Logistics Value and Perceived Customer Loyalty in E-commerce: Hierarchical Linear Modeling Analysis

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Abstract. Value is a fairly capacious concept and there are no clearly defined boundaries. This is due to the unlimited number of all needs, expectations and limitations of potential customers. In e-commerce, however, the most important elements of value that relate to logistics can be distinguished.

The aims of this paper are to identify the components of logistics value for customers, and to present their influence on loyalty in e-commerce. Moreover, we investigated the mediation effect between those two variables using the positions of the value chain members. The hierarchical linear modeling (HLM) method was applied to analyze the data structure and find the dependencies between the variables from different levels.

Keywords: E-commerce · Logistics value · Loyalty · HLM

1 Introduction

In e-commerce, some logistics processes are similar to those in traditional commerce, and some are different. The main difference is access to and collection of goods. In traditional trade, the seller sells a product that is available on the shelf. In e-commerce, on the other hand, s/he sells a promise of order fulfillment, in particular a promise that s/he will deliver the right product, in the right quantity and condition, to the right location, at the expected time, cost and to the right customer. This is in line, then, with the logistic principle of 7R, which refers to seven tips for dealing with the flow of products between individual actors in the supply chain.

The 7Rs refer to the overriding notion of value. The concept of value was introduced in 1954 by Drucker [3]. For more than 60 years it has been defined in many ways. Some of these definitions are characterized by simplicity and are quite general. Most often, value is treated as an evaluation of the usefulness of a product, resulting from the ratio of what was obtained to what was given [16]. Value in management often refers to the client and is therefore referred to as "value for the customer". Kotler defines it as the difference between the total value of the product for the customer and the cost s/he has to bear in acquiring it [6].

The concept of logistics value has a slightly shorter history. It was first described by Novack et al. [11]. Like value itself, logistics value also has many definitions. Most

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often, it boils down to a combination of quality, price, services provided to the customer, i.e. delivering what he or she wants and when he or she wants. It is also understood as a combination of customer service requirements with simultaneous consideration of minimising supply chain costs and maximising partners' profits [15]. For the purposes of this paper, we assumed that the logistics value for an e-commerce customer is the excess of subjectively perceived benefits over subjectively perceived costs associated with the purchase of a given product via the Internet.

The goals of this article are to identify the elements of logistics value for customers, and to verify their influence on loyalty in e-commerce. We researched the mediation effect between those two variables using the positions of the value chain members. We analyzed 1192 questionnaires from telephone and web interviews (CATI and CAWI). Hierarchical linear modeling method was applied to find the dependencies between variables from different levels.

2 Logistics as a Value

To explain the components of the logistics value, we will use the previously indicated 7R concept. Logistics in e-commerce is to ensure:

- The product in the right condition – it involves safe delivery of the product to the customer. The quality of the product delivered should be exactly the same as if the customer purchased the product himself/herself by means of traditional trade. Appropriate protection and packaging of the product plays an important role. Opening the packaging must be easy and intuitive and should not involve the risk of damage to the goods. In addition, the product is often returned in the same packaging, so it should be durable and designed to be re-shipped. Packaging also has a marketing function. It is often the first element that the customer has physical contact with. The moment of opening the packaging is very emotional for many customers. It can be compared to what happens when a gift is opened. Packaging should therefore encourage people to buy again with its aesthetic appearance and be a kind of advertisement for the online store [1, 10].
- The product in the right place – the possibility to choose the place of delivery or collection of goods makes the customer influence the configuration of his or her value chain. Currently, customers can receive products ordered online in several ways: by courier delivery, delivery to the point of shipment and pickup, pickup from a parcel locker, self-pickup at a stationary store or a different retailer's location, delivery by an online store. The most popular forms of delivery are courier and postal services. Recently, in e-commerce, parcel lockers and pick-up and drop-off (PUDO) points – places to which access is relatively easy, such as press lounges, shopping malls, petrol stations, grocery stores - have gained importance. The models of deliveries to the parcel lockers and PUDO are characterized by flexibility of place and time of delivery. Online retailers who provide varied and convenient ways of collecting and delivering goods can count on greater customer loyalty [7, 8].
- The product at the right time – unlike in traditional trade, the customer does not have immediate access to the product after purchasing it. Therefore, it is important that

the seller specifies the lead time of the order. This time runs from the moment the customer confirms the order to the moment the goods are received by the customer. Several processes affect it, then – completing, packing, preparing for dispatch and delivery. Customers want to be able to choose different delivery dates and change them dynamically, even at the stage of the last mile. Therefore, time and flexibility of delivery are important [7, 8].

- Shipping information – current and accurate information is a very important value factor for the customer in e-commerce. The seller should guarantee information about the availability of the goods, which must be consistent with their current stock status. It is also essential to provide information about the progress of the order fulfillment and the place of delivery or collection of goods (delivery monitoring). This is usually done by sending information about the status of the shipment by e-mail. Another form is a text message or website access. Such information is also provided by external entities connected with the execution of orders placed via the Internet, e.g. by a payment service provider and a logistics operator. With up-to-date information, the customer has more knowledge about the fulfillment of his/her order and a greater sense of security. Therefore, they will be willing to repeat their purchases [1].
- Convenience of return – Internet shopping, in contrast to shopping in stationary shops, is convenient, but at the same time excludes the possibility to check goods before buying them. Customers cannot see or touch them, so if the products fail to meet their expectations, they might want to return them, which is not pleasant for the customers. Returns take extra time, and customers often have to pay for them. Also, the situation may be stressful for some people - especially if they do it for the first time. They do not always know where or how to report a return, how to prepare and pack the goods, how to order a courier or where to bring the shipment. They are not sure if they need to pay for the return, if and when they will be refunded. Returns in e-commerce should, then, be seamless and leave a good experience [9].
- The right cost – the biggest logistical cost in e-commerce is the cost of delivery. The faster the delivery, the higher the cost. Delivery costs are attempted to be reduced by optimizing the last delivery process, the so-called last mile. It consists in offering various forms of shipment self-collection. More and more often, customers are expecting free product delivery and returns, especially when their order exceeds a certain amount of money. Apart from delivery, an important cost factor is the preparation of the order, i.e. product picking and packing. Due to the fact that costs are part of the other value elements mentioned, we did not distinguish them as a separate structure.

All these activities have an impact on the value for the customer and, in turn, on his/her loyalty [2, 12].

The above observations are the basis for the research hypothesis, which is as follows:
H1. *Logistics value positively affects perceived customer loyalty*.

3 Logistics Value, Closeness to Customer, and Perceived Customer Loyalty

Strategies aimed at creating and delivering the value have led companies to create it together for the final customer and to change business models, which are characterized

by cooperation with external specialized partners, co-creating value chains or networks. The joint efforts of companies and buyers can create the desired value.

In terms of entities in e-commerce, the value chain consists of: customers, e-tailers, suppliers, and complementors. The customer is almost any individual or institutional person who has access to the Internet. E-tailers are mostly companies that have their own online shops or sell products on marketplaces, auction platforms, etc. Suppliers offer products sold via the electronic channel and complementors provide services and supporting e-commerce, e.g. logistic services, financial services, IT solutions, comparison shopping websites [5].

These individual links have different customer relationships. Closest to the customers are the e-tailers who sell products directly to them. Then, there are suppliers who deliver the products to the sellers. The most distant ones are complementors. Only residual information reaches them. For this reason, they do not have full knowledge of the customers, especially their expectations and behaviours. They do not know whether customers are satisfied with their purchases or whether they are loyal.

On the basis of the above considerations, we formulated the following research hypothesis: **H2.** *Closeness to the customer in the value chain is negatively related to perceived customer loyalty.*

Because there is a relationship between the logistics value and perceived customer loyalty, it is worthwhile to look for other dependencies. It is interesting to investigate the mediation factor between those two variables. We supposed that the relationship between the logistics value and perceived customer loyalty is stronger in a situation where members of the value chain are further away from the customer.

The presented observations lead to the next research hypothesis: **H3.** *Closeness to the customer in the value chain moderates the relationship between logistics value and perceived customer loyalty.*

4 Methodology

Data Gathering

The research assumed that the respondent was to look at returns through the final customer's "eyes", regardless of their role in e-commerce. The questions addressed to each of these groups were therefore about how customers perceived the issue of logistics value and loyalty. The main reason of this was that the central point of the e-commerce system is the customer who ultimately evaluates the value and converts it into a monetary equivalent for the other network members [5].

CATI (computer-assisted telephone interview) was chosen as the main technique of information collection in the research, preceded by focus group interviews. It was complemented by a CAWI (computer-assisted web interview) method.

The study was conducted from November 2017 to May 2018 by an external agency. A total of 800 correctly filled questionnaires was obtained (200 records in each group – e-tailers, customers, suppliers, and complementors) [5]. In addition, the survey was supplemented by 392 interviews using CAWI. In total, we analyzed 1192 questionnaires.

Measures

Logistics Value. In this study, the logistics value was measured using 23 items. All the items used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Exploratory factor analysis (Principal Component Analysis) with varimax rotation was used to explore the factorial structure of the logistics value. This yielded five factors (see Table 1), explaining 48.9% of the total variance. They were named as follows: Convenient packaging, Delivery monitoring, Speed of delivery, Convenient place of delivery, Convenience of return. The results showed that Cronbach's α of these variables was 0.87, 0.81, 0.79, 0.72, 0.74 respectively. All Cronbach's α were above 0.70 and the α of the total scale was 0.79, indicating satisfactory internal consistency of the logistics value variable.

Table 1. Results of exploratory factor analysis of logistics value questionnaire (N = 1192)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	Convenient packaging	Delivery monitoring	Speed of delivery	Convenient place of delivery	Convenience of return
V2.70	**0.768**	0.043	0.177	0.109	0.022
V2.69	**0.752**	0.033	0.142	0.045	0.071
V2.71	**0.720**	0.206	0.104	−0.072	0.047
V2.73	**0.669**	0.031	0.105	0.096	0.238
V2.67	**0.627**	0.263	0.055	0.133	0.077
V2.72	**0.626**	−0.024	0.218	0.240	0.159
V2.62	0.093	**0.741**	0.152	0.069	0.147
V2.63	0.189	**0.714**	0.03	−0.001	0.168
V2.61	0.067	**0.707**	0.063	0.139	0.111
V2.60	0.002	**0.684**	0.199	0.171	0.042
V2.50	0.208	0.084	**0.758**	0.070	0.122
V2.49	0.309	0.014	**0.758**	0.115	0.066
V2.59	0.262	0.320	**0.607**	0.138	0.147
V2.58	0.097	0.415	**0.578**	0.148	0.132
V2.56	0.185	0.034	0.170	**0.756**	0.089
V2.55	0.063	0.151	−0.058	**0.741**	0.153
V2.57	0.238	0.094	0.230	**0.689**	0.044
V2.54	0.065	0.162	0.061	**0.544**	0.034
V2.74	0.142	0.162	0.033	0.177	**0.701**
V2.78	0.070	0.256	0.139	0.015	**0.655**
V2.75	0.093	0.268	−0.054	0.036	**0.616**
V2.77	0.308	0.084	0.337	0.133	**0.582**
V2.76	0.446	0.091	0.256	0.131	**0.509**
Variance	14.48%	11.91%	7.98%	7.40%	7.14%

Customer Loyalty. A 3-item scale was chosen to measure the degree of perceived customer loyalty by members of the value network. A 5-point Likert scale was used in all items. The items and the reliability of each variable are presented in Table 2.

Table 2. Constructs, items and scales

Logistics value. *Cronbach's alpha = 0.79*
Convenient packaging. Cronbach's alpha = 0.87
1. Customers buy from online sellers who use environmentally friendly packaging materials
2. Customers buy from online sellers whose shipments are easy to open
3. Customers buy from online retailers who match the size of the packaging to the size of the product
4. Customers buy from online retailers from which packaging you can easily delete your personal data
5. Customers buy from online retailers whose shipments are aesthetically packed
6. Customers buy from online retailers who offer gift packaging
Delivery monitoring. Cronbach's alpha = 0.81
1. Customers buy from online sellers who cooperate with couriers informing about the time of delivery
2. Customers buy from online retailers cooperating with couriers who are on time
3. Customers buy from online sellers who offer tracking shipments
4. Customers buy from online sellers who inform about the status of the order
Time and flexibility of delivery. Cronbach's alpha = 0.79
1. Customers buy from online retailers who offer delivery of products on the same business day
2. Customers buy from online sellers who offer delivery of products within 2 h
3. Customers buy from online retailers who offer the option of delivery on non-working days
4. Customers buy from online retailers who offer the opportunity to choose delivery times
Convenient place of delivery. Cronbach's alpha = 0.72
1. Customers buy from online sellers who offer deliveries to PUDO (pick up drop off) points (e.g. a traffic kiosk. gas station)
2. Customers buy from online sellers who offer deliveries to self-service terminals (e.g. for a parcel locker)
3. Customers buy from online sellers who offer pickup at their branches
Convenience of return. Cronbach's alpha = 0.74
1. Customers buy from online sellers who offer free return of products
2. Customers buy from online sellers who offer the possibility of returning products over 14 days
3. Customers buy from online sellers who have an easy return procedure

(*continued*)

Table 2. (*continued*)

4. Customers buy from online sellers who offer return of used products
5. Customers buy from online retailers who offer returnable packaging
(1 = strongly disagree to 5 = strongly agree)
Customer loyalty. *Cronbach's alpha = 0.80*
1. Customers of online retailers will continue to buy with them. even if the products offered by other online retailers are more competitive
2. Customers of online retailers will continue to buy with them. even if the delivery of products offered by other online retailers will be more competitive
3. Customers of online retailers will continue to buy with them. even if payments for products offered by other online retailers are more competitive
(1 = strongly disagree to 5 = strongly agree)

Proximity to the Customer in Value Networks. As mentioned, the members of value networks were divided into four groups: customers, e-tailers, suppliers and complementors. It was assumed that the complementors were furthest from the final customers, the suppliers were a little closer to them, the e-tailers were even closer, while the customers represented the actual level of customer loyalty in the value network. Customer proximity was rated on a scale of 1 to 4, where 1 meant the position of complementors, 2 – suppliers, 3 – e-tailers and 4 – customers, respectively.

Hierarchical Linear Modeling Analysis and Hypothesis Testing

Value networks are multi-level, hierarchical phenomena. Researchers cannot ignore the complex and cross-level nature of value networks when examining the problem of customer value created throughout the network and its consumer loyalty. In this study we analyze two-level hierarchical data structures concerning all members of value networks (level-1 unit) and roles in the value network (network links) (level-2 unit). At the highest level of the hierarchy (level-2) there is a variable related with network links – it is proximity to the customer in the value network. Variables at the individual levels are nested within level-2 groups, these are: logistics value and customer loyalty, which are outcome variables as well.

To test our hypotheses, we used hierarchical linear modeling (HLM), a statistical technique capable of analyzing hierarchical, cross-level data [13]. It simultaneously estimates the relationship within a certain level and between or across hierarchical levels. HLM achieves this process by performing regressions of regressions [4]. To assess the three hypotheses, a sequence of models is required: the null, random-coefficient regression, means-as-outcomes regression, intercept-as-outcomes and intercepts-and-slopes-as-outcomes models. The models and results of HLM are presented in Table 3. The HLM 7 program was used for the hierarchical linear modeling in this study.

Certain prerequisites must be met to perform cross-level analyses. First, there must be systematic within- and between-group variance in the dependent variable. This condition

is necessary because it is assumed that the dependent variable (customer loyalty) is significantly related to both the variable at the individual level (logistics value) and the variable at the group level (proximity to the customer in the value network). It tests whether there are any differences at the group level on the outcome variable and confirms that HLM is necessary. This is assessed in HLM using the null model (a one-way analysis of variance). The HLM program creates chi-square statistics to test the significance of variance between groups. The statistically significant chi-square for the dependent variable shows that the variance between the groups is significantly different from zero, thus indicating the differences between the groups. A statistically significant chi-square for "customer loyalty" has been achieved (χ^2 (3) = 143.51; $p < 0.001$); which supports the use of HLM. Additionally, using information estimated in the null model, an intraclass correlation coefficient (ICC) can be computed that represents the percent of the total variance in the dependent variable that is between groups [14]. The following equation was used:

$$ICC = \frac{\tau_{00}}{\tau_{00} + \sigma^2} = \frac{0.13912}{0.13912 + 0.80972} = 0.146$$

This means that about 15% of the variance of "customer loyalty" results from the group level. In other words, 15% of the inter-individual variance of "customer loyalty" is generated only by differences related to the role in the value network.

The essence of model M2 (see Table 3) is the ability to test the relationship between the variable from level 1 and the dependent variable, i.e. between "logistics value" and "customer loyalty". This relationship is positive and statistically significant ($\gamma_{10} = 0.34$. $p < 0.05$). This means that Hypothesis 1 has been supported. The measure of the effect size is the calculation of variance in "customer loyalty", explained by an independent variable from level 1 (logistics value). The result indicates (effect = 0.056; see Table 3) that the logistics value explains 5.6% of the variance in the perceived customer loyalty.

The main purpose of the M3 model is to test the significance and direction of the relationship between the level-2 predictor variable (customer proximity in the value network) and the dependent variable (customer loyalty). The results of the analysis support the fact that proximity to the customer in the value network predicts customer loyalty ($\gamma_{01} = -0.27$; $p < 0.05$). To measure the effect size, the explained variance in the outcome variable by the level-2 predictor variable is calculated (0.767; see Table 3). The results confirm that proximity to the customer in the value network explains 76.7% of the between-measures variance in "customer loyalty".

After determining that there is significant variation between the groups in the level-1 intercept, we can directly test the cross-level hypothesis (Hypothesis 2). The M4 model indicates whether or not the variable at the group level ("customer proximity in the value network") has a significant impact on the dependent variable ("customer loyalty"). The γ_{01} parameter is -0.30; $p < 0.001$. This result confirms Hypothesis 2, proving that the greater closeness to the customer in the value network, the lower the perceived customer loyalty is.

Next, it can be examined whether the variance of the slope coefficient in the groups is significantly related to the independent variable at the group level ("customer proximity"). This is a direct test for a moderator at various levels (Hypothesis 3). Model M5 is a direct test of Hypothesis 3, saying that proximity to the customer in the value

network moderates the logistics value-customer loyalty relationship. The HLM results reveal that the interaction is not significant ($\gamma_{11} = 0.15$; $p = 0.39$). It means that there is no cross-level interaction between the level-1 and level-2 predictors. Hypothesis 3 is not supported, then. The interaction is not statistically significant; therefore, it does not confirm that closeness to the customer in the value network moderates the relationship of logistics value and customer loyalty. Thus, we cannot say that the relationship between the logistics value and perceived customer loyalty is stronger in a situation where members of the value network are further away from the customer.

Table 3. Results of HLM analysis

Model	Parameter estimates							
	γ_{00}	γ_{01}	γ_{10}	γ_{11}	σ^2	τ_{00}	τ_{11}	Effect
M1: Null model (One-way ANOVA) L1: $(CL) = \beta_{0j} + r_{ij}$ L2: $\beta_{0j} = \gamma_{00} + u_{0j}$	3.55***				0.809	0.139		
M2: Random Coefficients Regression Model L1: $(CL) = \beta_{0j} + \beta_{1j}(LV) + r_{ij}$ L2: $\beta_{0j} = \gamma_{00} + u_{0j}$ $\beta_{1j} = \gamma_{10} + u_{1j}$	3.50***		0.34*		0.764	0.121	0.080	0.056
M3: Means-as-Outcomes Model L1: $(CL) = \beta_{0j} + r_{ij}$ L2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(PC) + u_{0j}$	4.21***	−0.27**			0.809	0.032		0.767
M4: Intercepts-as-Outcomes Model *L1*: $(CL) = \beta_{0j} + \beta_{1j}(LV) + r_{ij}$ *L2*: $\beta_{0j} = \gamma_{00} + \gamma_{01}(PC) + u_{0j}$ $\beta_{1j} = \gamma_{10} + u_{1j}$	4.25***	−0.30***	0.35*		0.762	0.006	0.073	0.946
M5: Intercepts-and-Slopes-as-Outcomes Model *L1*: $(CL) = \beta_{0j} + \beta_{1j}(LV) + r_{ij}$ *L2*: $\beta_{0j} = \gamma_{00} + \gamma_{01}(PC) + u_{0j}$ $\beta_{1j} = \gamma_{10} + \gamma_{11}(PC) + u_{1j}$	3.49***	−0.27**	0.33	0.15	0.762	0.006	0.074	0.910

Note: ***indicates $p < 0.01$; **indicates $p < 0.05$; *indicates $p < 0.1$;
L1 – Level 1; L2 – Level 2; CL – perceived customer loyalty; PC – proximity to the customer in value networks; LV – logistics value;
γ_{00} = Intercept of Level 2 regression predicting β_{0j}; γ_{01} = Slope of Level 2 regression predicting β_{0j}; γ_{10} = Intercept of Level 2 regression predicting β_{1j} (pooled Level 1 slopes); σ^2 = Variance in Level 1 residual (i.e. variance in r_{ij}); τ_{00} = Variance in Level 2 residual for models predicting β_{0j} (i.e. variance in U_0); τ_{11} = Variance in Level 2 residual for models predicting β_{1j};
Effect = (σ^2 of based model Mn – σ^2 of research model Mn + 1)/σ^2 of based model Mn.

5 Conclusion

Hierarchical linear modeling was used to analyze a data structure where members of value networks (level 1) were nested within groups (level 2) representing the roles in value networks. The relationship between perceived customer loyalty (level-1 outcome

variable) and both logistics value (level-1 predictor variable) and proximity to the customer in value networks (level-2 predictor variable) were of special interest. Tests were conducted in 5 phases: the null model, random-coefficient regression model, means-as-outcomes regression model, intercept-as-outcomes model and intercepts-and-slopes-as-outcomes model. The first model revealed the ICC (intraclass correlation coefficient) of 0.146, i.e. 14.6% of the variance in perceived customer loyalty was between members of the value network within a given role in the network. The random-regression coefficient model was tested using the logistics value as the only predictor variable. The result indicated that perceived customer loyalty levels were higher when logistics value levels were also higher. The means-as-outcomes model added proximity to the customer in value networks as a level-2 predictor variable. It turned out that perceived customer loyalty was greater in network links (groups) which were further away from customers in the value network. Finally, intercepts-and-slopes-as-outcomes model was tested with all predictor variables. The aim was to test the presence of interactions between the predictor variables. The cross-level interaction between the logistics value and proximity to the customer in the value networks was not statistically significant, which meant that the degree of distance from the customer in the value network had no influence on the strength of the relationship between the logistics value and the perceived customer loyalty.

Attention should be paid to the limitations of the conducted research procedure – methodological and substantive ones. The former concern the very essence of the model, which simplifies the economic reality and thus reduces the complex factual situation. The latter are the limitations of the research into logistics value. Future research by the authors is to focus on extending the value of e-commerce to include other components.

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References

1. Bansal, H., McDougall, G., Dikolli, S., Sedatole, K.: Relating e-satisfaction to behavioral outcomes: an empirical study. J. Serv. Mark. **18**(4), 290–302 (2004)
2. Chiu, C.-M., Lin, H.-Y., Sun, S.-Y., Hsu, M.-H.: Understanding customers' loyalty intentions towards online shopping: an integration of technology acceptance model and fairness theory. Behav. Inf. Technol. **28**(4), 347–360 (2009)
3. Drucker, P.F.: The Practice of Management: A Study of the Most Important Function in America Society. Harper & Brothers, New York (1954)
4. Hofmann, D.A.: An overview of the logic and rationale of hierarchical linear models. J. Manag. **23**, 723–744 (1997)
5. Kawa, A., Światowiec-Szczepańska, J.: IT value for customer: its influence on satisfaction and loyalty in e-commerce. In: Nguyen, N.T., Gaol, F.L., Hong, T.-P., Trawiński, B. (eds.) ACIIDS 2019. LNCS (LNAI), vol. 11432, pp. 489–498. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-14802-7_42
6. Kotler, P.: Marketing Management: Analysis Planning Implementation and Control. Prentice Hall, Englewood Cliffs (1994)

7. Koufteros, X., Droge, C., Heim, G., Massad, N., Vickery, S.K.: Encounter satisfaction in e-tailing: are the relationships of order fulfillment service quality with its antecedents and consequences moderated by historical satisfaction? Decis. Sci. **45**(1), 5–48 (2014)
8. Lee, G.G., Lin, H.F.: Customer perceptions of e-service quality in online shopping. Int. J. Retail Distrib. Manag. **33**(2), 161–176 (2005)
9. McCollough, M., Berry, L., Yadav, M.: An empirical investigation of customer satisfaction after service failure and recovery. J. Serv. Res. **3**(2), 121–137 (2000)
10. Mentzer, J.T., Flint, D.J., Kent, J.L.: Developing a logistics service quality scale. J. Bus. Logist. **201**, 9–32 (1999)
11. Novack, R.A., Rinehart, L.M.: An internal assessment of logistics value. J. Bus. Logist. **15**, 113–152 (1994)
12. Piyathasanan, B., Mathies, Ch., Wetzels, M., Patterson, P.G., Ruyter, K.: A hierarchical model of virtual experience and its influences on the perceived value and loyalty of customers. Int. J. Electron. Commer. **19**(2), 126–158 (2015)
13. Raudenbush, S.W.: Educational applications of hierarchical linear models: a review. J. Educ. Stat. **13**, 85–116 (1998)
14. Raudenbush, S.W., Bryk, A.S.: Hierarchical Linear Models. Sage, Newbury Park (1992)
15. Rutner, S.M., Langley, C.J.: Logistics value: definition. Process and measurement. Int. J. Logist. Manag. **2**, 73–82 (2000)
16. Zeithaml, V.A.: Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. J. Mark. **52**(3), 2–22 (1988)