fit (Ho, 2006). In this study CS and CL seems hold quite strongly, and they are strongly related to each other.

Hypothesis 4: There is significant relationship between online logistic service quality and customer loyalty B2C home appliance logistic.

The relationship between OLSQ and CL was examined and the results showed that H_4 is supported since the p value was significant (p<.05). The Standard Regression Weight is 0.134 and the Squared Multiple Correlation (r^2) value of .018 indicates that 1.8 percent of variance in CS is accounted for by the influence of OLSQ. The baseline comparison indices obtained are GFI = .903; NFI = .862; IFI = .931; TLI = .908 and CFI = .929. RMSEA value of .046 indicates a good model fit (Ho, 2006).

Therefore, from the point of p value, the relationship between OLSQ and CL is significant. This is consistent with Saura et al. (2008) and Huang et al. (2009), who found that there is a significant positive correlation between OLSQ and CL in online retailing context. While Square Multiple Correlation (R^2) of 0.018 indicates that only 1.8% of the CL variance is explained by OLSQ. This leaves much space to explore other factors that may affect CL in the target sample.

SUMMARY AND CONCLUSIONS

According to the findings, the researcher was able to answer the research question addressing the direct relationship between online logistics service quality and customer satisfaction as well as relationship between customer satisfaction and customer loyalty. Moreover, service price has positive relate to customer satisfaction, and there has a little positive relationship between online logistics service quality and customer loyalty. Subsequently the base model is fitted. With respect to online logistics service quality measurement, eight variables are verified there exist significant relationship between them and customer satisfaction. In contrast to the study from 5 years ago, some dimensions are more important, for example personnel contract. While other dimensions, for example information quality and order discrepancy handling are lesser in importance among customers' consideration.

The most significant theoretical contribution of this research is the creation of OLSQ framework, the empirical testing of it in home appliance delivery marketing. Based on the confirmatory factor analysis, the OLSQ measurement scales developed in the study turned out to be properly fit the data. Customer satisfaction still can be explained by 8 variables. The second contribution of the study was to address OLSQ difference between B2B setting and online retailing context, another gap in literature. The third contribution related to the factors for the OLSQ difference.

With respect to the managerial implications of the study, the findings specifically identify a range of variables, which is helpful to set key performance indicator and measure their performance effectively. Improved performance along the OLSQ dimension, at the expense of service price,

may not improve customer satisfaction to the desired extent. Therefore, online retailers should seek ways to increase OLSQ while reducing related costs.

From the beginning, customers concern much on personal contact, order condition and order accuracy. The Manager should focus on improve personal contact service ability, advance knowledge and experience and try best to solve the customer's problems. Make sure order condition and the order accuracy to delivery good condition, correct items and quantities. Another source of customer satisfaction come from service price, pricing should reflect the sense of reasonable, fair and value for money. That helps to develop understanding, foster trust and enhance effective collaboration. the customer loyalty, the more satisfaction customer feel, it increases opportunities for customer to re-purchase, both upsell and cross-sell campaign in the long run.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There are several limitations to the study. First of all, this thesis research study focuses on the B2C logistic service in the city of Xi'an. And the sampling distribution technique is not parametric sampling. Another major limitation is that the theoretical framework did not add on marketing approach, for example, value of brand, value proposition or value innovation, etc. That may reflect more explanation on customer satisfaction and customer loyalty. Finally, the researcher would like to specify that the generalization of the results of the research study may apply essentially to the period of time, when the study was conducted and the related data collection was made from the target population. The situation of e-commerce in the 2021 decade may differ from 2010.

Under recommendations for future research, the researcher would like to present the following agenda for future studies. Firstly, it is recommended to increase marketing and psychological dimension in any variable. Some interesting topics are related to the hedonistic shopping. Secondly, to find opportunities to base the future researches on longitudinal study. This allows re-examining the factors studied in the model. Thirdly, to replicate the research model in order to investigate the relationship between the constructs in the context of B2C services, both single and multi-channel retailers, in Thailand to help validate the applicability of the results in different business settings in between countries.

REFERENCES

Anderson, E. W., Fornell, C., & Lehmann, D. R. (1994). Customer satisfaction, market share, and profitability: Findings from Sweden. *Journal of marketing*, 58(3), 53-66.

Anderson, J. C., & Narus, J. A. (1990). A model of distributor firm and manufacturer firm working partnerships. *Journal of Marketing*, 54(1), 42-58.

Bienstock, C. C., Mentzer, J. T., & Bird, M. M. (1997). Measuring physical distribution service quality. *Journal of the Academy of Marketing Science*, 25(1), 31.

Bloemer, J. M., & Kasper, H. D. (1995). The complex relationship between consumer satisfaction and brand loyalty. *Journal of economic psychology*, 16(2), 311-329.

Bowen, J. T., & Chen, S. L. (2001). The relationship between customer loyalty and customer satisfaction. *International journal of contemporary hospitality management.*

Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: a transaction process-based approach for capturing service quality in online shopping. *Journal of Business Research*, 59(7), 866-875.

Chin, S. H., Soh, K. L., & Wong, W. P. (2013). Impact of Switching Costs on the Tripartite Model–Third Party Logistics. *Management*, 3(2), 79-88.

Dick, A. S., & Basu, K. (1994). Customer loyalty: toward an integrated conceptual framework. *Journal of the academy of marketing science*, 22(2), 99-113.

Grant, D. B., & Philipp, B. (2014). A planned study of the impact of B2C logistics service quality on shopper satisfaction and loyalty. *Sinergie Italian Journal of Management*, 32(Sep-Dec), 45-63.

Gourdin, K. (2006). *Global logistics management: a competitive advantage for the 21st century*. Wiley-Blackwell.

Huang, Y. K., Kuo, Y. W., & Xu, S. W. (2009). Applying Importance-performance Analysis to Evaluate Logistics Service Quality for Online Shopping among Retailing Delivery. *International Journal of Electronic Business Management*, 7(2).

Ho, R. (2006). Handbook of univariate and multivariate data analysis and interpretation with SPSS. CRC press.

Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., & Schlesinger, L. A. (1994). Putting the service-profit chain to work. *Harvard business review*, 72(2), 164-174.

Herrmann, A., Xia, L., Monroe, K. B., & Huber, F. (2007). The influence of price fairness on customer satisfaction: an empirical test in the context of automobile purchases. *Journal of product & brand management*.

Lin, Y., Luo, J., Cai, S., Ma, S., & Rong, K. (2016). Exploring the service quality in the e-commerce context: a triadic view. *Industrial Management & Data Systems*.

May, P. W. (2000). Diamond thin films: a 21st-century material. Philosophical Transactions of the Royal Society of London. Series A: Mathematical, *Physical and Engineering Sciences*, 358(1766), 473-495.

Mentzer, J. T., Gomes, R., & Krapfel, R. E. (1989). Physical distribution service: a fundamental marketing concept?. *Journal of the academy of marketing science*, 17(1), 53-62.

Mentzer, J. T., Flint, D. J., & Kent, J. L. (1999). Developing a logistics service quality scale. *Journal of Business logistics*, 20(1.1999).

Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics service quality as a segment-customized process. *Journal of marketing*, 65(4), 82-104.

Murfield, M. , Boone, C. A. , Rutner, P. , & Thomas, R. . (2017). Investigating logistics service quality in omni-channel retailing. *International Journal of Physical Distribution & Logistics Management*, 47(4), 263-296.

Novack, R. A. , Langley, C. , & Rinehart, L. M. (1995). Creating logistics value: themes for the future. Measurement.

Oliver, R. L. (1993). Cognitive, affective, and attribute bases of the satisfaction response. *Journal of consumer research*, 20(3), 418-430.

Oliver, R. L. (1999). Whence consumer loyalty?. *Journal of marketing*, 63(4_suppl1), 33-44.

Perreaul. W., & Russ, F. A. (1974). Physical distribution service-neglected aspect of marketing management. *MSU Business Topics*, 22(3), 37-45.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. *Journal of marketing*, 58(1), 111-124.

Rao, S., Goldsby, T. J., Griffis, S. E., & Iyengar, D. (2011). Electronic logistics service quality (e-LSQ): its impact on the customer's purchase satisfaction and retention. *Journal of Business Logistics,* 32(2), 167-179.

Saura, I. G., Frances, D. S., Contri, G. B., & Blasco, M. F. (2008). Logistics service quality: A new way to loyalty. *Industrial Management & Data Systems*, 108(5), 650−668.

Sivadass, E., & Baker-Prewitt, J. L. (2000). An examination of the relationship between Service quality. *International Journal of Retail & Distribution Management*.

Takeuchi, H., & Quelch, J. A. (1983). Quality is more than making a good product. Harvard business review, 61(4), 139-145.

Triatmanto, B., Nirwanto, N., & Razak, I. (2016). The impact of product quality and price on customer satisfaction with the mediator of customer value. IISTE: *Journal of Marketing and Consumer Research*, 30, 59-68.

Xing, Y., Grant, D. B., McKinnon, A. C., & Fernie, J. (2010). Physical distribution service quality in online retailing. *International Journal of Physical Distribution & Logistics Management* Vol. 40 No. 5, 415-432

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1988). Communication and control processes in the delivery of service quality. *The Journal of Marketing*, 35-48.

Zikmund, W. G. (2003). Sample designs and sampling procedures. *Business research methods*, 7(2), 368-400.

郑兵. (2008). B2C 网络商店物流服务质量及其与顾客忠诚的关系研究 (Doctoral dissertation, 大连理工大学).