

CUSTOMER SATISFACTION IN THE CONTEXT OF LIMITING THE COMPETITIVENESS OF THE ELECTRONIC MARKET BY DIGITAL PLATFORMS ON THE EXAMPLE OF AMAZON.COM INC.

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Purpose: The aim of this article is to assess the usefulness of the customer satisfaction index (CSI) as an appropriate marker for determining the competitiveness of the e-commerce market involving digital platforms.

Design/methodology/approach: Secondary data obtained from the Statista.com database were used. The analysis used traditional measures of market structure and concentration: CSI, ACSI in combination with the Herfindal-Hirschman Indices (HHI) and Market Concentration (CR), Ginni Indices (GI) and Pearson correlation coefficient (r) against the size of the market share index (SoM) for Amazon.com.

Findings: A negative correlation between SoM and ACSI was confirmed. The combined analysis of the HHI, CR and ACSI results proves that the competitiveness of the e-commerce market is at a moderate level. It was also found that the global e-commerce market is lowly concentrated, against which the American market is more concentrated, although still competitive. Only when Amazon.com has a ceteris paribus market share of 42% will the HHI = 1800 threshold be exceeded, indicating real threats to market competitiveness.

Research limitations/implications: The importance of both quantitative and qualitative indicators, such as customer satisfaction, is emphasized. It is suggested that the customer satisfaction indicator may be a supplement to the current procedure for recognizing the competitiveness of the e-commerce market using previously used measures. It requires companies to introduce consumer satisfaction surveys into the management process.

Social implications: Based on the analysis of indicators developed for Amazon.com, but also for other e-commerce platforms with the potential to dominate the market, there is a relationship between customer satisfaction levels and market competitiveness. It can be assumed that as the company's market share increases, and thus its market power increases, consumer satisfaction decreases. The threat of market monopolization, resulting directly from the increase in its concentration, leads to a decrease in satisfaction, which in the long run may result in customer outflow.

Originality/value: proposal to aggregate quantitative and qualitative indicators in order to more fully illustrate the changes taking place in the area of the exchange of goods and services on the e-commerce market, especially the analysis of competitiveness, which may constitute a practical implication for the actions taken by managers of electronic platforms.

Keywords: Customer satisfaction, electronic market, e-commerce platform, competition.

Category of the paper: Research paper, Conceptual paper.

1. Introduction

The state of competition on the market is analyzed using a static approach, while the process of market competition is analyzed using a dynamic approach. As a result of the saturation of the economy with information and communication technologies, business models develop exponentially, which intensifies the dynamic nature of the market along with the processes taking place on it. In the image proposed by Shapiro and Varian (2007), large technological entities called high-techs are becoming larger and larger, because they apply the lock-in effect strategy in the standard they have created, they use positive feedback in building the network effect. In this way, they ensure their development, called the spiral of success, which strengthens the strong and weakens the weak. Such a simplified and established image of the market deviates from the real state and is detrimental to the market mechanism's capabilities, along with the ability to self-regulate revealed in the competition process. Competition in the market, according to neoclassical theory, is disrupted by dominant entities that achieve excessive market power, measured by their market share, due to which the market loses its competitive structure and deterioration of economic efficiency. The verification of the above picture is possible with quantitative analysis tools describing the market effects achieved by companies. It is mainly the share in the market (SoM), and on its basis it is possible to determine the market concentration (CR), the competitive position of companies creating an appropriate entity structure, their market power and assignment to a specific competitive form. In order to prove excessive market power destructive to the market mechanism, the aggregation of quantitative and qualitative indicators, such as customer satisfaction, is rarely used. Therefore, marking the competitiveness of the market by supplementing quantitative criteria with qualitative criteria, for example those used in the construction of the consumer satisfaction index (SCI), can provide a more complete picture of competitive relations and exchange. In relation to the assessment of market competitiveness, such a research approach or suggestions for its application have not been found in the literature, which in the multidimensional present, dominated by big data, may provide more accurate premises and conclusions (methodological triangulation). By stating the non-competitiveness of market forms on the basis of deviations from the reference values of indicators (FERC)¹, mainly the number and size of companies and the degree of concentration, there is no greater margin for changes under the influence of the self-regulatory mechanism. At the same time, a static approach to the assessment of market competitiveness is indicated, while the market is a process phenomenon and is characterized by dynamics, especially the electronic market. Paraphrasing Bastiat (2009) and Hazlit (2012), attention is paid to what is visible, omitting what is not visible, which results directly from the theory of competition and entrepreneurship. Firstly, the recognition of freedom of activity and competition through various market activities in the

¹ <https://www.justice.gov/d9/2023-12/2023%20Merger%20Guidelines.pdf>, 20.08.2024.

interests of the true satisfaction of the buyer. The greater the freedom of action, the more competitive a given market is and the greater satisfaction the buyers will obtain. Secondly, if one has to face a situation characterized by the introduction of various types of regulatory solutions to the market mechanism, they should take into account *the consequences of a specific policy not only for one social group, but for the whole of society* (Hazlitt, 2012). Thirdly, we will never know whether regulatory solutions would actually prove to be a better alternative to a purely market process based on self-regulation and, as a result, protect the market from monopolization. In such a diverse perspective, the activity of digital platforms is perceived as super market entities, limiting with their expansiveness not only competition, but also innovation, standards, as if they were completely beyond the reach of competition from other companies and were lifelong resistant to self-destruction. Shapiro and Varian (2007) state that *absolute dominance cannot be achieved in every market*. This is contradicted by the cases of eBay or Amazon in Poland. These platforms are unable to achieve a market position in Poland even close to that of Amazon in the American market and eBay in the British market, as well. Both platforms are losing to Allegro on the Polish market. The examples of Everli and Barbora or shopping intermediaries such as Wszystko.pl or Shopee prove the same. These are cases of spectacular failures of e-commerce platforms, which relatively quickly disappeared from the e-commerce market in Poland. Equally spectacular examples of failures of strongly competitive companies come from the communications industry (Nokia, Blackberry) or hardware, such as Intel in the case of using AI in the construction of processors. Meanwhile, the potential of the electronic market is constantly growing, creating an incentive for new entities to enter. According to data from the Central Statistical Office (GUS) for 2023, 85.3% of the Polish population used the Internet regularly, which means at least once a week. At the same time, 16.7 million people (64.3%) made purchases online in the last 12 months. For comparison, in the USA, in 2021, 218.8 million Americans bought online, which is 65% of the population. As it is seen, the limit of the electronic market potential of the both market is still far away.

The pursuit of parameterization of market phenomena, including competition and competitiveness, facilitating the diagnosis of the state, contributes to the search for increasingly efficient measurements of human activity. In this context, the search for relationships between CSI and market competitiveness can lead to a change in the perception of threats to the competition process in electronic markets. It can also introduce a relatively new research dimension to the analysis of competition, which in practice can translate into the rationalization of regulatory solutions and, if necessary, better decisions in antitrust policy.

2. Methods

2.1. Consumer Satisfaction and Its Role in the Competition Process

Customer satisfaction is a state after selection and purchase, shaped on the basis of pre-purchase expectations. In a broader sense, satisfaction occurs in the area of a company's relations with customers, which in turn is important from the point of view of achieving competitive advantage. The general model of customer satisfaction can be expressed by the following formula:

$$\text{Customer satisfaction} = \frac{\text{prepurchase expectations}}{\text{postpurchase compliance assessment}} \quad (1)$$

In a detailed analysis according to the definition of the American Business Association (ABA), satisfaction is the compliance of the customer's expectations with the (1) quality, (2) service and (3) price provided by the purchase of the product. Both quality and service should be provided by companies at the highest level in relation to the price, which is only possible on a competitive market. The response of supply to these expectations is product differentiation and a price discrimination policy, which raises contradictory interpretations. On the one hand, it is treated as a pricing policy belonging to the autonomy of the company, on the other hand, as an anti-competitive pricing policy (Jurczyk, 2004, p. 8). Price expectations of buyers are high in relation to low prices, so the companies' desire to reduce them is a pro-competitive attitude. According to the Bertrand model for an oligopolistic market, price competition does not lead to the elimination of competitors. On the other hand, non-price competition plays an important role in limiting competitive advantages, mainly quality and service, as well as product differentiation.

Product differentiation, especially in the digital goods market, is relatively simple. The electronic market is characterized by high product differentiation and supply advantage. In these conditions, the issue of satisfaction becomes an important, or even the main factor of competitive advantage (Słaby, 2020, pp. 3-12). In many consumer studies, the aspect of consumer satisfaction is treated in more detail than the aforementioned ABA definition, in particular referring to the analysis of the relationship between satisfaction and non-price factors.

Companies that care about their customers' satisfaction often achieve better market and financial results, and consequently gain a competitive advantage in terms of technology, economy (lower costs and prices) and marketing. Customer satisfaction is seen as a key factor influencing customer loyalty (Dziewanowska, 2010, pp. 21-30). Loyal customers are more likely to repeat purchases and recommend purchased products to others, which also translates into stability or growth in market share. Studies indicate the existence of a relationship between the level of quality of products and services, which is closely related to customer satisfaction, and the profitability and market share of the company (Dziewanowska, 2010).

It can therefore be rightly assumed that the relationship between satisfaction and market competitiveness occurs and is more important in more competitive markets. In particular, in electronic markets, when marginal costs are not high and as such determine prices, which in this case turn out to be a weak factor of competitive advantage. Non-price factors remain important for competitiveness, generally related to quality and service, which is the main scope of the CSI construction (Morgeson et al., 2023) and to product differentiation, which allows for acquiring customers who constitute market niches (Figiel, 2019, p. 17). The variety of products offered in a given market space allows the buyer to make a better purchasing decision, the more diverse the offer the platform provides. Therefore, platforms offer not only a diverse range of products, but also access to more complete information about the market regarding the quality of goods, their availability, price, transaction costs, types of payments and service standards. These are important factors influencing consumer satisfaction and the competitiveness of platforms. The key consequence, regardless of the form and manner of differentiation, is the fact that consumers prefer the offering of one seller over another (Figiel, 2019, p. 18).

2.2. The Influence of Digital Platforms on Market Competitiveness

The basic issue in assessing the competitiveness of a market is its proper definition, which reduces the error of considerations directly related to determining its entity structure and the corresponding quantitative parameters, which come down to the correct determination of market boundaries (Kozłowski, 2013, p. 50). In the case of e-commerce platforms, market boundaries do not exist in practice due to the strong differentiation of the products offered and the often multilateral nature of relationships. The influence of digital platforms on the market results from their properties and specificity. The properties of these platforms mean that they offer companies relative ease of market adaptation and even expansion of their market area, while consumers have relative ease and security of concluding transactions and access to suppliers from other markets (Szulc, 2024, pp. 69-82). The most important property of platforms is the network effect. They benefit from network effects in such a way that the more users they have, the greater value they represent for them. This principle applies to both direct and indirect effects. Properly functioning markets require an appropriate density, which means that they must be able to attract a sufficient number of buyers and sellers (Roth, 2007, pp. 118-126). Therefore, the network effect, which is often indicated in the literature as a factor disturbing the market mechanism, providing platforms with a rapid increase in customers, is also a condition for a properly functioning market. However, the network of users cannot exceed its critical mass (Evans, Schmalensee, 2010, pp. 1-26), similarly to the case of scale diseconomies, when the average total cost increases with the increase in the quantity of the offer (Krugman, Wells, 2012, p. 569).

Another competitive feature of platforms is their integration with complementary tools and applications. The seamless integration of a platform with other business tools increases its usability and value for suppliers. For example, they facilitate the management of ongoing tasks

and increase the productivity of e-commerce platform suppliers in terms of communication and transactions between multiple sellers and buyers. This reduces costs and increases the selection of offers, data security and the stability of the system environment. Advanced security measures such as encryption, authentication, authorization and compliance with regulations build user trust and protect sensitive data from abuse. Platforms are also characterized by multiplatform (multihoming), which means offering products or services through several platforms. This method of operation increases access to customers, reduces dependence on one platform and strengthens the company's negotiating position in business relationships. Platforms have market power and ease of raising capital for continuous investment and financing of fixed costs, which are necessary for implementing technological innovations such as artificial intelligence (AI). In turn, artificial intelligence tools already have a significant impact on the way business is conducted, performing tasks with a speed and efficiency unattainable for humans. AI increases productivity, automates marketing and transaction tasks, and constantly provides new analytical data. It also significantly changes the conditions of competition, improving the competitiveness of platforms that use the results of its application. Recognizing that AI is a tool that improves people's life experiences (Escott, 2017), also in the sphere of consumption, it must also strengthen the satisfaction of buyers who feel this improvement. Market competition takes place on two levels. Both the competition of entities on the first level, related to cost advantage, and the competition on the second level, when unique and differentiated values are offered, are characteristic of markets related to new technologies (Szulc, 2024).

2.3. Research Concept

Customer satisfaction related to the value offered to them is a predicate of the company's competitiveness. Therefore, if a company achieves high CSI values, it must be competitive on the market. Similarly, if consumers of the entire market feel high satisfaction, the market must be even more competitive. Therefore, there is a positive relationship between the size of CSI and market competitiveness, and no example has been found in the literature that questions this truth. It results from a simple assumption that if consumers on the market are satisfied with the benefits obtained, then they confirm their satisfaction with choices and purchasing decisions, expressing the fulfilled demand. Although a negative relationship is indicated between satisfaction expressed by the CSI value and the achieved market shares of a given company (Rego et al., 2013), this relationship does not change the relationship between customer satisfaction and market competitiveness. Market share is not a measure of its competitiveness, but rather a measure of the market power of the company on this market. Growing market power and therefore increasing market share usually mean decreasing competition and therefore competitiveness.

Cause-and-effect relationship between customer satisfaction and market share allows us to measure the increase in market share (SoM) due to the growing satisfaction of the buyer, on the other hand, if the increase in SoM occurs with a rapid increase in demand, which usually means a lower quality of the value offered, a negative experience of the buyer is created, further a decrease in his satisfaction, and as a consequence a deterioration of the competitive position of the company. The existing limited empirical literature on this subject provides observations about a negative or insignificant relationship (Rego et al., 2013). In-depth studies of the American market consistently pointing to a significant negative relationship between market share and customer satisfaction, explain this relationship by the fact that customer satisfaction is not a predictor of the future market share of companies, but market share is a strong negative predictor of the future satisfaction of the companies' customers (Rego et al., 2013).

The feedback relationships between customer satisfaction and the competitiveness of individual companies that make up a given market, the sum of which expresses the competitiveness of this market, are illustrated in Figure 1. The relationship considered here is inscribed in the concept of using CSI in the context of the cause-and-effect relationship between customer satisfaction in a given market and its competitiveness. This indicator is commonly used to monitor economies, industries, including individual markets, and finally individual companies (Neely, 1999, pp. 205-228), in order to improve quality and their competitiveness (Fornell, 1992, pp. 6-21).

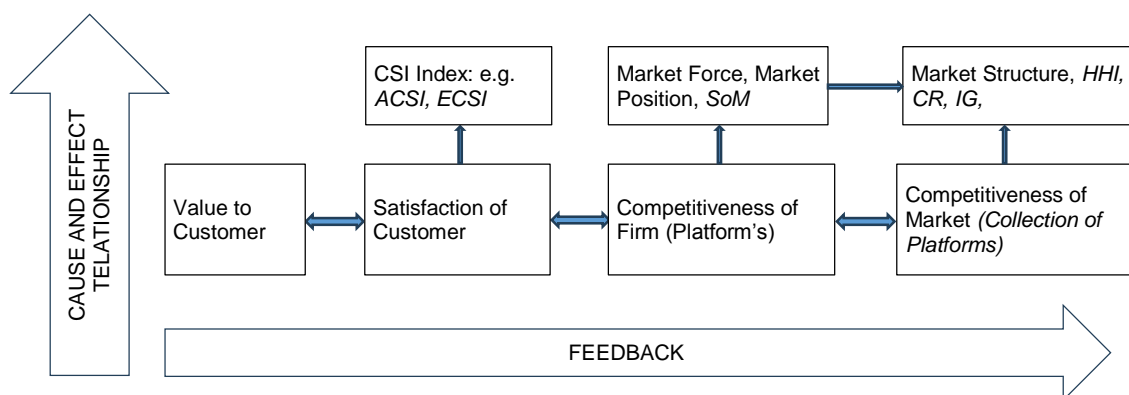


Figure 1. Relationship between market competitiveness factors and methods of their measurement.

Source: Author's own proposition.

Attention is also drawn to the specificity of customer satisfaction on the electronic market, which results from the greater complexity of electronic business compared to traditional, linear business. It is common knowledge that most technologically supported businesses develop exponentially, but remain dependent on the development of customer satisfaction. The issue of the network effect remains important, which can sometimes disrupt the intuitively understood relationship between satisfaction and competitiveness. Here, the issue of the size of the network, i.e. the number of users, appears as the only strong factor of satisfaction. Nevertheless, it seems that initially, in accordance with the model of product innovation adoption as a new value directed to the market, factors related to quality and customer service, and perhaps even price,

had to exist for the network effect to emerge. It is therefore worth paying attention not so much to the direction of changes (proportionality), but also to the pace of change. The pace of change of the CSI indicator in relation to, for example, the pace of growth of market share. Is there linearity here, or is there a lack of deterministic dependence between shares in SoM and CSI? Finally, it is worth paying attention to the problems of the functioning of the electronic market and the approach to its analysis, including processes such as competition and the effects it causes, observed in the traditional market, especially in the context of their similarity.

The source of the data are publicly available collections and official research reports containing information about the studied phenomenon and its context, which were then downloaded and often converted into tabular form, subjected to differentiation, verification and in some cases standardization. It is worth emphasizing that depending on the source, the data often differed, but the differences found were not significant. Another important issue was the completeness of the databases, therefore, due to the exhaustive nature and completeness of the data, the empirical material from the Statista.com collection was accepted for analysis.

Traditional measures of market structure and concentration and the CSI index, in particular the ACSI, were used for measurement. On this basis, an analysis was made based on the statistical description methodology, which is sufficient to discover significant relationships between the level of satisfaction, market share, competitiveness of a given market and its structure, which ultimately leads to conclusions regarding competitiveness.

3. Discussion

3.1. Using CSI and Market Concentration Measures in Evaluating the Competitiveness of the E-commerce Market. Research Results

Customer satisfaction research methods have a relatively long history. The first concept is the Swedish model (SCSB), which appeared in 1989. A more developed concept is the American model from 1994, known as the ACSI model. In response to the American initiative, the EPSI model was created in 1999, taking into account European specifics. In the Swedish model (SCSB), it is assumed that perceived quality, perceived value and customer expectations affect customer satisfaction.

Among the general objectives of measuring the level of customer satisfaction, for example, the quality of the company's activity in comparison with the quality of the competition's activity is mentioned (Hill, Alexander, 2003, p. 51; Słaby, 2020, pp. 3-12). However, more important in this study is the objective related to the possibility of determining competition and market competitiveness, assessed through the prism of buyer satisfaction, expressed by the CSI value. The role of satisfaction is important not only for assessing the effectiveness of the company's strategy, but also appears in the context of the resulting competitiveness, which is usually done

using such values as market share and market power as well as concentration, added value or productivity (Ajitabh, Momaya, 2004, pp. 45-61). Therefore, one can ask whether there is a relationship between buyer satisfaction and market share and what significance does it have for the competitiveness of the company and how does it translate into the competitiveness of the market in which it operates? Logic suggests a positive correlation between customer satisfaction and the company's market share and revenues, as a result of the satisfaction achieved. Studies conducted so far have shown such a relationship, although there are few of them, which may rather herald methodological difficulties, because the research problem itself is important from the point of view of market theory.

Anderson et al. (1994, pp. 53-66) addressed the issue of the relationship between customer satisfaction and a firm's market share. They found that increasing market share can indeed lead to lower customer satisfaction and provided initial empirical support for this hypothesis. They tested a set of hypotheses using the National Customer Satisfaction Score (SCSB) and traditional financial measures. They showed that customers' expectations about the quality of a firm's products positively influenced their overall satisfaction with the firm and that these expectations were largely rational, although they contained a small adaptive component (Anderson et al., 1994, pp. 53-66).

The development of the above problem is to identify differences in the relationships between buyer satisfaction and market share, depending on the market. Literature studies have made it possible to learn about the differences. Although the general trend indicates a positive correlation between these factors, the strength and nature of this relationship may vary depending on the specifics of a given industry.

For example, in the banking sector, the relationship between customer satisfaction and loyalty, which translates into market share, is particularly complex. Customer satisfaction is influenced not only by the quality of services, but also by factors such as price, product availability, or the ease of the complaint process (Bednarska-Olejniczak, 2010, p. 119). In the B2B market, research has shown that a high level of satisfaction does not always translate directly into loyalty and market share. It was observed that 7% of low-satisfaction customers showed high loyalty and the opposite situation, that 9% of high-satisfaction customers showed low loyalty (Schulz, 2011, pp. 107-116). In manufacturing industries, customer satisfaction is closely linked to product quality. Companies in these sectors often use specialized tools to measure customer satisfaction, which allow for the analysis of intangible product features and interpretation of results in order to implement corrective actions (Midor, 2017, pp. 58-71). In service industries, where customer interaction is key, satisfaction may have a more direct effect on market share. In industries with high competition and low entry barriers, the relationship between satisfaction and market share may be stronger because dissatisfied customers have more alternatives and are more likely to switch suppliers. In highly regulated sectors (e.g. energy), the relationship between satisfaction and market share may be weaker because the ability to switch energy suppliers is limited.

In summary, although customer satisfaction generally has a positive impact on market share, the strength and nature of this relationship may vary significantly depending on the specifics of the industry, market structure, nature of products/services, and other factors influencing consumer behavior and the dynamics of competition. It is therefore reasonable to monitor the phenomenon in the e-commerce market, which is subject to change due to the freedom of market competition and the speed of technological progress.

The basic parameter for measuring competitive relations in a given market is the market share index of each of the companies operating in it. The source of data illustrating the course of the studied phenomenon is data from the database maintained by Statista.com describing the American market. In the case of the e-commerce market in the USA, the share of e-commerce in total retail sales, the satisfaction index of American customers of Amazon.com and the general satisfaction index ACSI for the period 2000-2023 (Table 1).

Table 1.

Basic parameters of the statistical description of observations during 2000-2023

Variable	Min	Max	R	\bar{x}	SD	SD ²	Me	Mo
U.S. Customer Satisfaction with Amazon.com	78	88	10	85	2.60	6.78	85.5	86
Overall Consumer Satisfaction Index	77	84	7	81	2.01	4.20	81.0	80
E-commerce Share of Total US Retail Sales in %	0.90	15.40	14.5	6	4.58	21.00	5.05	14.6

Note: Min – minimum, Max – maximum, R – range, \bar{x} – average value, SD – standard deviation, SD² – variance, Me – median, Mo – modal value.

Source: author's own finding based: Statista.com data.

Various ranges of values are proposed for the interpretation of the satisfaction index value. For example, one can use the criteria developed by Wolniak and Skotnicka-Zasadzień (2008, p. 80). They propose a tool that is rather a certain pattern, based on an interval scale, together with a proposal for interpretation (Table 2).

Table 2.

Basic parameters of the statistical description of observations

Compartment	Satisfaction rating	Interpretation
0-40%	Very Bad	Customer Extremely Dissatisfied
40-60%	Badly	Customer Dissatisfied
60-75%	On Average	There Are Some Problems With Customer Satisfaction
75-90%	Good	There Are Few Problems With Customer Satisfaction
90-100%	Very Good	Customer Highly Satisfied

Source: author's own finding based: Wolniak, Skotnicka-Zasadzień (2008).

Based on the data in Table 1 and Table 2, it can be stated that the level of customer satisfaction in the USA with Amazon.com in the period 2000-2023 is good, which means that there are few problems. Considering the nature of CSI, its qualitative aspect combined with the subjective assessment of the individual buyer, it should be stated that Amazon.com is a competitive platform on the market. Unfortunately, it was not possible to obtain data on other market entities, which makes it impossible to compare these results against the market. However, a certain point of reference is the range of the overall value of the consumer

satisfaction index in the period 2000-2023 (Table 1). The limits of the range are lower in this case compared to the ACSI achieved by Amazon.com, although they are also within the range of a good assessment (Table 2). Customer satisfaction with the activities of Amazon.com is nevertheless slightly higher than in the case of the entire market.

To calculate market concentration and market power in the global e-commerce market, the CRN discrete index and the HHI absolute index were used, and the Gini Coefficient (IG) was used to determine the degree of equality of distribution of e-commerce leaders in terms of shares. In this case, it is possible to conclude about the strength of the leader's market dominance in the group of the largest players in a given market, because IG allows for the analysis of their differentiation in terms of market position. The following formulas were used in the analysis:

$$HHI = \sum_{i=1}^n S_i^2 \quad (2)$$

and

$$IG = \frac{0,5 \sum_i \sum_j |x_i - x_j|}{N^2 \bar{x}} \quad (3)$$

In the concentration analysis, the discrete indicator "N" is usually 2, 3 or 4 (Dubejko, 2007, pp. 326-339), although the shares of companies lower than the N largest entities are not taken into account. Therefore, in the analysis using CR, only the first 3 items from Tables 2 and 3 were included. The share of the leading online retailers in the global e-commerce market in 2022 in terms of gross merchandise volume (GMV) is given in Table 3. Data on the size of companies enable the use of various measures, including popular indicators.

Alibaba was the world's largest company in terms of online GMV in 2022 (Table 3). The Chinese multi-sided e-commerce platform provides B2B, C2C and B2C e-commerce to various consumer groups, accounting for a combined 23 percent of total online GMV in 2022. Amazon came in second, accounting for 12 percent of total online GMV. The global market concentration index for the top 3 sellers was $CR_3 = 44$ percent. Based on this, it can be assessed that the global market is moderately competitive, far from a monopoly. Only the values of the first 3 entities were used to calculate CR, due to the fact that Pinduoduo is an application used to broker agricultural products and its business model differs from a typical e-commerce platform. Following the principle of analysis using the CR indicator, the first 4 companies in Table 3 should be included.

Table 3.

Value of concentration indicators for the global market in 2022

Yeah	Platform	SoM	S _i ²
1	Alibaba	23	529
2	Amazon	12	144
3	JD.com	9	81
4	Pinduoduo	8	64

Cont. table 3.

5	TikTok/Douyin	4	16
6	eBay	1	1
7	Shopee	1	1
8	Apple	1	1
9	Rakuten	1	1
10	The Rest	39	1521

Source: author's own finding based: <https://www.statista.com/statistics/664814/global-e-commerce-market-share/>, 20.08.2024.

Based on the data in Table 2 regarding the competitive situation on the global market, the following values of the indices were obtained: HHI = 838 and IG = 0.18. The Gini Coefficient informs about the inequalities of the compared objects, in this case between the size and market power of companies on the market or in the sector. The higher the value, the greater the diversity of the size of companies on a given market, thus revealing the potential advantage of the company over competitors. As can be seen in Table 2. The IG value indicates a weak differentiation of the global e-commerce market, so it can be concluded that the market is not very diverse in terms of company size. The values of market shares also indicate a relatively small market power of the largest players, which results mainly from their position on the domestic market.

The upper limit of the competitive market is the HHI value of 1800 (FERC, 2023), it can be assumed that in the case of the global e-commerce market in 2022 we are dealing with a highly competitive market. Additionally, taking into account the degree of concentration, it should be stated that the global online sales market is an unconcentrated or very weakly concentrated market, according to references in the range of 0 to 1000. It would be interesting to track continuous observations of the HHI coefficient value for a longer period of time, due to the disclosure of the trend and its pace and dynamics. Taking into account market power, it is noted that Alibaba ($S_i^2 = 529$) is characterized by a clear advantage of market power over the second Amazon ($S_i^2 = 144$). The trend of shaping market power is equally interesting to observe and analyze in the context of market competitiveness. It means to what extent the competitive advantage is stable and at what pace the company increases it over other competitors, disturbing competitive relations between them. Therefore, a decrease in the Herfindahl-Hirschman Index implies a decrease in the power of sellers and an increase in market competitiveness, and conversely, an increase in HHI implies an increase in their market power and a decrease in market competitiveness. It is also worth noting that the square of Alibaba's global market share is more than half of the entire HHI, exactly 63percent. This may be due to the fact that Alibaba owes its global position to its position in the domestic market in China, similarly to JD.com.

Table 3.
US Market Share Indicator Illustration in 2023

Yeah	Platform	SoM	S ₁ ²
1	Amazon	37.6	1413.76
2	Walmart	6.4	40.96
3	Apple	3.6	12.96
4	eBay	3.0	9.00
5	Target	1.9	3.61
6	The Home Depot	1.9	3.61
7	Costco	1.5	2.25
8	BestBuy	1.4	1.96
9	Carvana	1.4	1.96
10	Kroger	1.3	1.69
11	The Rest	40.0	1600.00

Source: Author's own finding based: Largest online retailers in the US 2023 | Statista, 20.08.2024.

Based on the data in Table 3, the following values were obtained: HHI = 1492 and IG = 0.30.

In the global market, there is a noticeable difference in the values of the HHI and IG indicators as well as the discrete CR indicator. Higher values for the American market mean a higher degree of concentration, which also means less favorable conditions for competing on the American market. This can be seen in the example of Amazon.com's position in the table 2. Lets it is the undisputed leader on the domestic market with a huge advantage over other competitors.

3.2. Dependence Between Consumer Satisfaction and Market Share.

The Pearson correlation coefficient (r) according to the formula (4) was calculated based on data illustrating the relationship between US customer satisfaction with Amazon.com in the years 2006-2023 and the share of e-commerce in total US retail sales in the years 2006-2023 (Figure 2a). The same method was used for examine a dependency between overall customer satisfaction (ACSI) and E-commerce share of total retail sales in the United States from 2000 to 2023 (Figure 2b).

$$r(x, y) = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}} \quad (4)$$

The value of the correlation coefficient for the relationship between Amazon's CSI and its e-commerce market share in the period 2006-2023 is $r = -0,76$. The value of the correlation coefficient for the relationship between the overall e-commerce buyer satisfaction index and E-commerce share of total retail sales in the period 2006-2023 is $r = -0,33$. This means that there is a relationship between the phenomena studied that cannot be ignored. The strength of the relationship is high in the case of the first relationship ($r = -0,76$), while the strength of the relationship in the case of the second relationship is on the border between weak and moderately strong. In both cases, the value of r is negative, which means an inverse relationship.

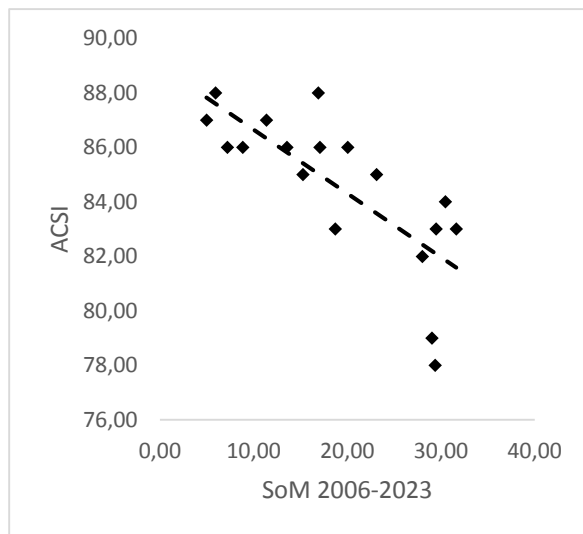


Figure 2a. Dependency between Amazon customer satisfaction (ACSI) and E-commerce share (SoM) of Amazon.com

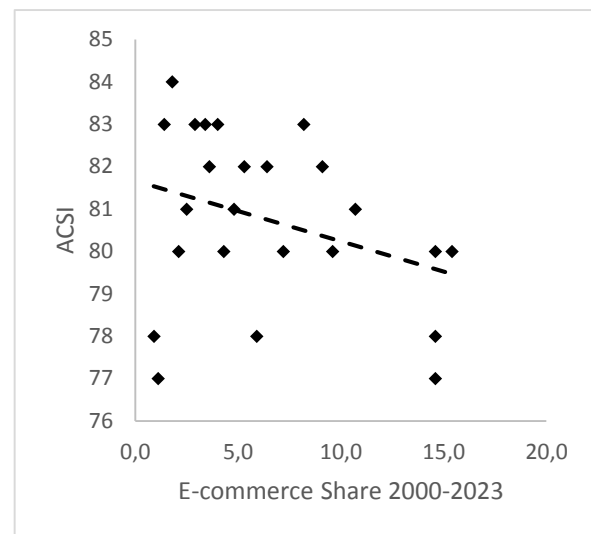


Figure 2b. Dependency between overall customer satisfaction (ACSI) and E-commerce share of Amazon.com

Source: Author's own finding based: Amazon regional net revenue 2023 | Statista , US customer satisfaction with Amazon 2024 | Statista, 20.08.2024.

Increasing market shares cause a decrease in buyer satisfaction, and decreasing shares mean an increase in their satisfaction. This is a paradox, which can be rationally explained. Decreasing market shares do not necessarily have to result from a deterioration in the quality of the value delivered to the market by the platform and deteriorating price competitiveness. They do mean, however, that the seller can eliminate the loss of market share by improving the quality of customer service, increasing the variety of products offered, and better transaction and distribution conditions. All the more so because the observed situation turned out to be short-lived. The difference between the dependencies comes down to distinguishing the satisfaction rating of Amazon.com consumers from that of consumers in general e-commerce, among whom there are also the Amazon customers. This leads to an interesting observation that the weaker correlation observed for the entire e-commerce market ($r = -0,33$) may mean a more even increase in Amazon's competitors, and thus less susceptibility to potential fluctuations in market share. Companies that develop more evenly should show a complete lack of correlation between CSI and SoM, which means result $r(0,0 - 0,2)$. Ultimately, a lack or weak correlation between CSI and SoM may indicate that the market is the most competitive. The market is competitive not because it strives to achieve optimal values of market indicators, but primarily through the freedom to act on it to meet the needs of buyers. This involves treating the market as a process (a dynamic system) and not as a state at a given moment (a static system).

Linking satisfaction with market share is not a completely new research concept, but there has been no recorded attempts to implement it in the electronic market in terms of assessing its competitiveness. The results obtained confirm the usefulness of this method, especially in in-depth quantitative and qualitative analysis. It can be stated that it is also correct to link satisfaction with competitiveness, which means that the satisfaction indicator can be used in assessing the degree of competitiveness of markets. There are premises for using this concept in assessing the competitiveness of the electronic market, which are complementary to the current used methodology. Emphasizing the importance of the aforementioned method in the assessment of economic phenomena, the consumer satisfaction indicator can be considered a valuable supplement to quantitative measures (Błoński, 2018, p. 85).

4. Summary

In a free market economy, any market that generates profits will always be subject to pressure from companies trying to enter them (Bickerton et al., 2006, p. 54). To this end, they will use different strategies to deliver primary goods or their substitutes to the same target buyers. However, it is productivity of technologies e.g. AI that will cause turbulent changes in the current models of operation of all companies, including the current market leaders, and need for their adjustments in the short and long term.

Analysis of the HHI indicator, calculated as the sum of squares of e-commerce market shares on the example of the USA, indicates the competitiveness of this market. Market concentration indicators do not indicate its excessive concentration, and therefore its low competitiveness due to the significant market power of the leaders. Although the competitive advantage resulting from having significant market shares is higher than the second largest entity on the e-commerce market in a ratio of almost 3:1, it is not high enough to talk about a dominant position on the market, which results from the HHI value and Gini.

The above conclusions do not confirm the common opinion about the lack of competition in the e-commerce market, where the leaders are digital platforms, achieving a significant competitive advantage. Therefore, logically, they deny the claim that digital platforms destroy competition in the market and do not have a destructive effect on it at such a dynamic pace, what is indicated in many literature. The applied analytical approach to market competition shows that thinking in terms of Bastiat's "what can be seen", i.e. high market shares, market power and the resulting destruction of the market, should be extended to "what cannot be seen" in order to demonstrate the objective state of competitiveness of the electronic market. There are benefits for consumers who pay lower prices in optimal time-space conditions for them, gain more experience and understanding of how technology works, receive better market information, which allows them to make more favorable decisions, and receive a higher standard of service during and after the purchase. All this affects the high assessment expressed

by the value of the customer satisfaction index. This is also consistent with Hazlit's thinking about actions not only for selected groups of buyers, but as far as possible for all market participants, including risk-taking entrepreneurs. Finally, it would be consistent with expressing trust in consumers, who, as it seems in the light of their opinions, achieve higher well-being. In addition, the growing trend of buyer satisfaction in relation to the leader of the e-commerce market, which is the Amazon platform, indicates concern for their satisfaction. Such thinking also requires noticing and recognizing that fixed costs play an important role in building a high value of the consumer satisfaction indicator. Only when there is intensive cooperation with numerous suppliers, a specific symbiotic effect appears, so characteristic of multi-sided markets, represented by platforms, even those called gatekeepers.

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