Analysis of the effectiveness of the portal integrating various tender platforms

Analiza efektywności portalu integrującego różne platformy przetargowe

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Abstract

The article presents an analysis of the efficiency of a portal integrating various tender platforms. The study identifies key factors affecting the effectiveness and functionality of such platforms, including search speed, integration with external databases, and user settings customization. Three popular portals were evaluated in terms of usability, information accessibility, reliability, and technical support. The results highlight the strengths and weaknesses of each platform, indicating areas for improvement to enhance efficiency and user satisfaction.

Keywords: tender portal; integration; optimization of use

Streszczenie

W artykule przedstawiono analizę efektywności portalu integrującego różne platformy przetargowe. Badanie identyfikuje kluczowe czynniki wpływające na skuteczność i funkcjonalność platform, takie jak szybkość wyszukiwania przetargów, integracja z zewnętrznymi bazami danych oraz możliwość personalizacji ustawień użytkownika. Oceniono trzy popularne portale pod kątem ich użyteczności, dostępności informacji, niezawodności oraz wsparcia technicznego. Wyniki podkreślają mocne i słabe strony każdej platformy, wskazując obszary wymagające poprawy w celu zwiększenia efektywności oraz zadowolenia użytkowników.

Słowa kluczowe: portal przetargowy; integracja; optymalizacja użytkowania

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1. Entry

Management of processes is a consequence of the activities of many companies and which lead to optimization of purchasing systems and selection of the best offers. With the utilization of technology Increasingly great opportunities are tender portals that allow access to various services platform facilitating access to offers and specifications transparency of tender procedures. However, The properties of these portals may become necessary to use.

Assessment and analysis of the activities of such platforms is to identify their strengths and weaknesses and improvements that have improved the experience of users who are users of tender processes. The aim of this study is to investigate how to access information and integrate with databases on the effectiveness and satisfaction of users of tender portals.

1.1. Research materials and methods

The research was based on data collected from multiple tender portals, which serve as platforms for publishing and accessing procurement offers. The study utilized both qualitative and quantitative methods to assess the efficiency, reliability, and transparency of these portals.

To ensure a comprehensive analysis, publicly available datasets from tendering platforms were examined. The data included information on procurement announcements, deadlines, and specifications. Additionally, SQL databases were used to store and organize the retrieved records systematically, allowing for comparative analysis.

The study also involved the development of dedicated PHP scripts to automate data retrieval from selected sources. These scripts periodically fetched and recorded new announcements, storing them alongside timestamps to measure access speed and system efficiency.

1.2. Selected applications

As part of the study, PHP code was prepared, the task of which was to download current data from several of the most popular sources, which were then transferred to a common SQL database along with the times of reading individual records. On this basis, we were able to assess which of the Solutions is the most effective and efficient.

1.3. Research methodology

The study was based on the analysis of data collected at two predefined time points, allowing for a structured comparison of tender publication trends and system performance. Once the data collection deadlines had passed, the author proceeded with an in-depth analysis of the gathered records.

The data collection period lasted over four months, a duration chosen deliberately based on prior research indicating that this timeframe corresponds to one of the most active periods for the publication of tenders and requests for offers. This selection ensured that the dataset captured a representative sample of procurement activities across various sectors.

To assess the efficiency and performance of different platforms, the study focused on several key indicators:

- Time elapsed from the announcement to saving the record in the database.
- Time of placing the record in the database.
- System efficiency, which sees the correlation between the hourly intensity of queries placed in the database and the load resulting from the hours of publication on a given day (ratio of records to time of placing in the database).
- Cyclicality (e.g. the impact of holidays on the number of advertisements).

After completing the data collection phase, the records were consolidated, ensuring that all entries were properly categorized and formatted for further examination. A statistical analysis was then conducted to extract meaningful insights from the dataset.

To maintain the relevance and accuracy of the findings, only records that met the predefined selection criteria were considered. Specifically, the study focused on procurement related to computer hardware, electronic devices, and similar categories, excluding tenders unrelated to technological equipment. This targeted approach ensured that the conclusions drawn would be directly applicable to the sector under analysis.

Hypotheses have also been formulated to help confirm the above:

- H1. Integration of tender platforms shortens the time of access to public information,
- H2. The number of records handled affects the efficiency of the portal.

2. Results

The average ratings of the applications in the individual tender platform categories are presented in Table 1.

Table 1: Average application results for each tender platform

Average Results	Application name		
	"E-Zamówienia"	"Platforma Zakupowa"	"Logintrade"
Response time (ms)	10.00 980 ms	6.00 3A397 ms	3.00 7423 ms
Load per hour	10.00	8.00	5.00
Efficiency (ms/quantity)	19.05	18.96	7.46
Information	10.00	10.00	10.00
Periodicity	10.00	10.00	10.00
Specifics of the application	6.00	10.00	2.00
TOTAL	65.05	62.96	37.46

Figure 1 presents the number of all ads with the criteria specified by the author.

A division was also made, which informs about the highest hourly load, as in Figure 2, and Figure 3 shows a set of specific records broken down by announcement day.
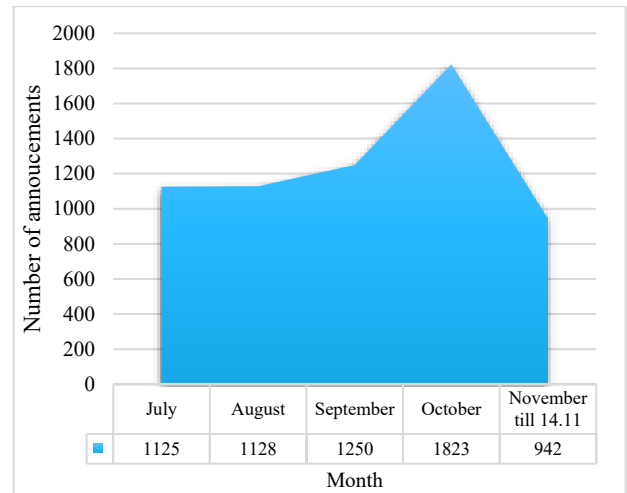

Figure 1: Number of announcements in the range of 1st July 2024 – 14th November 2024.
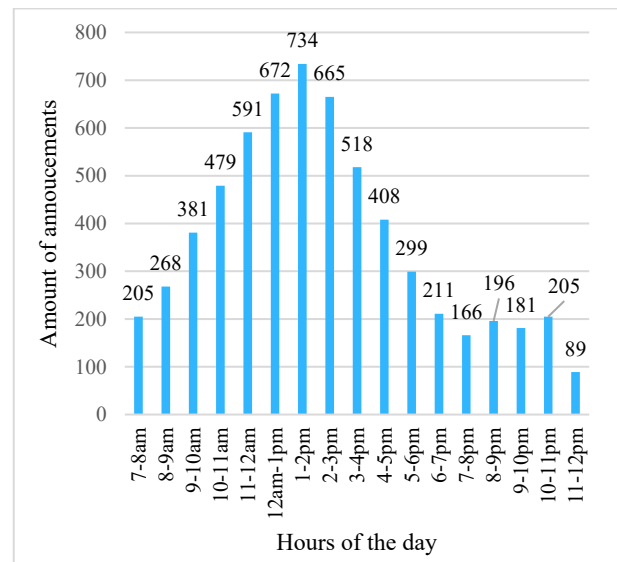

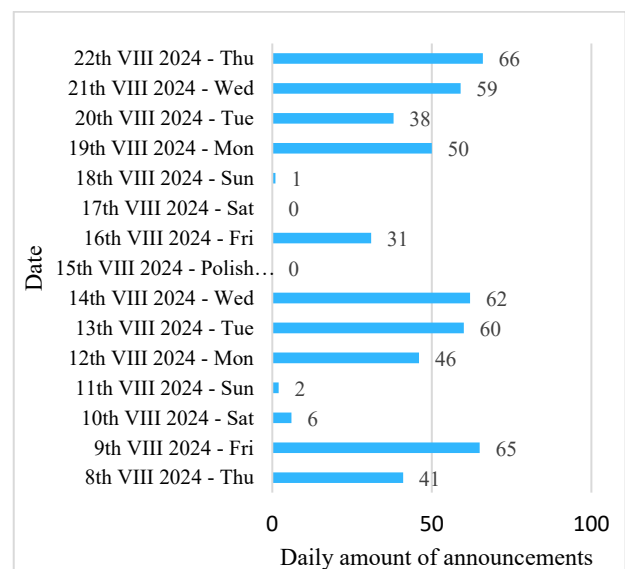Figure 2: Graphical form of added ads in hourly format.

Figure 3: Number of amount of announcements a few days before and after the comparison date - Polish Armed Forces Day 15 August 2024.
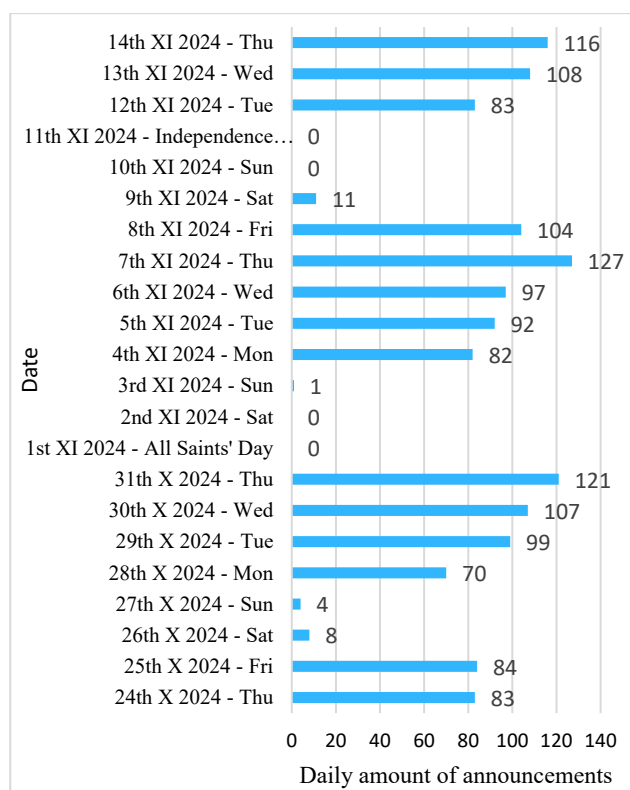
Figure 4: Number of amount of announcements a few days before and after the comparison date - All Saints' Day (1 XI 2024) and Independence Day (11 XI 2024).

Based on the indicated results, we also rely on the data of the most popular solution and at the same time recommended by the Public Procurement Office, i.e. the "E-Zamówienia" service.

3. Conclusions

The analysis of the results clearly confirms that the fastest solution is the "E-Zamówienia" platform, which is recommended by the Public Procurement Office. The portal met the challenge and fully allowed for the collection of a huge amount of data, which could then be summarized on a figure. From the figures attached to the article, it can be read that the second half of the year has significantly more tenders, compared to the middle months when the experiment was started. From Figure 2, it can be concluded that the greatest load on the service was between 10am and 3pm. This may suggest that these are the working hours of various units that publish proceedings during these hours. Afternoon and evening hours are definitely less burdened with publications, and therefore at times when most employees have finished work on a given day. We also measured the cyclicality of dates such as national holidays. On Figure 3 and Figure 4, you can see certain time points that may indicate this. There was a much greater intensity of announcements before 1st XI 2024, i.e. All Saints' Day, where there were almost the most of these records, and before 11th XI 2024, i.e. the Independence Day, where there were the most of them on the entire table. A similar situation occurred around 16th-18th VIII 2024, but this time more announcements appeared after Polish Armed

Forces Day, and not before, as was the case in November. The data marked in Figure 3 and Figure 4 clearly indicate that in Poland the holidays or events presented above have a strong influence. Reading the Figure 1, you can also notice a greater intensity of announcements at the turn of each month, where very often this could indicate the start of new or completion of current subsidies and budget projects.

Based on the measured results and the adopted scale of evaluation of each application, the best platform is "E-Zamówienia". This application demonstrated the highest efficiency among the tested solutions, achieving the fastest performance in terms of data retrieval and processing. Although it may not be the most interactive or intuitive compared to other similar e-procurement platforms, its speed and ability to handle large datasets effectively make it a standout choice.

One of the key advantages of "E-Zamówienia" is its exceptional capability to process a vast number of records without a significant drop in performance. The system ensures rapid access to public procurement information, which is crucial for businesses, government entities, and institutions that rely on timely and accurate data to make strategic decisions. By minimizing delays in retrieving relevant procurement details, "E-Zamówienia" provides users with a competitive edge over other solutions, allowing them to react quickly to new opportunities.

The findings of this study confirm that integrated tender platforms play a vital role in streamlining access to public procurement data. By significantly reducing the time required to obtain critical information, these platforms contribute to more efficient and transparent bidding processes. For businesses and institutions engaged in public tenders, faster access to tender announcements enhances their ability to prepare and submit proposals on time, ultimately increasing their chances of securing contracts. Furthermore, this efficiency supports fair competition, fosters greater market participation, and strengthens the overall integrity of the procurement system.

For future research, it would be beneficial to expand the dataset, incorporating a broader range of procurement platforms and evaluating additional factors, such as user experience, interface accessibility, and mobile responsiveness. An interesting direction for future development could involve combining the speed and efficiency of the "E-Zamówienia" platform with the intuitive design of commercial purchasing platforms, creating an optimized solution that maximizes both performance and usability.

By refining and improving the tender platform ecosystem, public procurement processes could become even more transparent, efficient, and accessible, benefiting both contracting authorities and potential bidders.

Based on the conducted research, hypothesis H1 can be confirmed, that the integration of tender platforms shortens the time of access to public information. The results of the analysis indicate that a centralized system, such as "E-Zamówienia", enables faster collection and processing of tender data compared to distributed sources. Shortening the time from the publication of the

announcement to its saving in the database indicates higher efficiency of such a solution.

Hypothesis H2, concerning the impact of the number of records handled on the efficiency of the portal, was partially confirmed. The analysis showed that with a larger number of system queries during peak hours, some platforms showed slower response. However, "E-Zamówienia" coped with the high load better than competitive solutions, which means that infrastructure optimization and database efficiency play a key role in maintaining the efficiency of the system.

Additionally, the analysis of the cyclicality of publications showed significant dependencies, such as an increase in the number of announcements before non-working days or at the turn of the month, which may be an important clue for entities interested in participating in tenders. Future research should consider an even longer period of analysis and other public procurement sectors to further define the relationship between system load and efficiency.

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