

QUALITY IN E-COMMERCE SERVICES RELATED TO MARITIME ECONOMY

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Purpose: The aim of the study was to obtain information from respondents about the assessment of their satisfaction resulting from the identified features in the online commercial services provided.

Design/methodology/approach: The article uses a qualitative study. The survey method was used, and the data was obtained through an online survey. The sample selection was purposeful, both in terms of respondents and the websites themselves. The expert method was used to study the websites, and the data was obtained through desk research. The theoretical scope of the work concerns the determination of attributes for assessing the quality of e-commerce services. The novelty of the article is the study of quality in the niche area of online trade related to the maritime economy (maritime e-commerce).

Findings: Niche maritime e-commerce requires multidimensional shaping quality of commercial services. The quality of commercial services provided by online stores in maritime e-commerce, is more satisfying than in terms of services offered in this sphere of online trade. The quality of commercial services provided in maritime e-commerce requires improvement, especially in the technological dimension.

Research limitations/implications: The niche nature of the study group meant that it was impossible to use random sampling, hence convenience sampling was used. The study group turned out to be quite hermetic, which caused difficulties in collecting data. Nevertheless, it is worth conducting research in such populations, even if it were to be considered preliminary or exploratory

Practical implications: The article has application value. As a result of the research, areas requiring quality improvement in maritime e-commerce for two groups of business entities were indicated - online stores and entities providing services related to the maritime economy.

Social implications: Social implications may concern the recognition of preferences of a niche group of consumers, which can also be considered a contribution to science.

Originality/value: A niche area in e-commerce has been identified, concerning the maritime economy, which may contribute to science. Based on the literature, a new, original model for assessing the quality of commercial services has been developed, which can be used in any industry. Based on the results, recommendations have been collected for entrepreneurs operating in maritime e-commerce, which may also bring benefits to their customers. for whom it is worth improving the quality of services.

Keywords: e-commerce, maritime e-commerce, online commercial service, service quality, quality management.

Category of the paper: Research paper.

1. Introduction

Online commerce holds an important place in today's economy. This form of trade is becoming popular in almost every industry. In the maritime economy, it functions as maritime e-commerce and is a niche industry. Nowadays, niche design may turn out to be a good option for conquering the market and gaining a competitive advantage there. It is therefore important that online trading services in this area are provided at the highest level. This article presents the results of quality assessment in maritime e-commerce. Comparatively, it was carried out in the case of online stores and a provider of maritime services for retail customers. Customers assessed quality in three dimensions: formal, functional-procedural and technological, in accordance with the original model of quality assessment in e-commerce proposed by the author of the article. The research used a survey method and an expert audit of websites. The research results are applicable - they prove that quality in e-commerce in the maritime economy should be shaped in all indicated dimensions, especially technological ones, and maritime service providers should contribute to this to a greater extent. In the article, the is presented originality material.

2. Internet trade and maritime e-commerce

Online commerce in today's world is a common way of making purchases. This method of trading operates in almost every industry and economic field. It turns out that the maritime economy is also not passive towards online trade, as evidenced by the so-called maritime e-commerce (Szyda, 2014).

Maritime e-commerce can be defined as making purchase and sale transactions of goods and services related to maritime economy via the Internet. In the scientific literature, this term is insufficiently defined, and there is even a deficit of scientific studies devoted to this topic. It can therefore be concluded that online trade in the maritime economy is still an open area of research.

Maritime e-commerce emerged around 2000 and initially concerned mainly the B2B sector. The Maritime e-Commerce Association (MeCA), established in Great Britain, bringing together maritime business entrepreneurs and technical experts, contributed to the development of this form of trade. This association was also supported by organizations such as:

IMPA (International Marine Purchasing Association) and ISSA (International Ship Suppliers Association). These associations committed to accelerating economic operations related to the maritime sector through the development of applications that meet interoperability standards, thanks to which e-commerce platforms were designed for the maritime sector - for shipowners, managers, brokers, maritime agents and suppliers.

The European Union also provided indirect support in the development of maritime e-commerce. In 2006, the Commission's communication to the Council and the European Parliament called for the continuation of smart mobility programs in maritime transport, the design of which was included in the e-maritime initiative presented in *Keep Europe moving - Sustainable mobility for our continent (2006)*. This initiative aimed to promote the use of advanced information technologies for work and business in the maritime transport sector. The e-maritime initiative saw an opportunity for the development of e-business in the maritime sector. Increasing the use of information and communication technologies in the maritime transport sector and improving interoperability have contributed to the creation of infrastructural base for e-commerce in this economic sector, which allows us to conclude that the maritime e-commerce market has great development potential (Szyda, 2020).

Despite over 20 years of introducing e-business into the maritime economy, e-commerce in this area still remains niche. This is a very specific market, addressed to specific - industry, sometimes local, recipients who constitute a relatively narrow group. Therefore, vertical stores that sell a narrow but deep range of products intended for specialized customers seem to be ideal for niche activities.

In today's e-commerce and at the current stage of its development, the factor determining the future of e-commerce may be its niche nature. The entry of online trade into niche areas undoubtedly proves its continued dynamic expansion and search for new sales markets.

Analyzing the content of the websites of Polish online stores related to the maritime economy, it can be concluded that on the Polish maritime e-commerce market there are: sailing stores selling boats, kayaks and pontoons, stores with water sports and motorboat equipment, fishing equipment, spare parts, equipment (e.g. furniture) for small ships and yachts, navigation equipment, specialized electronic equipment, equipment ensuring safety at sea, diving equipment, specialized clothing and footwear, yacht chemicals, sanitary facilities, literature on maritime topics, etc.

Services related to maritime economy can also be purchased or even booked via the Internet. In the latter case, the characteristics of e-commerce are not always met, as the reservation is usually non-binding and does not constitute the conclusion of a purchase and sale contract. Services related to maritime economy can most often be booked via regular forms, rather than using technological solutions in the form of a shopping cart. Sometimes there are no other functionalities, such as the ability to pay online for the service. Services currently offered via the Internet by European service providers include: reservations of ferry tickets, yacht charters, reservations of berths in marinas, accommodation and other services in marinas, sea trips and

cruises, sailing courses, swimming, diving and related to other sports water, ordering the services of helmsmen, boatswains, maintenance services on yachts and ships, as well as catering and insurance services. Potentially, selected port services could also be ordered online, such as: mooring, towing, bunkering (delivering) fuel, sewage and garbage collection, water supply, etc.

The examples presented above show that the range of goods and services that can be offered within maritime e-commerce can be very wide and diverse. From the analysis of websites related to maritime e-commerce, it can be concluded that the sale of physical goods is much better developed. Maritime-related services are much less likely to be purchased online (rather, they can be booked). Accordingly, for the purposes of this research, approximately 70 stores and 40 service providers were identified in Polish maritime e-commerce.

It is visible that there are many product categories in maritime e-commerce. Referring to the product groups listed in publicly available reports on e-commerce, goods sold in maritime e-commerce can be classified into the following categories: sport and tourism, automotive, computer and electronic equipment, clothing and footwear, hobbies, home and garden, especially subcategories - furniture or equipment, books, delicatessen and any more (Szyda, 2014).

3. Quality in e-commerce and the state of research on it

Reducing e-commerce solely to an online purchase transaction is too general a solution. For the purpose of research on quality in e-commerce, online commerce should be considered in the context of a broadly understood online trading service. **Online trading service is an intermediation process between the manufacturer and the buyer carried out via the Internet, including the sale of the product range and the provision of added value to the customer** (Szyda, 2020). Therefore, issues related to broadly understood customer service should be taken into account, both before and after the sale.

In the literature, the quality of online trading services was defined as follows:

- 1) the quality of an online trading service is the overall customer assessment in connection with the delivery of goods or services on the virtual market (Santos, 2003),
- 2) online shopping service quality is a function intended to facilitate shopping and the delivery of products and services (Zeithaml, Parasuraman, Malhorta, 2000).

Based on the general definitions of quality known from the literature, the quality of a commercial service provided via the Internet can be perceived as (Szyda, 2020):

- 1) all the features of the online trading service that determine its ability to meet clearly defined or predictable needs,
- 2) compliance of the online trading service provided with the customer's requirements,

- 3) the degree to which the online commercial service meets the recipient's expectations,
- 4) the user's degree of preference for an online trading service compared to others.

Quality in e-commerce remains a current research topic. Quality researchers in online trade services include: E. Cristobal, C. Flavian and M. Guinaliu (2007), A. Lotko (2009), G.J. Udo, K.K. Bagchi and P.J. Kirs (2010), R. Ladhari (2010) and J. Popko, K. Bartnik (2013), J.H. Kim and S.J. Lennon (2017), M. Szyda and I. Czarnowski (2017), Ingaldi M. and Ulewicz R. (2018), S. Dhingra, S. Gupta and R. Bhatt (2020), J. Sukendia, N. Sukendia, S. Wansaga and W. Gunadi (2021).

Many widely known methods in service quality research have been used or adapted: ServPerf (Zhang, Lin, Ren, 2010), Servqual - transformed to e-Servqual (Van Iwaarden et al., 2003; Lee, Lin, 2005; Parasuraman, Zeithaml, Malhotra, 2005; Suomi, Li, 2009), QFD = Quality Function Deployment (Kuo, Chen, 2011), FMEA = Failure Mode and Effect Analysis (Waterworth, Eldridge, 2011), SixSigma (Alhyari et al., 2011), Kano (Kuo et al., 2012), etc.

Numerous scales have also been developed to measure the quality of services in online commerce: e.g. SITEQUAL (Yoo, Donthu, 2001), WebQual (Barnes, Vidgen, 2002; Loiacono et al., 2007), E-S-QUAL [Parasuraman et al., 2005], E-Rec-Qual (Dolatabadi, Pool, 2013), UTAUT model (Albugami, Zaheer, 2023) etc.

Attempts are also made to study the impact of current trends on the quality of trade, e.g. Covid19 (Muslimin et al., 2022), changes in consumer behavior (Zhao et al., 2023), the growing popularity of shopping in social media (Zhao, Oi, 2024), new sales platforms (Wijaya et al., 2021) and many others.

Individual e-commerce industries differ in their specificity, and therefore they may also differ in the quality of the service provided. Hence, it seems justified to attempt to shape the quality of online trading services in individual e-commerce industries. The right direction in improving the quality of these services would be to focus especially on niche areas of e-commerce.

4. Quality assessment model for e-commerce in the maritime industry

The previously known quality assessment studies mentioned above were very diverse, the quality was assessed in many threads, but not always comprehensively - some studies focused on the perception of the quality of a sales website based on attributes related to functionality or usability, others focused on interactions related to customer service or its scope.

Using a comprehensive approach to assessing and then improving quality in an online trading service, a multidimensional quality assessment model can be proposed. The proposed model, which is the result of conceptual work, takes into account not only aspects related to the

scope of functions provided by the online store and resulting from the specific nature of the website, but also the fulfillment by the seller of obligations arising from the specific nature of the business activity. This model also takes into account the attributes of the commercial service, not only those perceived by the customer, but also those whose existence the customer is not aware of, but which may have a clear impact on the quality of the provision of this service (website design technology).

The proposed model for assessing the quality of online trading services includes the following three components:

- 1) Formal - related to the legal requirements imposed on sellers trading on the Internet and requirements that can be considered obligatory or standard to be met in trade.
- 2) Functional and procedural - relating to the attributes of the sales website that provide functions (or support them) enabling the implementation of specific elements of the process of providing online commercial services. It is determined by the mode of provision of the commercial service, refers to customer service via the website and is related to the functionality and usability of the online sales website.
- 3) Technological – relating to technologies and standards, including those related to security, used for the implementation of the website. The technological dimension of assessing the quality of online trading services can therefore be defined as the background of the website that determines its characteristics and functionality.

Table 1 indicates individual attributes of the quality of online trading services and assigns detailed assessment criteria to them.

Table 1.

Attributes and determinants of the quality of online trading services

Formal quality attributes	Individual characteristics
The method of the information presentation (A1)*	Details of the information available on the store's web page and given by the staff and compliance with the actual state, (C1)
	Update of the web page content, (C2)
	Informing on the availability of the goods and services, (C3)
Company's identification (A2)	Posting on the web page all data concerning the seller – his name, address, contact information (phone numbers, e-mail addresses), legal form, identification number of the registration activity, (C7)
Sellers' image (A3)	Allowing the customers to share their opinions and posting them on the web page, (C4)
	Quality certificates, recommendations of the institutions and professionals, distinction of the trademarks of the sold brands, (C5)
Sellers' reliability (A4)	Simplicity, visibility and availability of the rules and regulations of the provided services, (C6)
	Visibility of the pricing policy, (C8)
	Transparency of making complaints and withdrawal from the agreement, (C9)
	Transparency of the range of given warranty, (C10)
Personal data protection (A5)	Lack of irritating advertisements and lack of sending of promotional materials without consent of the consumer, (C11)
	Transparency of the privacy, (C12)
	Declaration of data encryption, (C13)
	Minimization of the range of data acquired from the customers, (C14)
	Question for the consent on the processing of data, possibility of insight to the data and its modification, (C15)

Cont. table 1.

Technological quality attributes	Individual characteristics
Type of technology (A14)	Compliance of the technologies used with applicable standards (including those regarding the use of graphics and multimedia in Internet applications), (C42)
	Version of the website development language used, (C43)
	Using Style Sheets (CSS), (C44)
	The use of the so-called A framework dedicated to e-commerce for building a website, (C45)
	Using languages to create dynamic websites, (C46)
	Type of databases used, (C47)
	Type of software for running a store, (C48)
Availability of the sales portal (A6)	24/7 shop availability, its reliability and efficiency, (C16)
	Presence (perceptibility, visibility) in the search engines results and sponsored links, (C17)
Security (A15)	Use of data encryption (using SSL and https) and SSL protocol class, (C49)
	Making backup copies and keeping event logs (C50)
	Using anti-virus protection and firewalls and monitoring network threats, (C51)
Functional-procedural quality attributes	Individual characteristics
Support from the web page and its complexity (A7)	Availability of the help system explaining the procedure of making an order, (C18)
	Availability of the suggestion system for filling the forms and indicating in the form fields incorrectly filled, (C19)
	Possibility of realization of all desired service activities exclusively via the web page (gathering information on the offer, seller, conditions of purchase, contact, ordered post-sales service), (C20)
Utility of the web page (A8)	Ease of navigation on the web page, simplicity and transparency of the menu, (C21)
	Speed in reaching the interesting information and availability of the internal search engines making it easier to find a searched product or information, (C22)
	Transparency and readability of the information included on the web site, (C23)
	Availability of the web page in other language versions and adaptation of the web site for the needs of the disabled, (C24)
Visualization of the offer (A9)	Use of high quality multimedia for the presentation of the offer (photos with the zoom option, presentations, movies), (C25)
Cart functionality (A10)	Presence in the shop of the virtual shopping cart, (C26)
	Allowing the choice of making a purchase with registration and without it, (C27)
	Allowing to return to the previous stages of the order to modify them, (C28)
	Allowing for the automatic recalculation and actualization of the cart contents, (C29)
Communication (A11)	Allowing for the display of the summary of the made order, (C30)
	Richness of the forms of contact, (C31)
	Level of engagement of the personnel in the solving of the customer's problem, (C32)
	Speed of giving answer to the question, (C33)
Customer's participation (A12)	Confirmation of the realization of the stages of the order via mail, (C34)
	Availability of the offer configurators or forms for expression of wishes, special needs concerning the delivery, (C35)
	Option of registration and having a member account, (C36)
	Availability of choice from among many forms of payment, many forms of delivery and delivery date, (C37)
	Possibility of the price negotiation, (C38)
Post sales service (A13)	Fulfillment by the sales portal of the function of the conductor of the promotion-advertisement campaign, (C41)
	Availability of the forms for filing complaints, returns or withdrawal from the agreement, (C39)
	Possibility to check history of orders, (C40)

*In the table, the letters A with subsequent Arabic numerals mark individual attributes as a group of determinants. The letters C with subsequent Arabic numerals indicate detailed features of the online trading service, which are determinants of the quality of this service. The numbering of attributes and features results from the order of questions in the consumer survey.

Source: own study.

5. Research methodology

The general methodological assumptions of the research were as follows. The quality of online trading services provided by two groups of entities was assessed:

- 1) the first group of entities consisted of online stores offering only goods,
- 2) the second group of entities consisted of service providers offering their services online.

The aim of the study was to obtain information from respondents (consumers of the niche segment of maritime e-commerce in age 16-64 years old) about the assessment of their satisfaction resulting from the identified features in the online commercial services provided. The level of consumer satisfaction was assessed in terms of features grouped in two dimensions:

- 1) the first dimension of the assessment took into account 17 quality features of the online trading service, which are determinants of formal and technological quality¹,
- 2) the second dimension of the assessment took into account 24 quality features of the online trading service in the functional and procedural dimension.

Based on their own shopping experiences in maritime e-commerce, customers had the opportunity to evaluate each of the features of the commercial service from the point of view of meeting their expectations. The following grading scale was adopted:

- 1 = very bad rating, when customer expectations were not met completely,
- 2 = bad rating, when customer expectations were mostly not met,
- 3 = average rating, when the fulfillment of expectations was rated as average,
- 4 = good rating, when customers' expectations were mostly met,
- 5 = very good, when the customer's expectations were fully met or even exceeded.

The respondents were selected randomly, but were recruited from purposefully selected websites (websites of sellers and service providers and their company pages on the Facebook social networking site).

Moreover, due to the fact that the average e-consumer is rather a layman in matters of website design technology, the quality in the technological aspect was assessed in the course of an expert study (author's own research), which consisted of performing an audit of the websites of entities selling in maritime e-commerce. The analysis covered 10 criteria (attributes) of a commercial service, defined in the technological dimension of the quality assessment model: meeting website design standards, design language version, use of style sheets, use of dynamic design languages, use of databases, type of software, type of data encryption, security key length, the presence of any information confirming the website owner's care for the security of the website and data. The rating scale was adopted in the same way as in the consumer survey.

¹ Consumers could assess the technological quality of only a small number of features (only features C16 and C17), the rest were subject to expert assessment.

The aim of the research was to assess the quality of online trading services in the maritime economy. The following hypotheses were formulated in the research:

H1: Niche maritime e-commerce requires multidimensional shaping quality of commercial services.

H2: The quality of commercial services provided by online stores in maritime e-commerce, is more satisfying than in terms of services offered in this sphere of online trade.

6. Research results and commentary

Among the formal features, online store customers rated the feature related to the disclosure of the scope of guarantees provided by online sellers the worst (C10). Customers' expectations were met in this respect only mediocrely (average rating 3.35). Also, on average, respondents assessed that their expectations were met in connection with the possibility of giving ratings or comments and making them public on the website (C4 - average score of 3.43). However, the ratings for meeting expectations in the context of the above features were not low, which means that online sellers did not make any significant omissions in this respect.

The highest scores were given to (better than good, but not very good) formal aspects such as the transparency of the pricing policy (C8 - average score 4.12) and the availability, detail and compliance with the facts of the information posted on the website (C1 - average score 4.02). The remaining features of the online trading service in these dimensions were rated between 3 and 4, which means that they met expectations better than average, but not yet at a good level.

Customers of service providers, on the other hand, rated the least (average rating 3.17) the fulfillment of expectations in terms of: transparency of the procedure for submitting complaints and withdrawal from the contract (C 9), as well as transparency of the scope of guarantees provided (C10), the possibility of issuing ratings via the website and making them public them on the website (C4 - average score 3.27), transparency of the pricing policy (C8 - average score 3.32) and declarations regarding data encryption (C13 - average score 3.39). The respondents' opinions allow us to assess these features as satisfying customers only in an average way.

Customers of service providers rated customer identification the best in formal matters (C7), but the score was 3.93, which means that expectations in this area are almost met. Other features of the online trading service in the presented dimensions were also rated at a level between average and good in terms of meeting the respondents' expectations.

A comparison was also made of the average ratings for meeting the expectations of both groups of customers in terms of each of the examined features. Respondents' expectations regarding formal and technological features were better met in the case of commercial services provided by online stores. As many as 12 out of 17 analyzed determinants received average ratings higher than in the case of online trading services provided by service providers.

In terms of technological issues that could be assessed by customers, the best scores for both online stores and service providers were the 24/7 availability of the website and its reliability and efficiency of the sales website (C16 - average score of 4.24 and 4.29, respectively).

An expert audit of websites on technological issues revealed significant shortcomings. The websites of both stores and maritime e-commerce service providers were not encrypted in terms of data in accordance with the standards (inappropriate encryption key) - feature C49, ratings below 0.5. What deserved praise was:

- in online stores: use of dynamic website creation languages (C49 - score 4.25) and the use of the so-called framework dedicated to e-commerce for building a website (C45) and using databases (C47) - ratings of 4.10, respectively;
- for service providers: use of style sheets (C44 - score 4.70) and compliance of the technologies used with applicable standards (C42 - score 4.25).

In the case of commercial services provided by online stores, among the features of the formal and procedural dimension of the assessment, the lowest score was obtained in the field of price negotiation via the sales website (C38) - meeting customer expectations was rated as lower than average (average score 2.72). Customers were only averagely satisfied with the provision of ready-made forms for reporting complaints, returns or withdrawal from the contract (C39 - average rating 3.09) and the website's function as a transmitter of the promotional and advertising campaign (C41 - average rating 3.11).

However, respondents rated the highest (good level) the fulfillment of expectations in the following areas: presence of a shopping cart (C26 - average rating 4.15), transparency and readability of information, including font typography (C23 - average rating 4.13), speed of reaching information (C22 - average rating 4.08), simplicity and transparency of the menu (C21 - average rating 4.04) and the possibility of making a purchase with or without registration (C27 - average rating 4.02).

Customers of service providers, on the other hand, rated below average (average ratings 2.81) the fulfillment of expectations regarding the possibility of negotiating prices (C38) and providing complaint, return and withdrawal forms on the website (C39). The fulfillment of expectations regarding the presence of offer configurators and forms for expressing wishes and special needs regarding the order was assessed as average (C35 - average rating 3.14), as well as regarding the presence of a shopping cart (C26 - average rating 3.26).

This group of respondents was most satisfied with the ease of navigation, transparency and simplicity of the menu (C21 - average rating 4.05) and the transparency and readability of information in terms of font size and color and background (C23 - average rating 4.02). The remaining features received scores between 3 and 4.

Results in terms of average ratings for meeting respondents' expectations towards the features of the online trading service are presented in Figure 1.

To sum up, it can be said that the presented research results indicate that each of the three dimensions of assessing the quality of online commercial services (formal, functional-procedural and technological) requires improvement. Customers have clearly higher requirements for commercial services than are met by both online stores and service providers. In each of the examined dimensions of the quality of online trading services, there are deficiencies and shortcomings in terms of the analyzed features, but most of them are in the technological area, which is a critical error.

It was shown that in the case of online stores, online shopping services were more comprehensive and strategically refined, which allowed customers to make a quick, self-service purchase. In services, there was a much greater need to expand the scope of online commercial services. In both groups of entities, customers indicated the need to improve quality, especially in terms of after-sales service, but also in the context of the sales website serving as a relay for promotional and advertising campaigns, the possibility of negotiating prices, increasing the shopping cart function, customer participation and increasing the options for choosing the methods of providing the online commercial service.

The presented charts show the existence of a quality gap. The gap in the quality of online trading services can be considered to be the space between the graph line and the edge of the axis with the maximum score that respondents could give for meeting expectations regarding individual features (score 5). The largest gap is visible in relation to the technological dimension of online trading services. In the case of the formal and functional-procedural dimensions, the size of the gap is comparable.

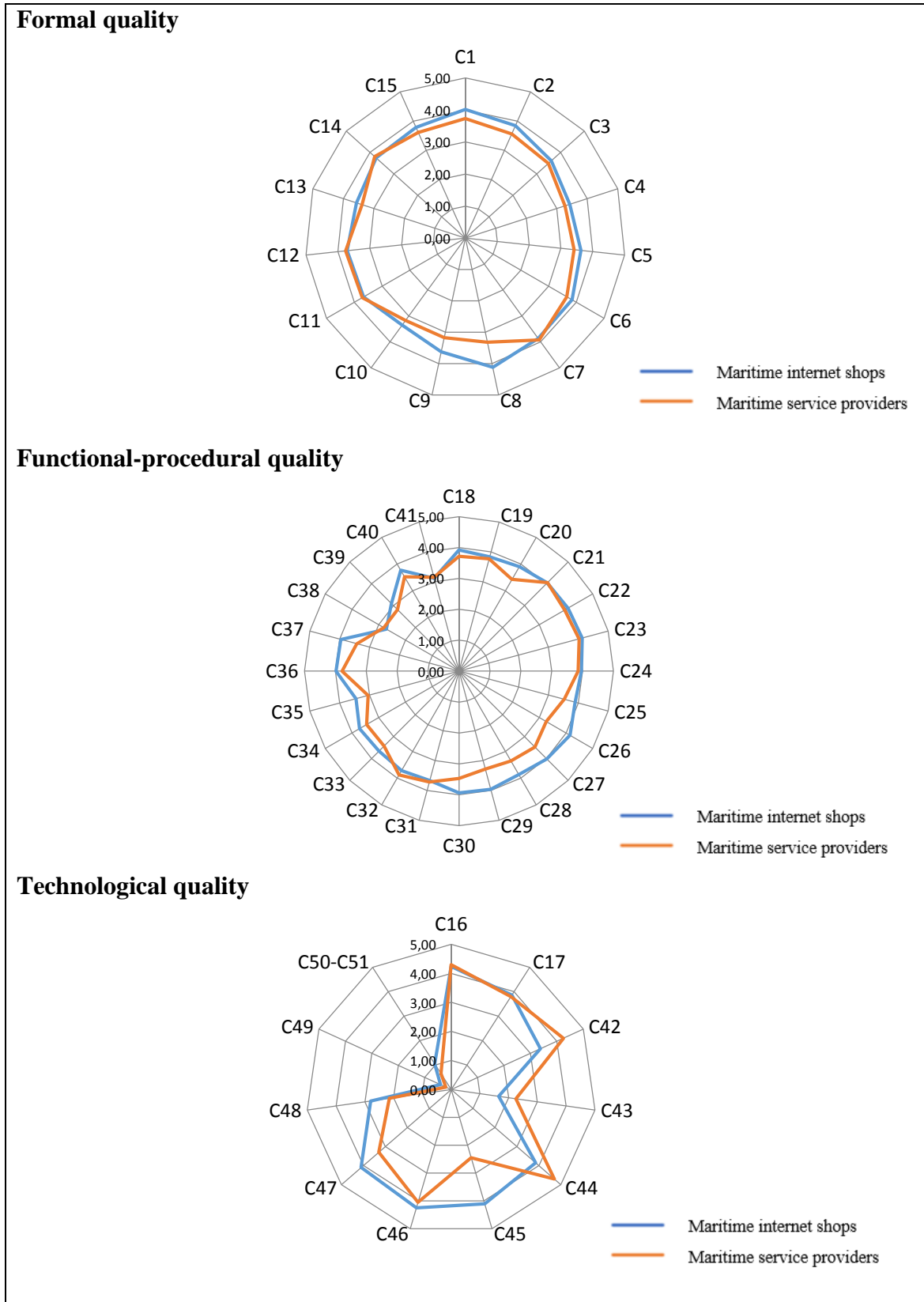


Figure 1. Results of assessing the quality of online trade services in maritime e-commerce.

Source: own study.

The results of the study should be used applicably, as it clearly showed which areas of online trading services in maritime e-commerce absolutely require improvement, those in which improvement actions are recommended and those that do not require improvement actions (table 2).

Table 2.
Recommendations for maritime e-commerce websites

Type of website:	Website features which...		
	... absolutely require improvement	... improvement is recommended	... do not require improvements
Maritime internet shops	C2, C3, C13, C16, C33, C35, C38, C39, C42, C43, C49	C4, C7, C10, C11, C14, C15, C17, C22, C25, C28, C29, C30, C31, C32, C34, C41, C44, C46, C48, C50, C51	C1, C5, C6, C8, C9, C12, C18, C19, C20, C21, C23, C24, C26, C27, C36, C37, C40, C45, C47
Maritime service providers	C2, C3, C6, C8, C13, C20, C25, C26, C27, C28, C29, C33, C34, C35, C39, C43, C45, C46, C48, C49	C1, C4, C5, C7, C9, C10, C15, C17, C30, C31, C32, C37, C38, C41, C44, C46, C48, C50, C51	C11, C12, C14, C18, C19, C21, C22, C23, C24, C36, C42, C16, C17

Source: own study.

The final conclusions of the study are as follows. Niche maritime e-commerce requires multidimensional shaping quality of commercial services (H1). The quality of commercial services provided by online stores in maritime e-commerce, is more satisfying than in terms of services offered in this sphere of online trade (H2). The quality of commercial services provided in maritime e-commerce requires improvement, especially in the technological dimension.

7. Conclusions

The study analyzes the results of research on the quality of commercial services in the niche area of e-commerce, which is maritime e-commerce. This area of e-commerce has not been particularly scientifically researched or described in the literature, especially in B2C relationship. It can therefore be assumed that the research results related to the conceptualization of maritime e-commerce are a contribution to science. The respondents turned out to be a rather hermetic group, reluctant to provide answers, which implied the use of non-random research methods. Nevertheless, it is worth doing research on niche areas of e-commerce, because it can affect their further development. Additionally, sellers and services providers of maritime e-commerce can benefit from the research results, because they have developed recommendations for improving the quality of commercial services. Hence, the article also has an application character.

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