



IT Value for Customer: Its Influence on Satisfaction and Loyalty in E-commerce

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Abstract. Today, in the time of a technological revolution, which has a great influence on the economy, we can say that the world is smaller than ever. IT solutions have significantly changed business activities, which can be developed in almost any place. A specific beneficiary of this amendment is e-commerce. The customer does shopping online because of lower prices, convenience, a wider range of products, etc. Beside logistics and marketing reasons, they pay more and more attention to other aspects, too. One of them is IT solutions which support the majority of processes in online retailers, especially marketing communication and website usability. They can have influence on their satisfaction, and, consequently, on their loyalty. These aspects are relatively rarely studied. The goals of this paper are to identify the components of value for customers related to IT, and to present their influence on satisfaction and loyalty in e-commerce. We administered our survey to managers representing e-tailers, suppliers, complementors, and to customers.

Keywords: E-commerce · Value for customer · Satisfaction · Loyalty

1 Introduction

E-commerce has quite a short history and initially its meaning was marginal. Nowadays, however, e-commerce is recognized as one of the most important sectors of the economies of many countries, including Poland. The dynamic development of e-commerce is driven by rapidly expanding Internet access, but also by growing mobility and popularity of portable devices, via which customers order goods and services at a convenient time and place more and more frequently. They do not only order things of greater value, but, more and more often, everyday products to which they want to have very fast access.

According to the research carried out by Gemius [7], the main reason behind the fact that we buy online is the convenience of twenty-four-hour access to stores, lower prices, greater assortment selection than in brick-and-mortar stores and the ease of comparing different offers available on the market. Sales aspects seem to be very significant. However, it must be stressed that logistics issues, such as a convenient form of delivery and return of the goods purchased are also taken into account by customers. That is why logistics plays an increasingly important role in e-commerce. It not only

attracts new customers, but also helps to retain the existing ones by punctuality, conformity of the delivered products with the order, no damage. These two aspects are extensively described in the literature, in particular the one related to sales. However, there is a deficit of empirical studies on the IT solutions which support the majority of the processes in e-tailers, especially website usability and marketing communication. Thanks to them, customers can have access to information about companies and their products at any time on the e-tailer website, in social media or blogs provided by experts. They can easily find offers, compare them and read other users' opinions. They may also purchase new products in a simple way by registering at online store or even without registration. All the positive experience in all the processes of online shopping is positively related to customer satisfaction.

Many different entities are involved in e-commerce. For this reason, e-commerce should be treated as a system which consists of e-tailers, their customers, suppliers, and complementors. E-tailers are mostly companies that have their own online shops or cooperate with other intermediaries such as marketplaces, auction platforms. The customers can be almost any individual or institutional persons who have access to the Internet and financial resources. Suppliers include suppliers of products sold through electronic channels. However, complementors are understood as subcontractors supporting e-commerce, e.g. providers of logistics services, financial services, IT solutions, etc.

The subject of value in e-commerce, which is analyzed from different perspectives by different entities, is still little recognized, even though the issue of value has been discussed in the literature for many years. In particular, there is a lack of empirical research that would address the issue of value creation for customers from different perspectives. Therefore, the aim of the article is to identify customer value factors related to IT created and delivered by e-tailers, suppliers, complementors, and customers. The second goal is to present the influence of this value on satisfaction, and, subsequently, on loyalty of customers in e-commerce.

2 Value for Customer

Originally introduced in 1954 by P. Drucker, the notion of value is defined in the literature in various ways. Broadly speaking, value can be defined as an evaluation of the utility of a product understood as a relationship between what has been received and what has been given – value represents a compromise between what can be obtained and what should be given. The notion of value in management sciences often refers to the customer. In that case it is described as a value for customer [12].

The existing body of literature on e-commerce is primarily devoted to explaining the essence of e-commerce, e-customer characteristics and e-marketing concepts. To a large extent, it is also focused on the B2B market. Moreover, the literature provides a little insight into the area of value creation despite the fact that the issue of value and value creation has been investigated for many years. The research work of Zott et al. [24], in which the authors focus on relationships between firms operating in the Internet environment to create a value, can serve as an example. On the other hand Piyathanasan et al. [17] in their article analyze how customers perceive value during contacts with e-tailers.

The theoretical considerations as well as the research carried out are very fragmented, which is manifested in analyzing value creation from an individual market participant's point of view. The customers and companies in most cases serve as focal points. On the other hand, the attempt to simultaneously include the point of view of both customers and companies is reduced to analyzing value creation in dyadic relationships. A simplified perspective is adopted in which a single company creates value for a single customer without taking into account other entities directly or indirectly involved in the provision of the value.

With the abovementioned characteristics of the research into value creation in mind, namely fragmentation of the research and the dyadic approach to the problem, it was postulated to investigate this issue (value creation) in a broad and holistic way. This requires to include an analysis of all (if possible) market entities involved in value creation. A reaction to this need is a concept of value networks that can be defined as spontaneous combinations of actors interacting to co-produce service offerings, exchange them, and co-create value [14]. The value network includes not only companies but also customers.

3 Value for Customer Related to IT in E-commerce

3.1 Satisfaction and Loyalty

Olivier [16] claims that satisfaction is the customer's fulfillment response and notices that satisfaction is not merely about the extent of being pleased, but can be described as a process as well [15]. According to Kotler [12], satisfaction is understood as the degree to which the perceived features of the product meet the expectations of the buyer. Satisfaction is, then, a gradable feeling. In the case of e-commerce, satisfaction means contentment with the transaction and a sense of understanding the customer's needs by the entities of network value.

In turn, loyalty means the customer's willingness to buy the product of a given brand or to use a service again. It leads to repeatability of purchases, despite the situation impacts and marketing efforts to promote competing brands [16]. This means that the customer will continue to buy even if the products and services offered by other sellers are more competitive. Loyalty is a determinant of the customer's trust in the company and is evident primarily in the customer's emotional attachment to a given entity and maintenance of a special type of ties. In the case of e-commerce, loyalty does not only refer to the product itself, but also to the place where one re-purchases, such as marketplaces.

Satisfaction and loyalty are well-known constructs widely discussed in the literature in various industries. Along with the dynamic development of e-commerce, researchers have started to study e-satisfaction and e-loyalty. This applies in particular to the impact of satisfaction on loyalty, where most studies show a positive effect of satisfaction on loyalty [4] or repurchase intention [2, 13]. Moreover, researchers have found out that the link between satisfaction and customer spending is positive when higher satisfaction results in more spending in e-commerce [15].

The above observations are the basis for the research hypothesis, which is as follows: **H1.** *Satisfaction has positive impact on loyalty in e-commerce.*

3.2 Moderation Effect Between Satisfaction and Loyalty

In most studies, many factors, such as trust and commitment, are positively linked with satisfaction or loyalty [20]. They are increasingly associated with customer value. For example, Chiou and Pana studied the indirect impact of service quality on customer loyalty among online bookshop customers. The authors confirmed a positive correlation between perceived quality and customer satisfaction and customer trust, which in turn affect customer loyalty [2].

Nisar and Prabhakar [15] supported the hypothesis that customer satisfaction has a positive impact on consumer spending in American-based e-commerce retailers. It is very important to note that the received value should be conceptualized and measured as a cognitive construct, but both satisfaction and loyalty should be conceptualized as affective constructs [16]. However, satisfaction can be a moderator between value and loyalty in e-commerce. That is why in this paper, apart from exploring the direct relationship between value for customers and loyalty, the moderation effect between these two constructs is studied.

3.3 IT-Assisted Marketing Communication

Information technologies are widely used in marketing activities, especially those related to the Internet, which is known as e-marketing. The researchers describe it as company activities undertaken to inform customers, communicate, promote and sell by means of the Internet [19]. Here, the focus is on marketing communication which has been used for many years with the aim of developing relationships with organizational stakeholders. Thanks to the Internet this communication has become more interactive. One of excellent examples of new marketing communication tools is social media which have provided yet another platform for a multi-step theory of communication [15]. Social media are based on word of mouth, which has been treated as a major influence on what people know, feel and do. The rapid development of social media has led to a transformation of e-commerce from a product-oriented environment into a social and customer-centered one.

Thanks to media tools such as forums and blogs collective intelligence is provided, which allows to deepen knowledge about products and services or to solve specific problems [10]. Blogs are a specific marketing tool which is based on leaders' opinion. Consumers often consider opinions of leaders in their purchase decision-making processes, not only after buying a product or in order to check how to use it, but also before the purchase to know more about it [22]. Research shows that many customers depend on ratings and reviews given by others who have already purchased the products and are using them [18].

IT-assisted marketing communication brings customers a lot of benefits. One of them is that more customized information can be communicated in the same unit of time, which may lead to a reduction of the transaction and coordination costs. Moreover, customers are able to easily access firms and get to know their brands at any time

[15]. The beneficiaries are also customers. If they have more appropriate information about e-tailers, their products and services, they can be more satisfied with their shopping. Electronic word-of-mouth recommendations have significant importance in shaping customer behavior. According to Hsu and Lin [8], social media based on social norms and identification are included as additional beliefs and have influence on customer intentions to use apps and make in-app purchases.

On the basis of the above considerations, we formulated the following hypotheses:

H2. *IT-assisted marketing communication has positive impact on loyalty in e-commerce.*

H2a. *IT-assisted marketing communication positively moderate the link between satisfaction and loyalty in e-commerce.*

3.4 Website Customization

Around 25 years ago, the first online shops started to be established. Amazon was founded in 1994 and eBay was opened in 1995. Initially, very simple websites were used, where orders were placed through a special form. Over time, virtual baskets and other amenities imitating shopping at a traditional shop appeared. Currently, an e-tailer's website is equipped with many tools facilitating the whole shopping process.

The website of a shop, apart from the previously mentioned adverts, social media, blogs, is an essential form of communication with the customer in e-commerce. Due to its complexity and lack of occurrence in traditional marketing communications, it has been treated in this article as a separate construct.

The homepage of the online store is very important, because it is visited most frequently by customers in the first place. It plays the role of a business image of the shop, represents its strategy and distinguishes it from the competition, so it must contain information tailored to the profile of the company and its products. In addition to the homepage, the online shop should have other website categories with various specific objectives: product category pages that allow customers to browse and compare products freely; a product card that contains detailed information about the product and a landing page that is a dedicated website, e.g. with a promotional campaign.

The website of a shop should also include a tool that enables to compare products. It makes the user spend more time on the website, analyze information about several products and search for a product most suitable for their needs. Companies also run cross-selling and up-selling activities, which consist in presenting complementary or similar products.

Buyers should be offered different options of searching for a product, e.g. by product category, using a search engine (without a need to leave the store and search, for example, via Google). The facilitating search for product information [23] is very important because customers can easily change e-retailers – it is enough to find another website with the given product. Well-customized websites attract customers and make them attached to e-tailer brands or Internet platforms. An example is seeking products by customers who use a search engine of a marketplace or an online retail service (e.g. Amazon, AliExpress) as their first choice [11].

Another very important aspect of websites is personalization, which allows to keep your customers by matching products or services to their individuality or preferences.

Companies have an opportunity to build closer relationships with customers by using the information that the customer gives when registering or by agreeing to the cookies policy. According to Fernandez-Lanvin [6], personalization enhances customer retention and increases sales by improving customer perception of the site quality.

The access to customer information, storage, processing and sharing thereof must be transparent. E-tailers cannot fail to obey the privacy policy [23]. Research shows that insufficient, incomplete and wrong information in purchase process decision makes customers less satisfied, and, subsequently, results in refusal to do shopping. Zhou et al. [23] suggest that improving the transparency attracts consumers and increases the purchase rate.

Website customization is related to ease of use as well as shopping directions, navigation, interaction, personality and review swapping. According to researchers, website design and the detail extent with respect to product information provided are some of the main elements influencing customer satisfaction in e-commerce. Moreover, they proved that website design positively affects the purchase intention [15].

The presented observations lead to another research hypotheses:

H3. *Website customization has positive impact on loyalty in e-commerce.*

H3a. *Website customization positively moderate the link between satisfaction and loyalty in e-commerce.*

4 Methodology

The research presented in this paper was carried out for the needs of a project whose aim is to develop a model of value network creation in e-commerce. Achievement of this goal will be possible thanks to conducting three-stage research, which consists of: an in-depth literature review, empirical research and multi-level modeling. The empirical research was divided into two parts: research using the qualitative method and research using the quantitative method. This article presents the results of the second type of research.

The research assumed that the respondent (representing e-tailers, suppliers, complementors) was to look at the value through the final customer's "eyes", regardless of their role in e-commerce. The main reason of this was that the value network is created around its customers. 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 [11].

CATI (computer-assisted telephone interview) was selected as a technique of information collection, which had been preceded by FGIs (focus group interviews). The research with the use of qualitative methods was aimed at a preliminary analysis of the problems of value creation and providing information necessary for the proper organization of the research by the quantitative method, including, most importantly, the design of a measuring instrument.

The database of companies operating in e-commerce, suppliers and customers in Poland was used as the sample. It included, inter alia, data from the Regon database kept by the Central Statistical Office in Poland and Polish commercial databases, such as DBMS, Bisnode. Approximately 10 thousand respondents took part. In all four

general populations, non-random purposeful sampling was applied. The sample was selected from those entities that had relevant experience in selling (e-tailers) or purchasing (customers) products via the Internet, cooperating with e-tailers (suppliers and complementors).

The research was conducted between November 2017 and May 2018 by an external entity – a research and expert agency with extensive experience in empirical research. In total, 800 correctly completed questionnaires were received (200 records in each group – customers, e-tailers, suppliers, and complementors). There were not any errors and incomplete information; that is why no surveys were rejected. All questionnaires were qualified for further analysis, which, assuming the size of the fraction of 50% and the confidence level of 95%, gives an acceptable measurement error of 7% in each group [9].

In the study 5 measures, which correspond to the previously presented theoretical considerations, were distinguished. These are respectively: IT-assisted marketing communication, website customization, satisfaction, and loyalty. Since relationship related variables were latent, we adopted multi-item scale approach in this research to increase item reliability. We used all items for measuring variables of interest from existing literature. The respondents were asked to indicate the extent to which they agreed with a given description using a five-point Likert-type scale. In all constructs the scale was as follows: 1 = strongly disagree to 5 = strongly agree. The quality of the results were verified using validity and reliability measures (all Cronbach's alpha coefficients of constructs were higher than 0.75).

4.1 Analysis and Results

We analysed the data using hierarchical moderated multiple regression, which is particularly appropriate for testing of moderation effects [1] proposed in hypotheses H2a and H3a. The empirical models include satisfaction, IT-assisted marketing communication and website customization variables and the interaction between satisfaction and IT-assisted marketing communication and satisfaction and website customization as explanatory variables. To avoid the problem of collinearity of variables in the regression model with interaction terms all continuous predictors (including both independent variables and moderators) were mean-centered (i.e., the mean of the variable was subtracted from it, so the new version has a mean of zero) [5]. We also include control variables of regions and three dichotomous variables indicating a role in value network, i.e. e-tailer, supplier or complementor. Table 1 reports means, standard deviation, and Pearson's correlation coefficients for all variables used in this study.

Table 2 presents the hypothesised results of main interaction effects. For all the regressions, we report robust standard error to address the heteroscedasticity.

Model 1 is the baseline model with all control variables included. Model 2 and 3 includes main effects put forward in hypotheses 1, 2 and 3. Model 4 includes the interaction terms needed to test hypotheses H2a and H3a. Corroborating H1, the effect of satisfaction on loyalty is found to be significant and positive ($\beta = 0.527$, $p < 0.001$) as shown in Model 2. The results of Model 3 strongly support H2, which proposes a positive impact of IT-assisted marketing communication on loyalty ($\beta = 0.215$, $p < .001$). However, the results of Model 3 do not support H3, which proposes a

Table 1. Descriptive statistics

	Variable	Mean	S.D.	1	2	3	4	5	6	7
1.	Loyalty	3.472	0.960							
2.	Satisfaction	3.901	0.678	0.555**						
3.	Web customization	3.655	0.705	0.240**	0.231**					
4.	Communication	3.370	0.818	0.366**	0.167**	0.564**				
5.	Regions	8.100	4.467	0.004	-0.101**	-0.084*	-0.080*			
6.	Role: e-tailer	0.250	0.433	-0.306**	-0.410**	-0.026	-0.025	0.057		
7.	Role: supplier	0.250	0.433	0.249**	0.087*	0.108**	0.234**	-0.062	-0.333**	
8.	Role: complementor	0.250	0.433	0.235**	0.186**	-0.043	0.080*	-0.035	-0.333**	-0.333**

*p < .05, **p < .01; N = 800

Table 2. Hierarchical regression analysis results

	Y = Loyalty			
	Model 1	Model 2	Model 3	Model 4
<i>Control variables</i>				
Regions	0.040 (0.007)	0.082** (0.006)	0.091** (0.006)	0.088** (0.006)
Role: e-tailer	-0.097** (0.087)	0.119** (0.079)	0.059* (0.078)	0.072* (0.078)
Role: supplier	0.323*** (0.087)	0.346*** (0.074)	0.261*** (0.076)	0.266*** (0.076)
Role: complementor	0.311*** (0.087)	0.294*** (0.074)	0.237*** (0.075)	0.248*** (0.075)
<i>Main effects</i>				
Satisfaction		0.527*** (0.043)	0.486*** (0.042)	0.490*** (0.043)
Communication			0.215*** (0.040)	0.218*** (0.040)
Web customization			-0.002 (0.045)	0.004 (0.045)
<i>Interaction effects</i>				
Communication × satisfaction				0.037 (0.054)
Web customization × satisfaction				0.065** (0.062)
R ²	0.183	0.412	0.451	0.459
Adjusted R ²	0.179	0.408	0.446	0.453
Δ Adjusted R ²	-	0.228	0.039	0.008
ΔF-statistics	44.556***	308.292***	28.199***	5.865***

Note: Standardised beta coefficients reported. Standard errors reported in parentheses. Significance levels: *p < 0.05, **p < 0.01, ***p < 0.001.

positive impact of website customization on loyalty. The coefficient for website customization is non-significant ($\beta = -0.002$, $p > 0.05$). Compared with the baseline model, Model 2 and 3 explain a significantly greater variance of the firm loyalty (respectively $\Delta R^2 = 0.228$, $p < 0.001$ and $\Delta R^2 = 0.267$, $p < 0.001$). H2a proposes that IT-assisted marketing communication positively moderates the link between satisfaction and loyalty. In Model 4 this interaction term ($\beta = 0.037$, $p > .05$) is not

statistically significant. However, the interaction term between website customization and loyalty is positive and statistically significant ($\beta = 0.065$, $p < 0.05$). These findings support H3a. Compared with Model 3, Model 4 does not explain a significantly greater variance of firm loyalty ($\Delta R^2 = 0.008$). Hence, the interaction effects were supported only partly.

5 Conclusion

Trade with the use of Internet technology enables expansion on a larger scale for existing businesses and offers prospects for rapid development of new companies. This is possible thanks to low barriers to market entry which encourage the sales of products. Customers who have access at all times to information about sellers, and thus their products, also benefit. They can easily find offers, compare them, read other users' opinions and, as a result, buy cheaper.

Value in e-commerce is created and delivered not only by e-tailers, but also by many other entities, such as: product manufacturers, sales platforms, financial institutions, logistics companies, warehouse service providers and customers themselves. The research carried out for the purpose of this study confirmed a strong relationship between customer satisfaction and loyalty in the value network in e-commerce. Moreover, our analyses lead to the conclusion that communication directly influences loyalty, but is not a moderator of the satisfaction-loyalty relationship. On the other hand, website customization does not directly affect loyalty, but acts as a moderator in the satisfaction-loyalty relationship.

The research results have managerial implications. Entities of the value network in e-commerce, i.e. e-tailers, suppliers and complementors, should not only take into account marketing and logistics issues, but also those related to information technologies.

The limitation of this research is the methodological nature of this study. It is based on an empirical model which simplifies the economic reality and thus reduces the complexity of the actual state. Therefore, further research work on the development of the variable measurement reflecting the value network should be carried out.

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