



EDI SYSTEM IN LOGISTIC MANAGEMENT OF AN ENTERPRISE

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ABSTRACT. Background: Currently, many IT tools are used in every field. Therefore, the management of enterprises want modern IT solutions to also include logistic applications in various and diversified business profiles. It is also related to the minimization of operating costs. The EDI system makes it possible to achieve such goals. For this reason, research was carried out in selected Polish and Russian enterprises and the results were presented together with the conclusions regarding the use of the EDI system.

Methods: The comparison of small enterprises in Poland and Russia were conducted. For that purpose a random sample of 100 enterprises, i.e. 50 enterprises in Poland and 50 enterprises in Russia was selected. The data were collected by the use of specially prepared questionnaires.

Results and conclusions: EDI system is used in both Polish and Russian enterprises although the scope of application of this system varies and depends on the concept of its use by the management of enterprises. Polish enterprises is mainly focused on the optimization of inventory management, minimization of costs and productivity of the enterprise, while in the case of Russian enterprises, activities are aimed at improving relationships with partners, the quality of the company's operations and productivity.

Key words: EDI, IT, IT tools, IT solutions, logistic applications.

INTRODUCTION

The EDI system is necessary to achieve the set goals, as it allows shortening the time of customer service completion. It is well known that the longer the customer service time, the longer it takes to freeze the company's financial resources [Cyplik, Zaborowski, Shvartsburg 2017]. As a consequence, it may result in a lack of financial liquidity and lead to perturbation in the company's operations. For this reason, it is important to analyze the EDI system in an enterprise that produces goods [Cyplik, Zaborowski, Shvartsburg 2017]. It is therefore necessary to test the EDI system used in business management. It improves customer service and significantly improves the quality of this service [Leung 2012, Cadle, Paul 2010].

These activities can significantly help Computer Science. It should be remembered that an IT system is a tool used to integrate data from multiple sources and which are distinguished by identifiers and transformed into a specific stream of information [Naraynan, Maruchek, Handfield 2018, Hoc-Hai, Bernard, Kwak-Kee 2015, Fiaidhi, Mohammed, Mohammed 2017]. This information is then collected in the database and is the result of the implementation of the main planning processes and implementation of processes [Bradley et.al 2018, Cyplik, Zaborowski, Shvartsburg 2017, Blecker, Kersten, Ringle 2014].

An interesting solution is the integration of the IT system with the telecommunications system leading to the creation of an ICT system, which allows access to the computer

system of every enterprise to the telecommunications network [Vesela 2017, Fiaidhi, Mohammed, Mohammed 2017]. This leads to integration between the IT and ICT systems, enabling the processing of information and placing them in the cloud, which becomes a place and computing power related to enterprise servers [Fiaidhi, Mohammed, Mohammed 2017, Han, Dong 2017, Neise, 2017].

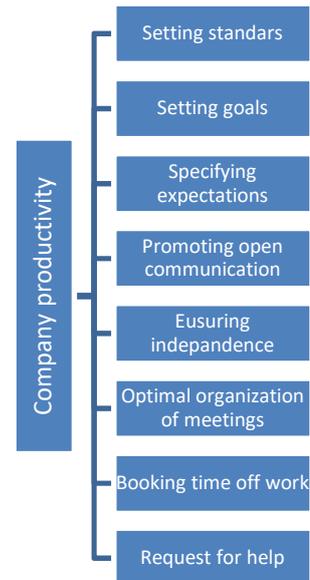
Thanks to this solution, every employee can work on documents in real time. This enables electronic data exchange (EDI) in a closed group of users [Cyplik, Zaborowski, Shvartsburg 2017] and allows you to use its main advantages (Fig. 1- 6).

The factors of individual elements listed in Figs. 2-6 illustrate how the EDI system works. They are also the basis for carrying out tests of the occurrence of these elements in individual enterprises. In this way, it is possible to assess to what extent the EDI system or its components are installed and used in the surveyed enterprises to influence the effectiveness of their functioning.



Source: own study

Fig. 1. Advantages of the EDI system



Source: own study

Fig. 2. Productivity as part of the EDI system

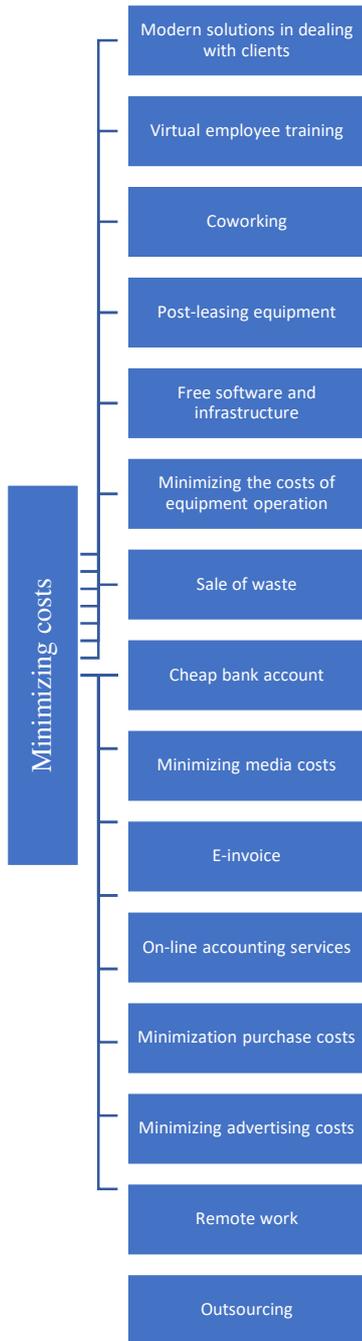
MATERIALS AND TEST METHODS

The research covered small enterprises in Poland and Russia, while for comparisons, a random sample of 100 enterprises, i.e. 50 enterprises in Poland and 50 enterprises in Russia, which deal with the production of machinery and equipment was established.

Selected companies were directed to specially developed questionnaires in which they explained what they are used for and what is the purpose of the research.

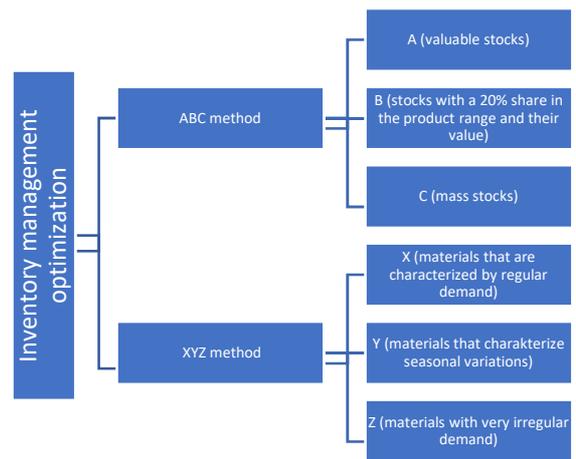
Responses were received from 24 enterprises, in 12 enterprises from Poland and 12 companies from Russia, which accounts for 24% of the surveyed enterprises. The results of the obtained tests were subjected to statistical analysis using the Statistica program for this purpose.

Respondents answered questions related to the EDI system and the use of individual elements of this system, which are presented in Figure 2-7. The results of these tests are presented in the following drawings.



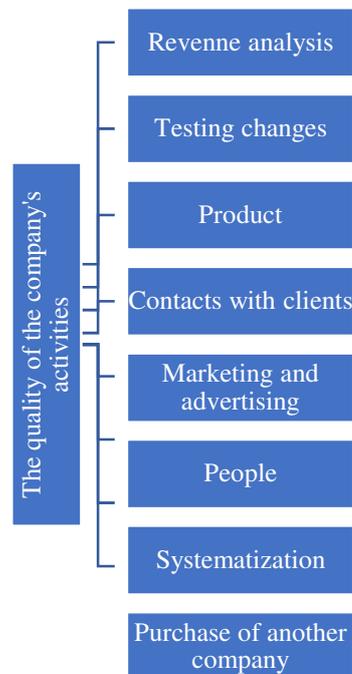
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Fig. 3. Minimization of costs as an element of EDI



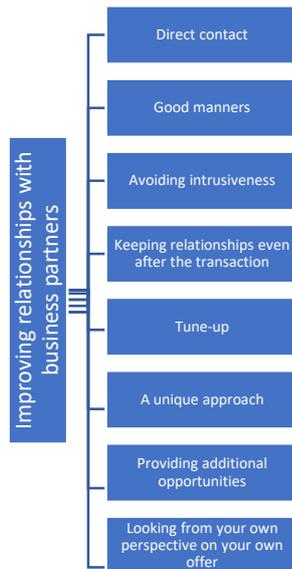
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Fig. 4. Optimal inventory management as an element of EDI



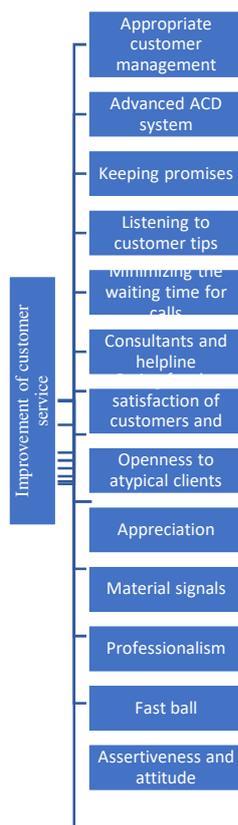
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Fig. 5. The quality of the company's activities as a component of EDI



Source: own study

Fig. 6. Improvement of relations with partners as a component of EDI



Source: own study

Fig. 7. Improvement of customer service as an EDI component

FINDINGS

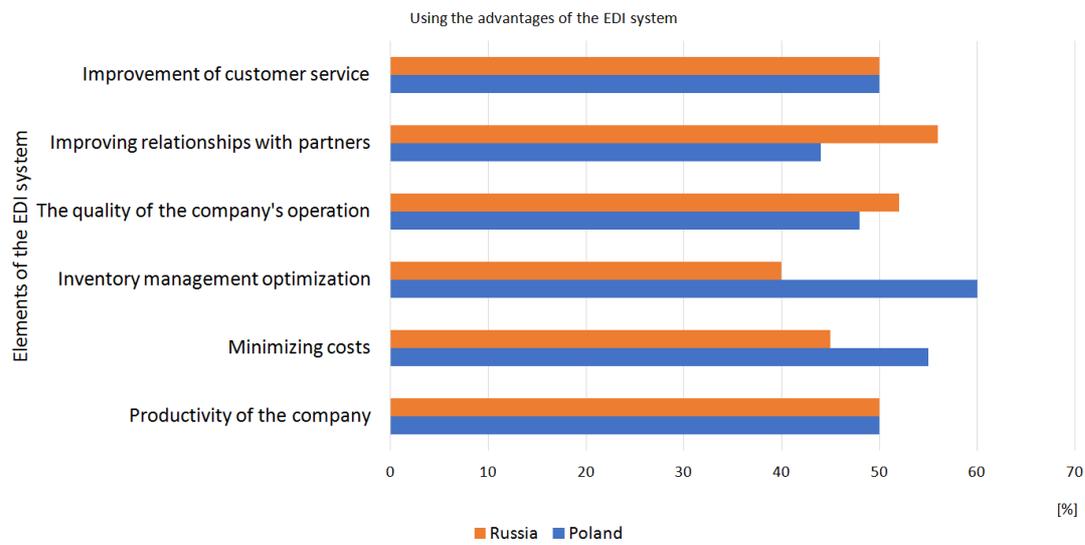
Research on using the advantages of the EDI system showed (Fig. 8) that cost minimization is used in Polish enterprises in 18% more than in Russian enterprises, while the optimization of inventory management is 33% higher than in Russian enterprises. However, quality activities in Russian enterprises are higher by 7.3% than in Polish enterprises and the improvement in relations with partners is higher by 21% in Russian enterprises.

It should be noted that the elements of individual components in the assessment of the surveyed enterprises are of great importance for the entire EDI system. Therefore, the results of research on individual elements included in the productivity for Polish enterprises are presented (Fig. 9) and for Russian enterprises (Fig. 10).

Comparing individual elements within the productivity of enterprises (Figure 9, Figure 10), it can be seen that the following elements dominate in Polish enterprises: promoting open communication 8.4%, optimal organization of meetings 9.67%, request for help 24.42% they are bigger than in Russian companies. On the other hand, Russian companies have an advantage in setting standards by 37.25%, setting goals by 61.9%, specifying expectations by 13.2%, ensuring independence by 14.6% and booking time off from work by 68.51%.

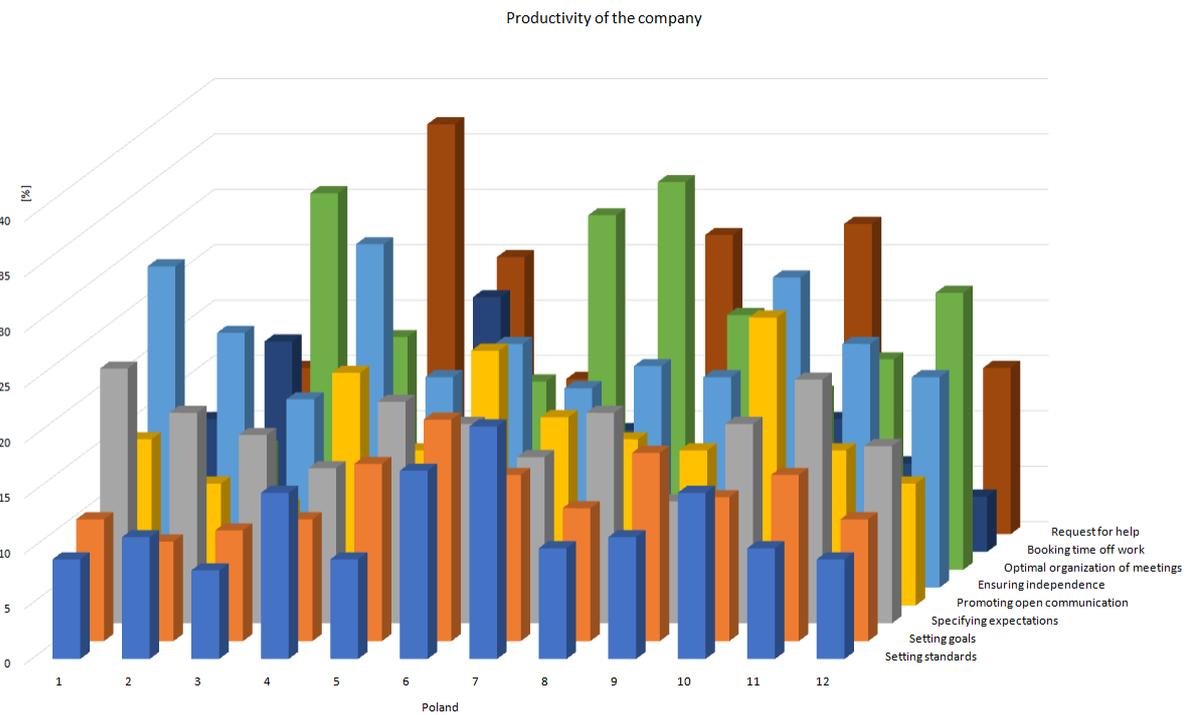
The research results indicate a different approach in the surveyed enterprises towards the EDI system. Skillful use of setting standards and setting goals gives the Russian company a greater perspective in the area of EDI production and use.

In the case of minimization of costs by an enterprise, elements of this component of EDI for the surveyed enterprises also differ, which is illustrated in Fig. 11, Fig. 12 and Fig. 13. The research results indicate that there are groups of elements in the surveyed enterprises, which in one case are beneficial for Polish enterprises, and in other cases for Russian enterprises (Fig. 13).



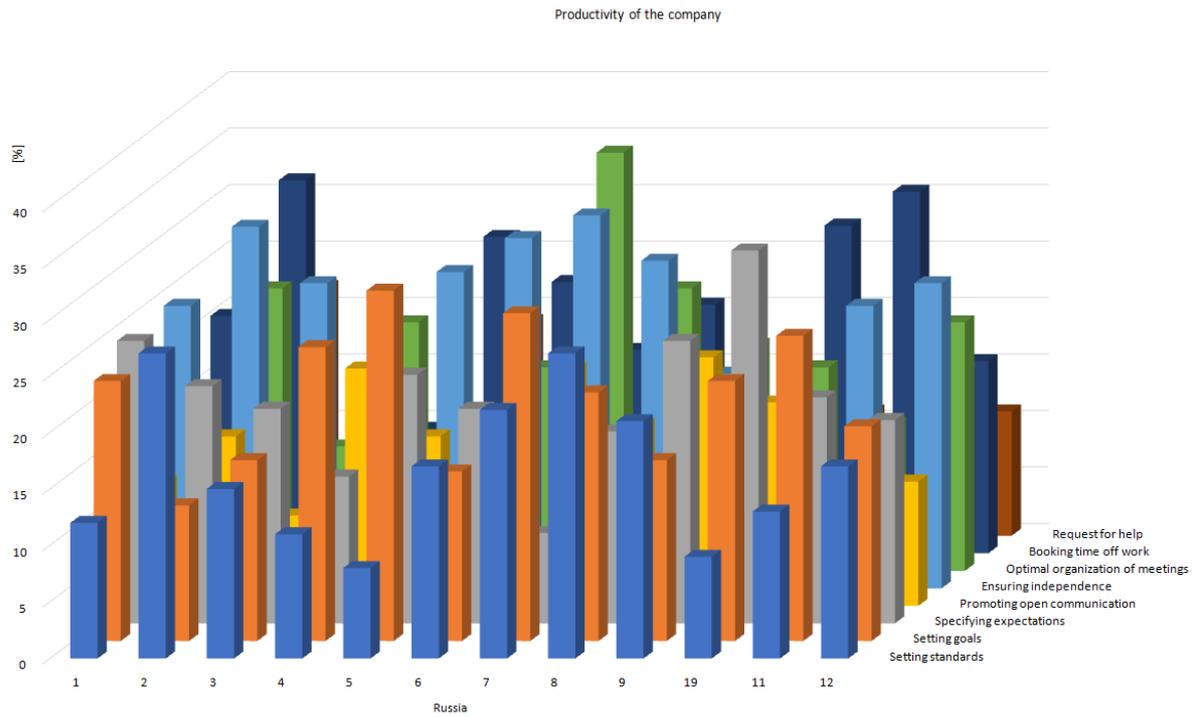
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Fig. 8. Components of the EDI system used by Polish and Russian enterprises



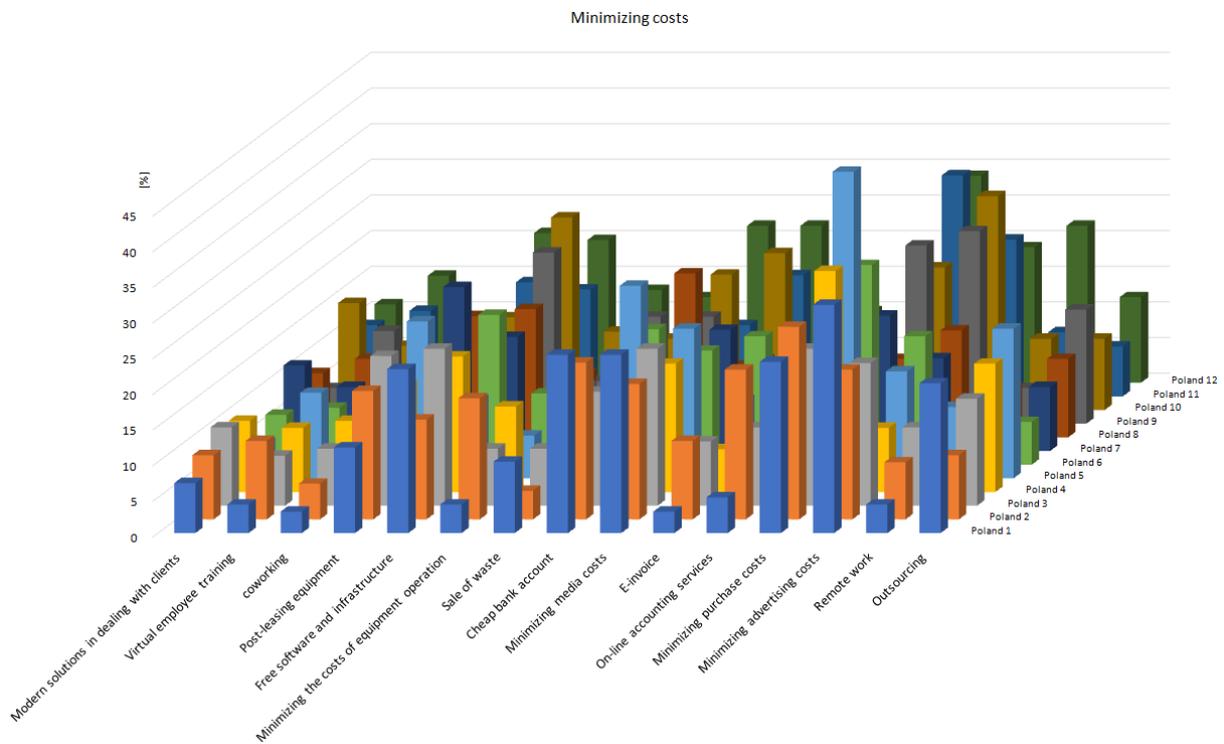
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Fig. 9. Elements of productivity in Polish enterprises



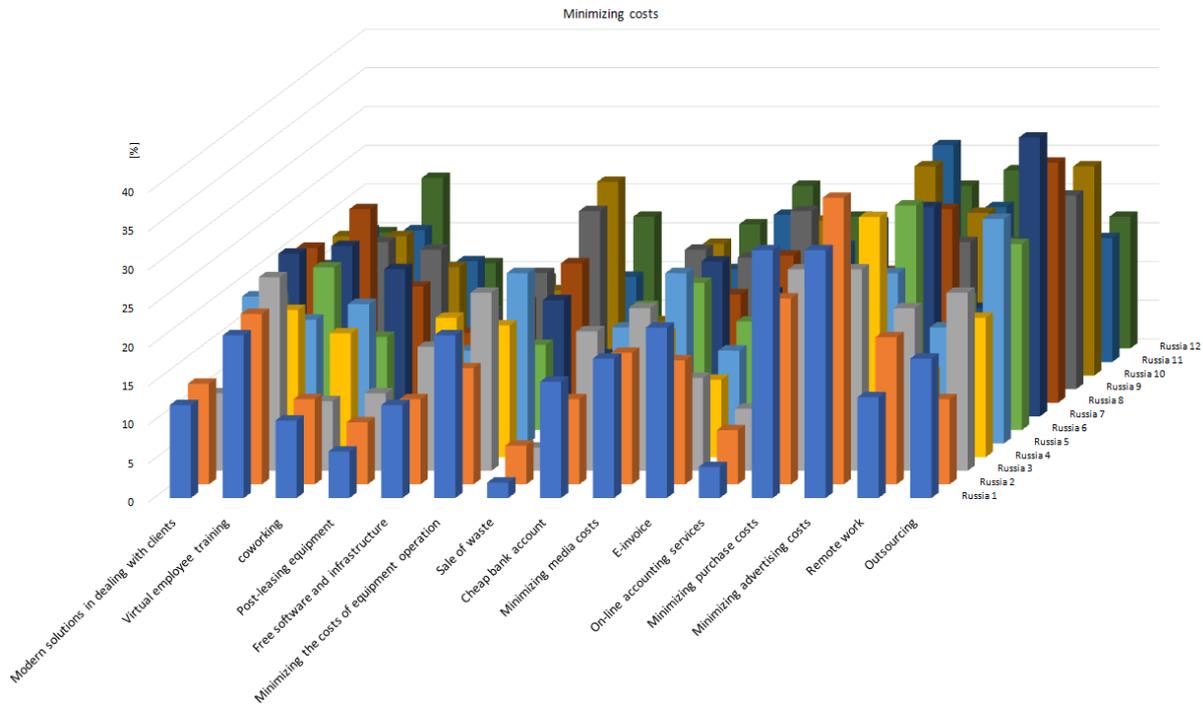
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Fig. 10. Elements of productivity in Russian enterprises



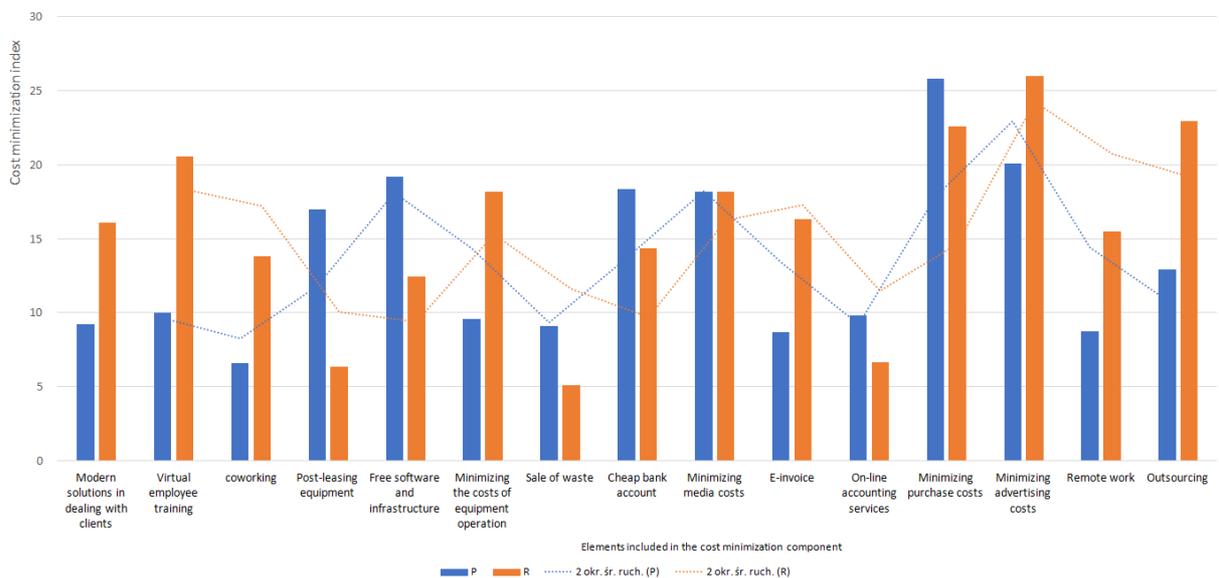
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Fig. 11. Minimization of cost elements in Polish enterprises



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Fig. 12. Minimization of cost elements in Russian enterprises



Source: own study

Fig. 13. Elements of cost minimization of Polish (P) and Russian (R) enterprises

In the use of EDI in enterprises, the use of inventory management methods is important. Therefore, in Fig. 14 and 15, the results of research on individual elements of the applied methods for Polish and Russian enterprises are presented. The individual elements of the

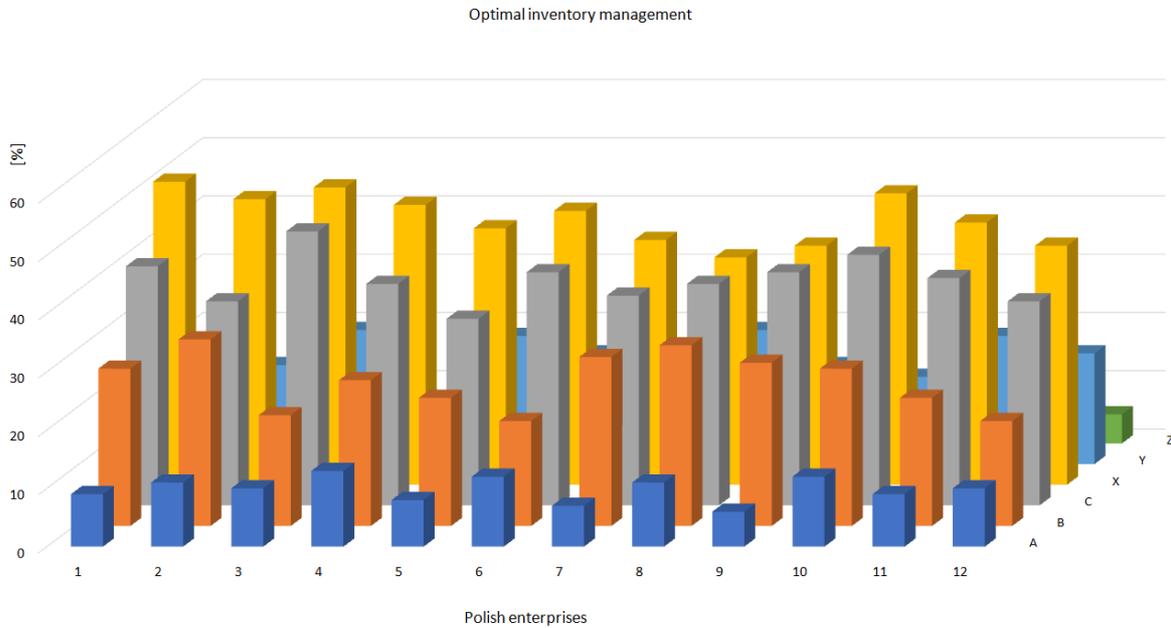
studied methods are used with varying intensity in the surveyed enterprises. The results of the research presented in Fig. 16 show that the individual elements of both methods are applied to a different degree, with the C method and the X method being the most

common method. Of course, other methods are also used, but with different frequency.

company's operational quality is, therefore, of significant importance (Figure 17, Figure 18).

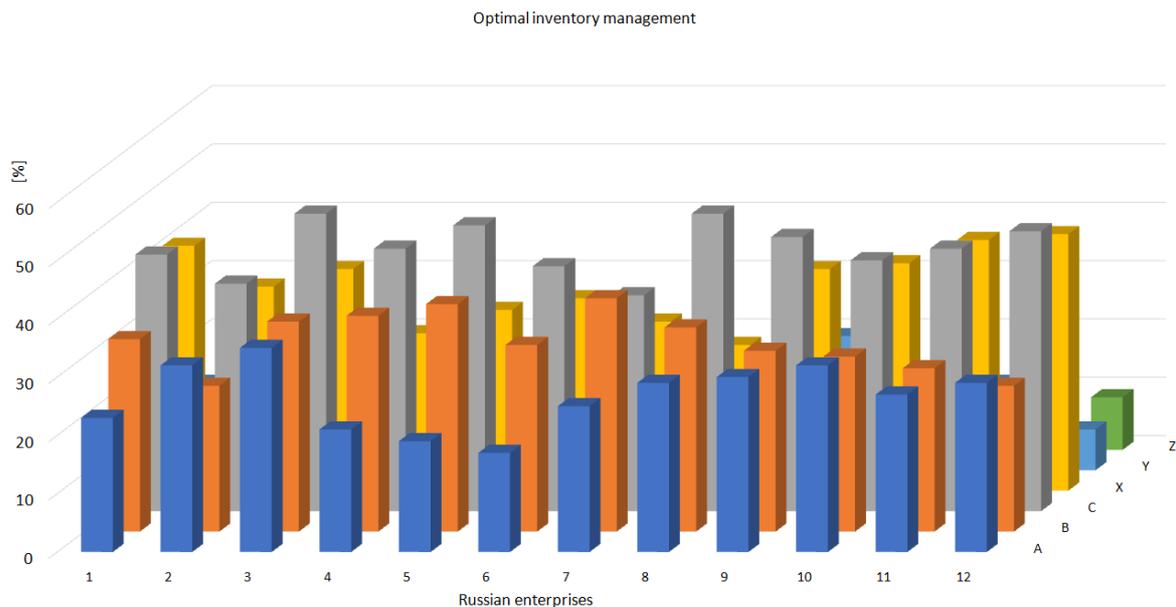
In the EDI system, the quality of the company's operations is of considerable importance. Obtaining the results of tests of elements falling within the scope of the

The analysis of Figs. 17-18 shows that Polish enterprises attach more importance to marketing, and Russian enterprises to the product.



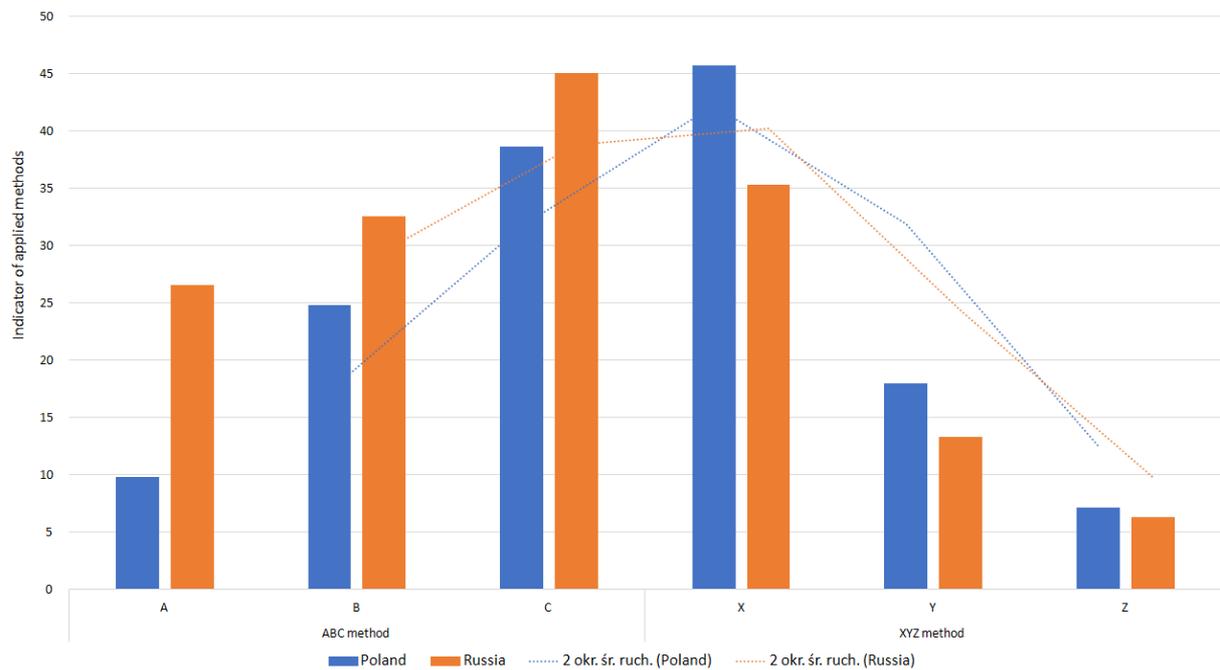
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Fig. 14. Elements of optimal methods of inventory management in Polish enterprises



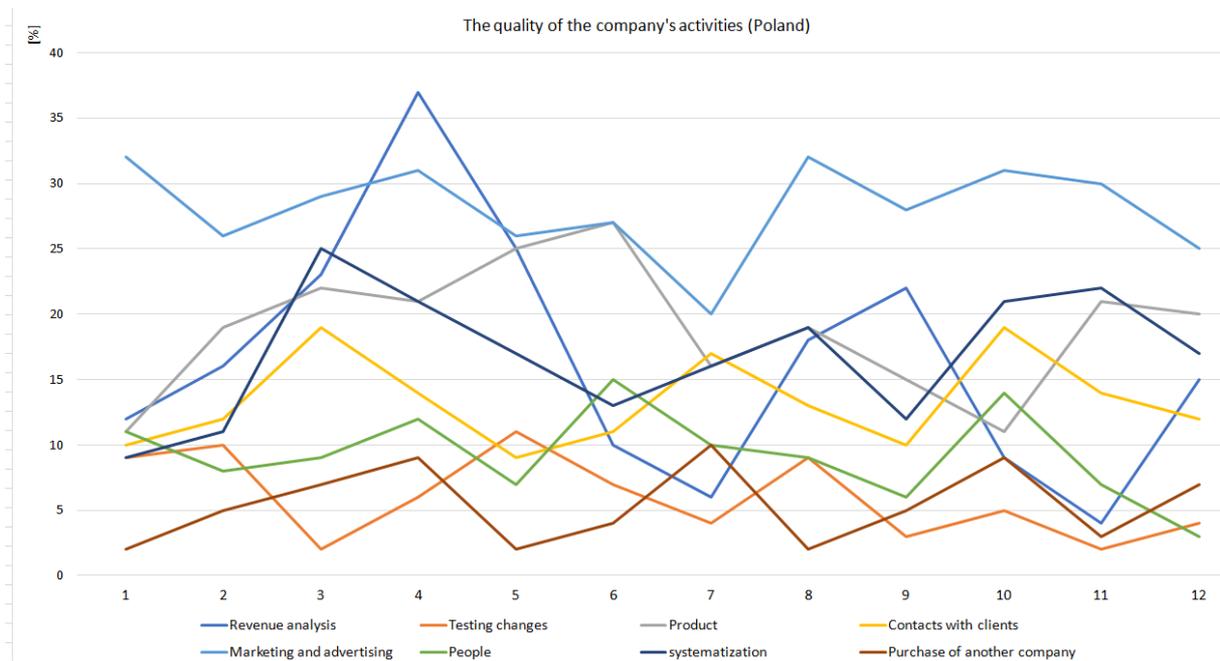
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Fig. 15. Elements of optimal methods of inventory management in Russian enterprises



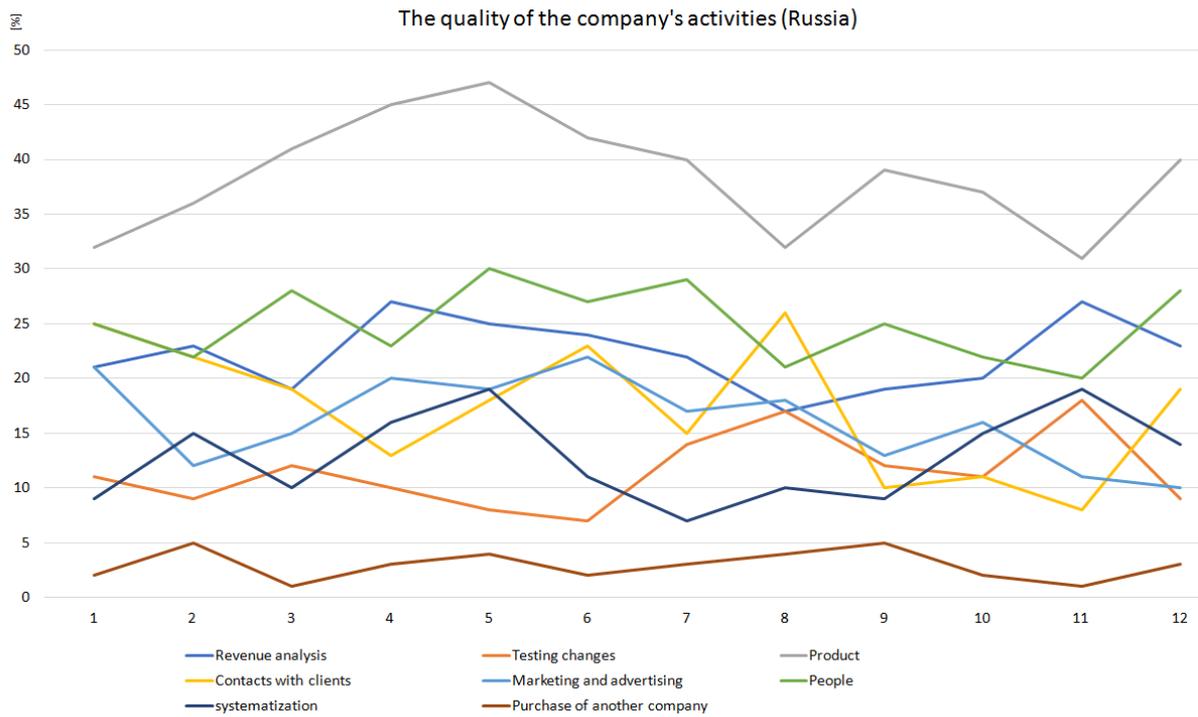
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Fig. 16. Comparison of component components used in inventory management in Polish (P) and Russian (R) enterprises



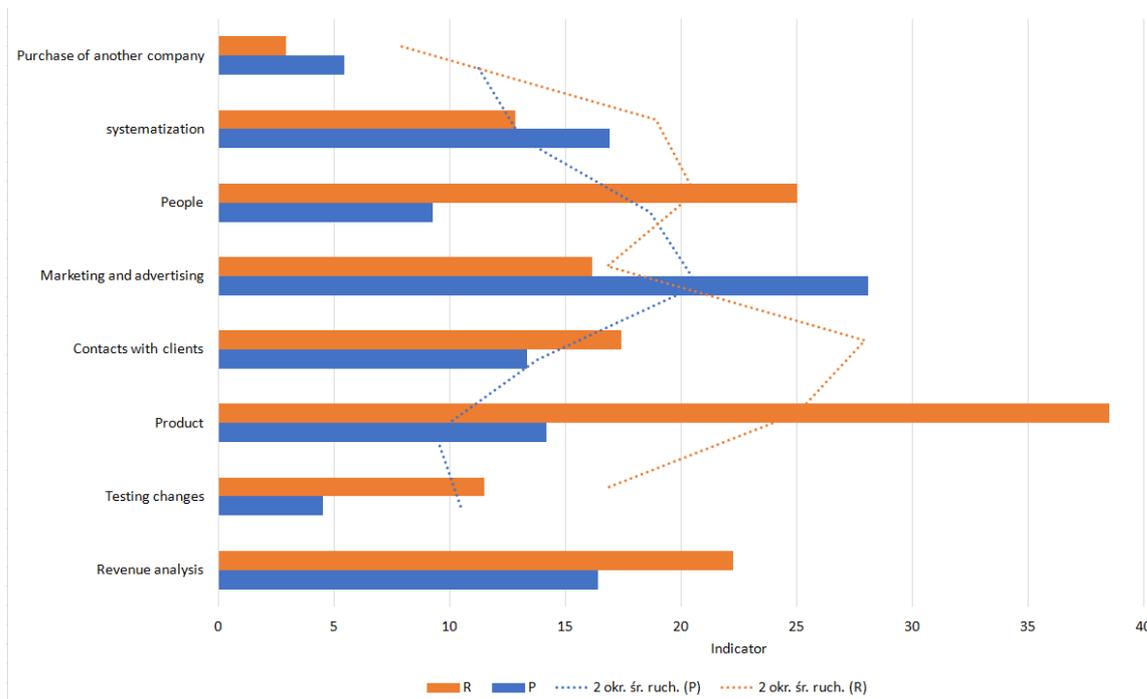
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Fig. 17. Elements of the quality of management in Polish enterprises



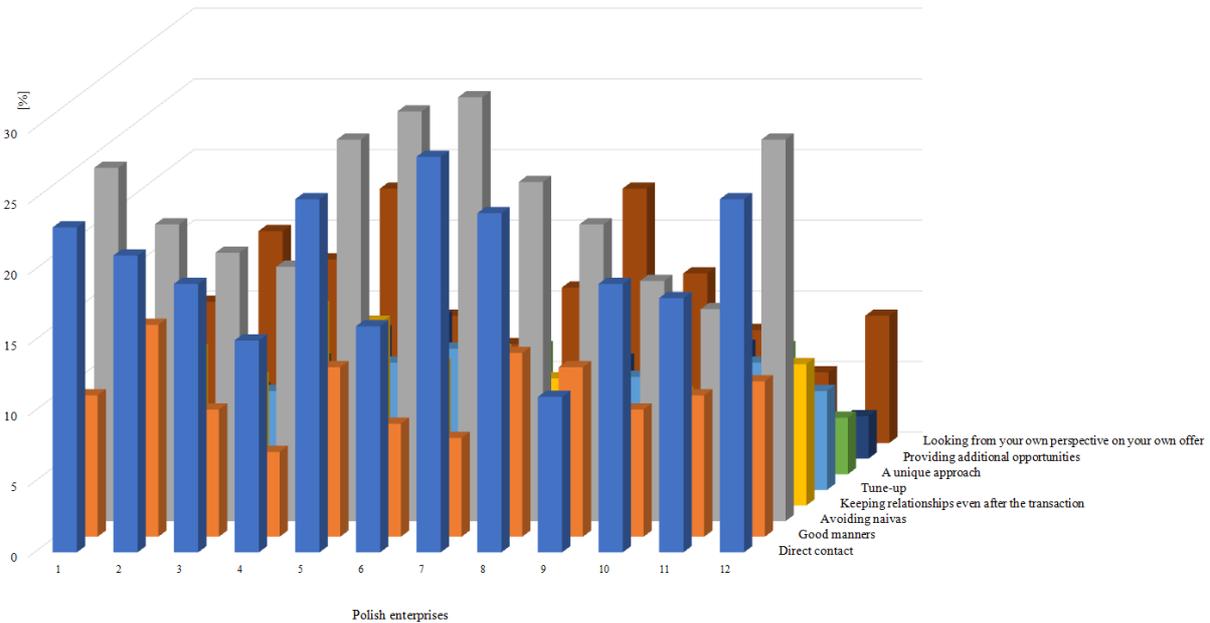
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Fig. 18. Components of management quality in Russian enterprises



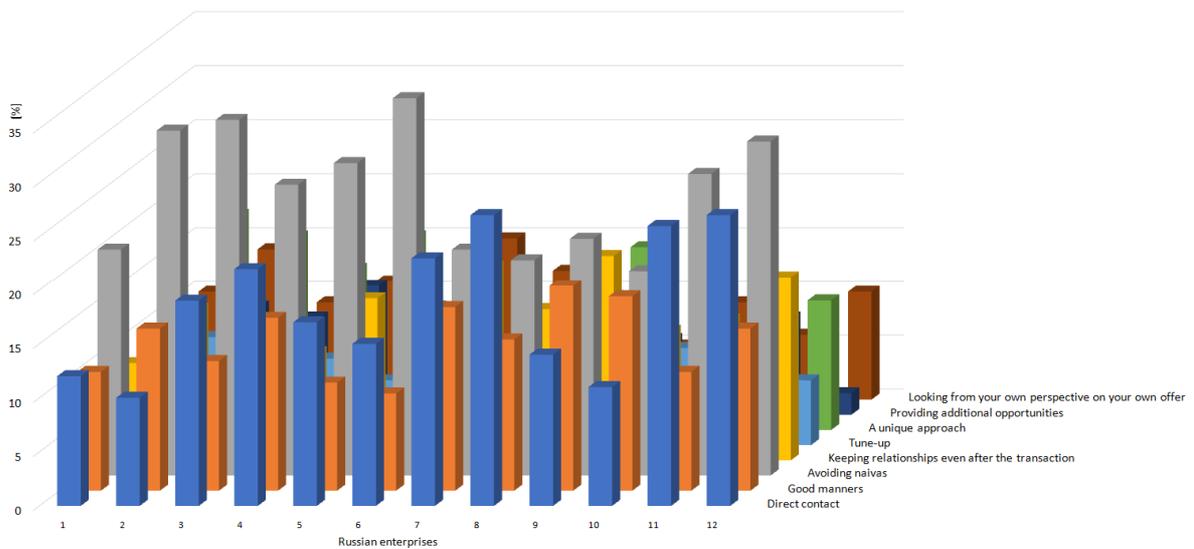
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Fig. 19. Comparison of research results in the field of quality of activities for the surveyed enterprises along with trend lines



Source: own study

Fig. 20. Research results of elements occurring as part of improving relations with partners in Polish enterprises



Source: own study

Fig. 21. Research results of elements occurring as part of improving relations with partners in Russian enterprises

The comparison of these research results illustrates different approaches in Polish enterprises and Russian enterprises in terms of quality of activities (Fig. 19).

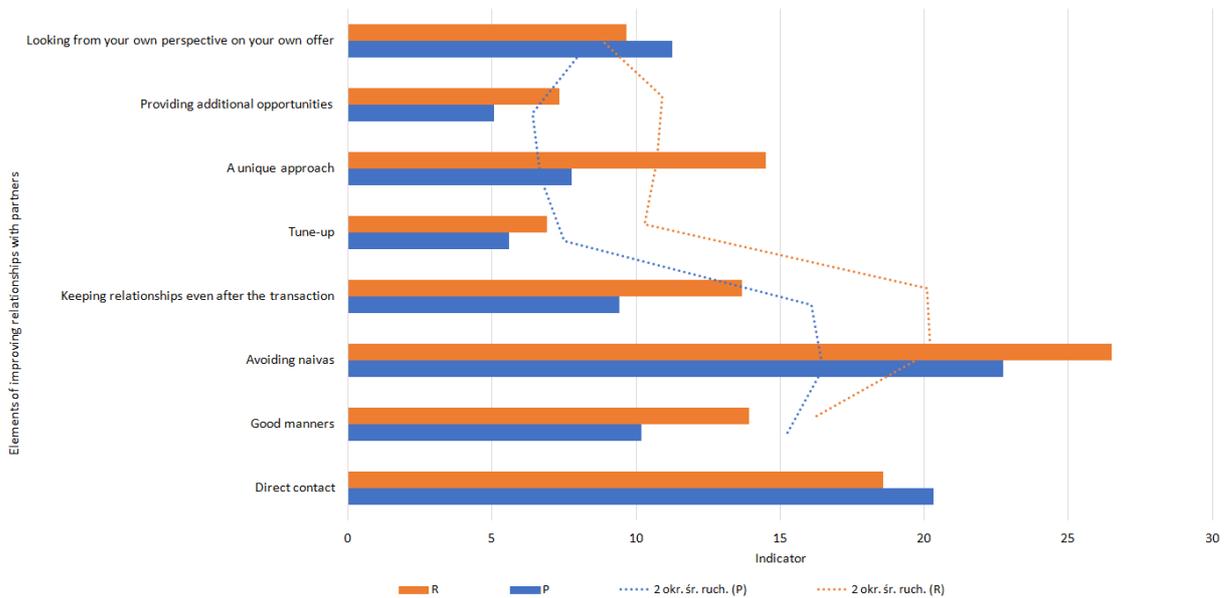
In Polish enterprises, marketing and advertising, systematization, revenue analysis and product were recognized as the most important elements of the activities (Figure 19), while the Russian companies considered

the product, people, revenue analysis and contacts with customers to be the most important elements of the quality of activities (Figure 19). Thus, there are differences in the approach and understanding of the quality of activities.

Research in improving relations with partners is presented in Fig. 20 and Fig. 21.

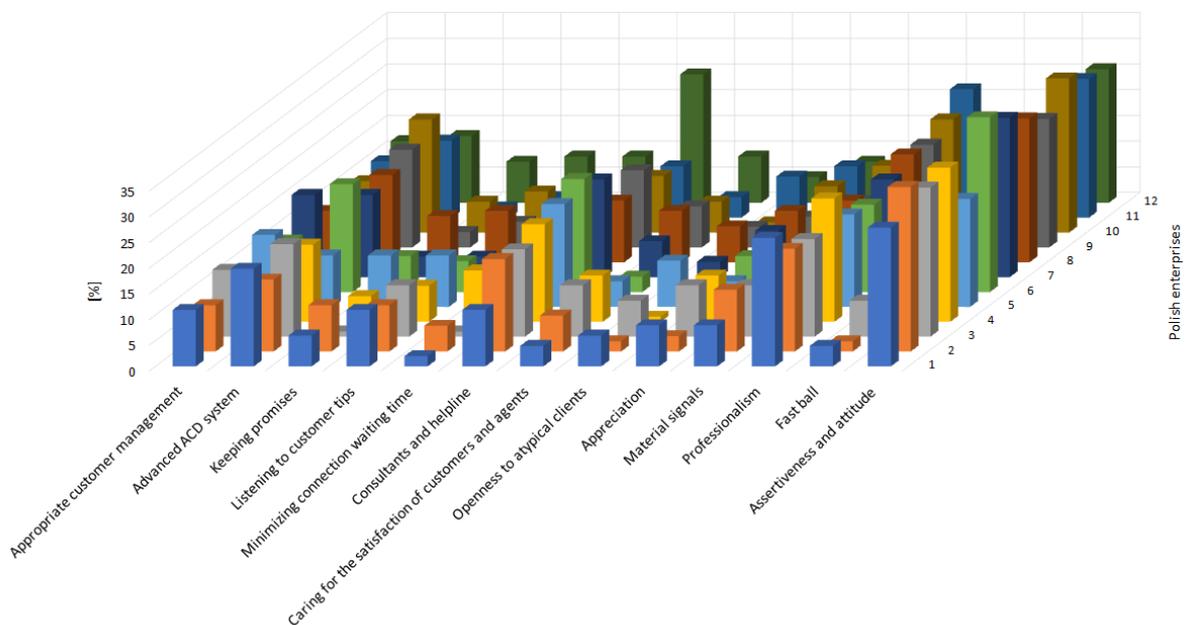
Fig. 22 presents the results of research on elements of improving relations with partners cumulatively for Polish (P) and Russian (R) enterprises. A comparison of the research

results showed that Polish and Russian enterprises carry out almost parallel activities in the use of elements of improving relations with partners (Fig. 22).



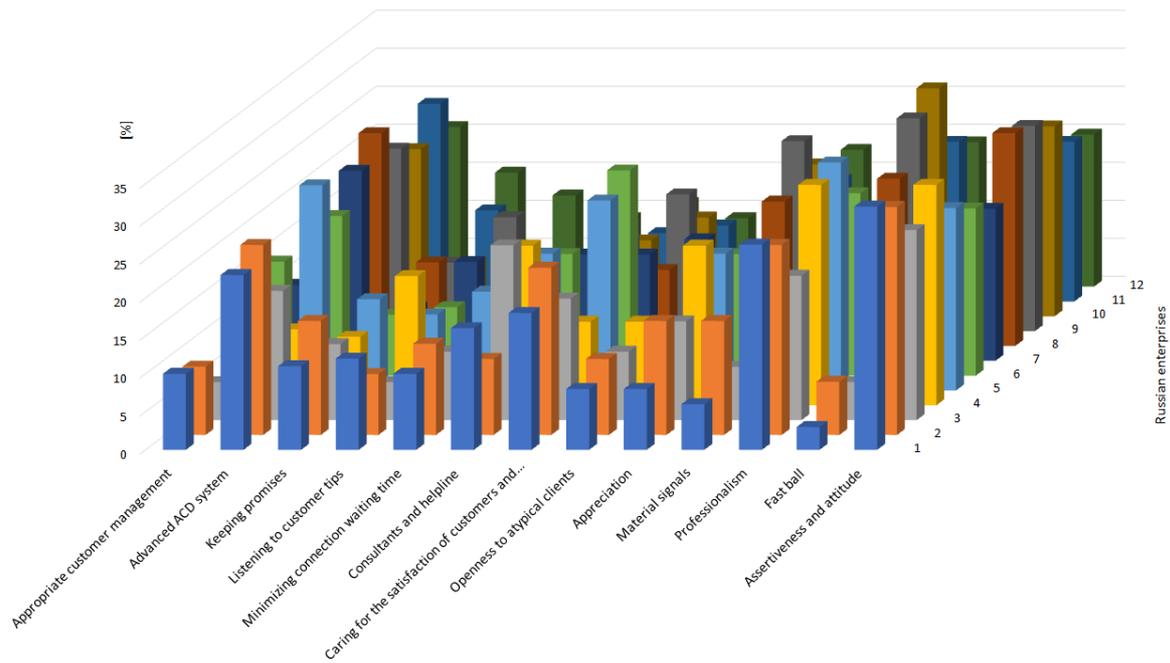
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Fig. 22. Elements of improving relations with partners in Polish (P) and Russian (R) enterprises



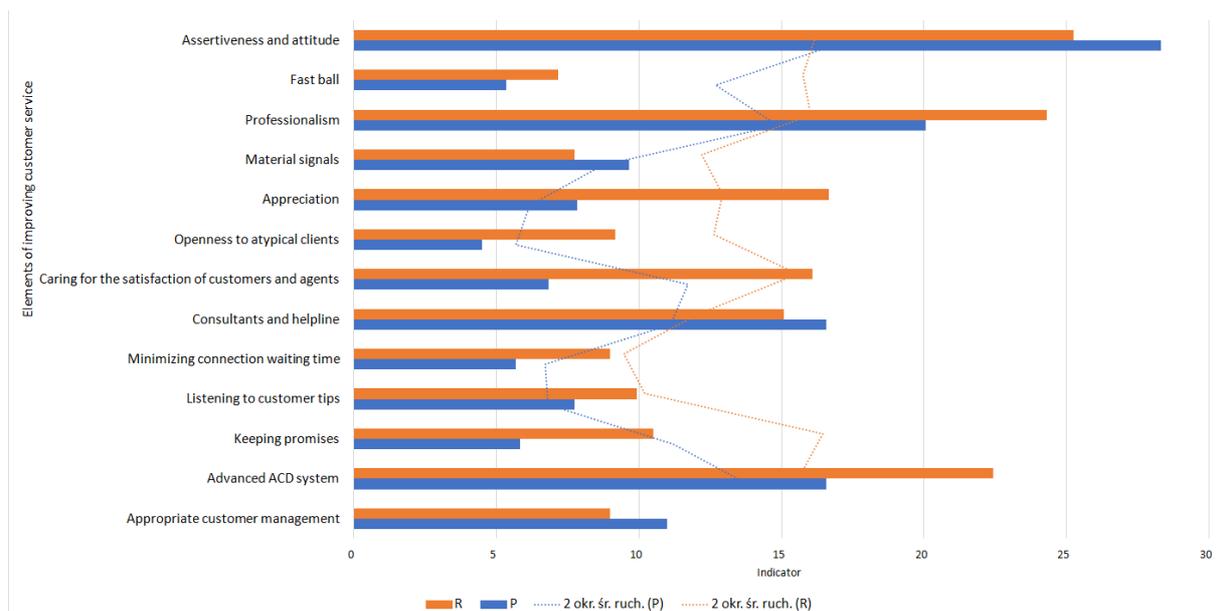
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Fig. 23. Research results of elements of improving customer service for Polish enterprises



Source: own study

Fig. 24. Results of research on elements of improving customer service for Russian enterprises



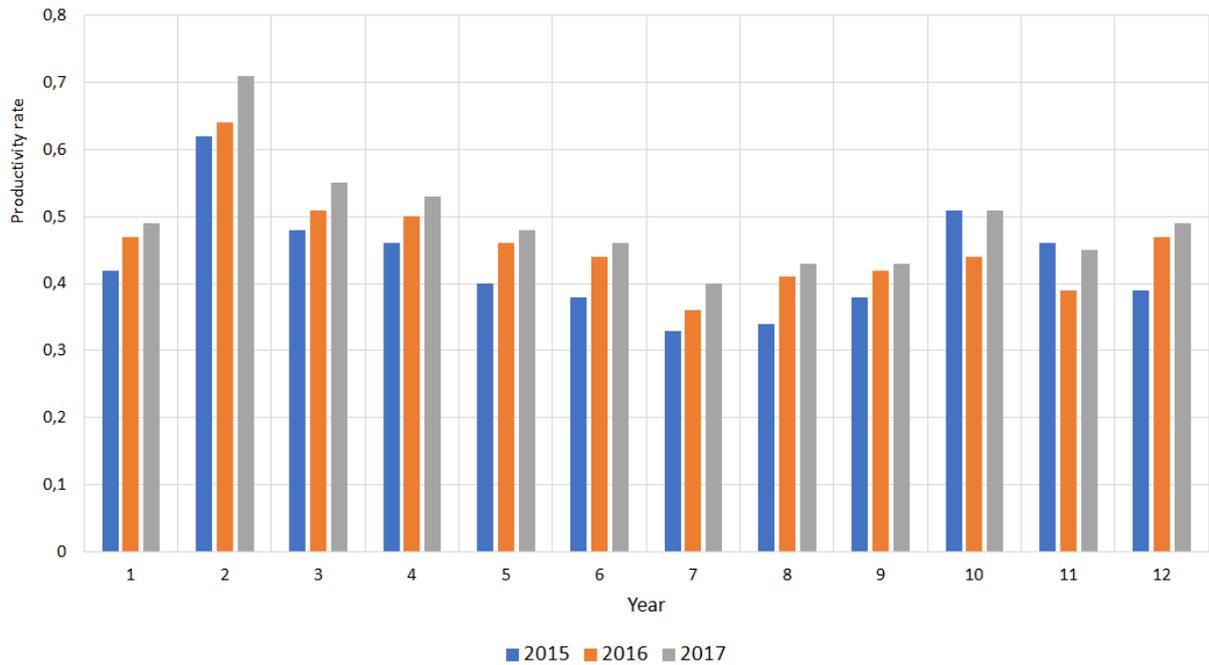
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Fig. 25. Comparison of research results of elements of customer service improvement in Polish (P) and Russian (R) enterprises

Russian companies use the elements of improving relations more than Polish enterprises to a greater extent. Polish companies dominate mainly avoiding intrusiveness, direct contact, looking from their own perspective on their own offer and good manners, while Russian companies should be distinguished by avoiding intrusiveness, direct

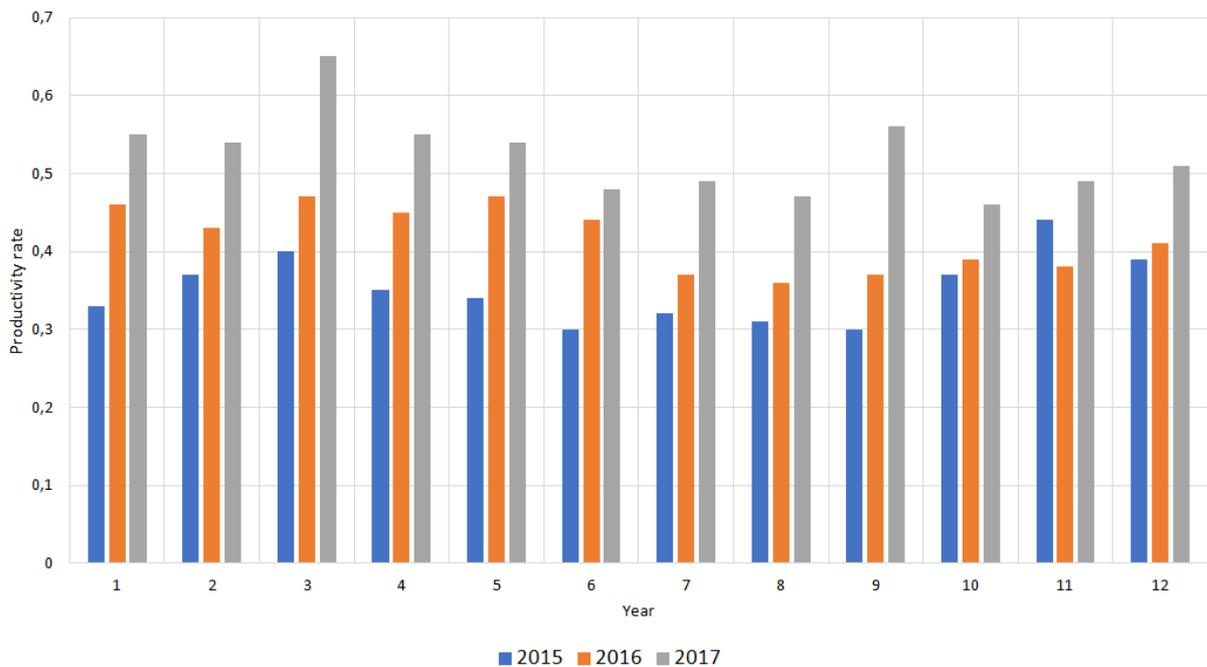
contact, unique approach, maintaining relationships even after the transaction.

The results of testing elements in the field of customer service are presented in Fig. 23 for Polish enterprises and Fig. 24 for Russian enterprises.



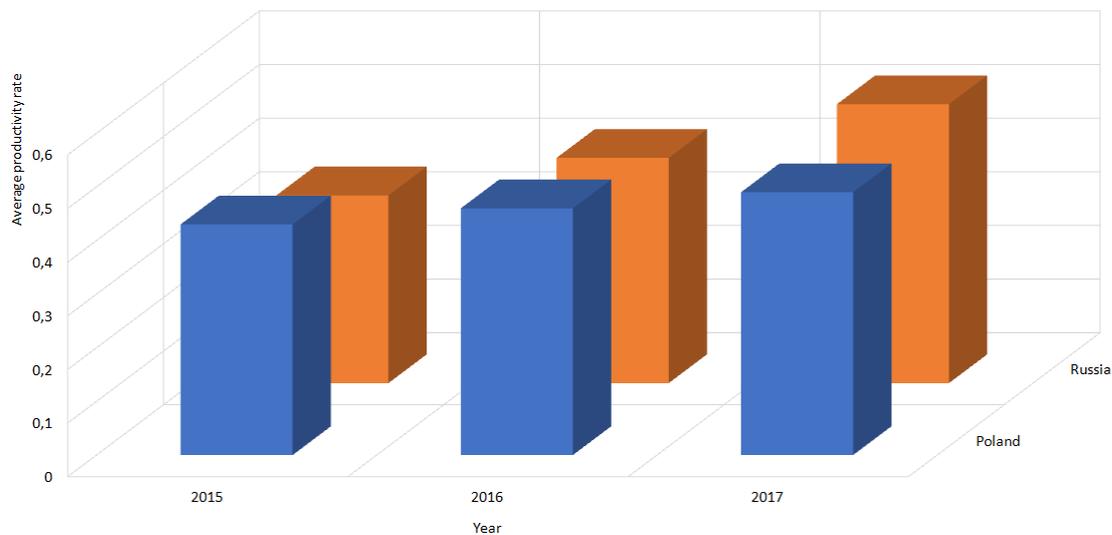
Source: own study

Fig. 26. Productivity index for Polish enterprises



Source: own study

Fig. 27. Productivity rate for Russian enterprises



Source: own study

Fig. 28. Comparison of the average productivity index for the surveyed enterprises

A comparison of research results in terms of elements of customer service improvement (Fig. 25) showed that there are four important activities in both Polish and Russian elements of improving customer service. In the case of Polish enterprises, you can include (appropriate) customer management, professionalism, consultants and helpline as well as an advanced ACD system (innovaphone Automatic Call Distribution), while in the case of Russian companies (Fig. 25) you can distinguish the appropriate customer management and professionalism, advanced ACD system and appreciating.

Regardless of the results of research obtained for individual factors, an important assessment of the efficient operation of the company is the assessment of productivity (Fig. 26- 27). The results of the productivity index survey for Polish enterprises are presented in Fig. 26, while for Russian enterprises Fig. 27.

When comparing Fig. 26 and Fig. 27, it is possible to notice how the productivity rate for the surveyed enterprises has been shaped over the years and which of the analyzed elements are of importance.

A comparison of the obtained research results (Fig. 28) accurately illustrates the average productivity index for the surveyed enterprises. It turns out that the indicator was more favorable for Polish enterprises in 2015 of around 19%, 2016 for around 9%, and for Russian enterprises the index was more favorable by about 6% in 2017.

CONCLUSIONS

The conducted research has shown that the EDI system is used in both Polish and Russian enterprises. The scope of application of this system varies and depends on the concept of its use by the management of enterprises.

Using the advantages of the EDI system by Polish enterprises is mainly focused on the optimization of inventory management, minimization of costs and productivity of the enterprise (Figure 8), while in the case of Russian enterprises, activities are aimed at improving relationships with partners, the quality of the company's operations and productivity (Fig. 8).

A comprehensive assessment of Polish and Russian enterprises requires further research including assessment of business management through integrated logistics systems.

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SYSTEM EDI W LOGISTYCZNYM ZARZĄDZANIU PRZEDSIĘBIORSTWEM

STRESZCZENIE. Wstęp: Obecnie wykorzystywanych jest wiele narzędzi informatycznych w każdej dziedzinie. Dlatego kierownictwa przedsiębiorstw chcą, aby nowoczesne rozwiązania informatyczne obejmowały także zastosowania logistyczne w różnych i zróżnicowanych profilach działalności. Związane jest to także z minimalizacją kosztów działalności. System EDI umożliwia realizację takich celów. Z tego względu przeprowadzono badania w wybranych przedsiębiorstwach polskich i rosyjskich oraz przedstawiono wyniki wraz z wnioskami w zakresie stosowania systemu EDI.

Metody: Przeprowadzono analizę porównawczą pomiędzy polskimi i rosyjskimi małymi przedsiębiorstwami. W celu wyselekcjonowano losową próbę 100 przedsiębiorstw tj. 50 przedsiębiorstw polskich i 50 przedsiębiorstw rosyjskich. Dane do analizy zostały zebrane przy pomocy specjalnie przygotowanej ankiety.

Wyniki i wnioski: System EDI jest używany zarówno w polskich jak i rosyjskich przedsiębiorstwach aczkolwiek zakres i cel używania jest różny i zależy od koncepcji zarządzania w firmie. Polskie przedsiębiorstwa skupiają się głównie na optymalizacji zarządzania zapasem, minimalizacją kosztów oraz produktywnością natomiast rosyjskie przedsiębiorstwa skupiają się głównie na poprawie relacji z partnerami oraz jakością operacji biznesowych i produktywnością.

Słowa kluczowe: EDI, IT, narzędzia IT, rozwiązania IT, aplikacje logistyczne

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