

Product life cycle value as a criterion for evaluating tender offers

(Presented by Doctor of Economics, Prof D.O. Grytsyshen)

The need to calculate the value of the life cycle of goods for the evaluation of tender proposals is a topical issue of procurement practice today. The aim of the study is to analyze the content of this evaluation criterion and its impact on public procurement in terms of their transformation into a more transparent and cost-effective process. The author states that this issue in the field of procurement is still insufficiently studied by the Ukrainian scientific community, and therefore there is an objective need to consider the peculiarities of the value of the life cycle of goods. It is noted that the value of a product and its operating costs are the essence of the life cycle cost, at which tenders are evaluated not only by price but also taking into account environmental friendliness, social necessity of product procurement. The key factor in the implementation of this criterion is the need to optimize costs by customers and, accordingly, to improve procurement practices. The issue of determining the value of the product life cycle is also studied, as the Approximate method of its calculation needs to be specified, and customers still avoid the application of this criterion, which negatively affects the transparency and economic feasibility of domestic procurement. At the same time, the author analyzes the state of application of the value of the life cycle of goods by customers in 2021–2022 and finds that there are some positive changes in this area, because customers are beginning to be interested in calculating this parameter. In the future it is necessary to continue the study of the features of non-price evaluation criteria, so it seems promising to develop a mechanism for calculating the value of the life cycle of the product.

Keywords: procurement; tender offers; evaluation criteria; life cycle cost; evaluation methodology.

Relevance of the topic. Choosing the best tender offer is a topical issue today, as the state seeks to make the public procurement process more transparent and economically feasible. Such scientists as Lagovska O.A., Legenchuk S.F. and Svirko S.V. note that «the development of criteria for evaluating tender contracts and selecting suppliers that will ensure transparent decision-making processes» [1, p. 57] is an important task at one of the stages of public procurement.

Accordingly, Article 29 of the Law of Ukraine «On Public Procurement» [2] defines the criteria for evaluating tender proposals, among which the novelty of today is the value of the life cycle of goods. The introduction of this criterion provides an opportunity to evaluate proposals based on the cost of operation of the product, and not just its price. For example, take into account the cost of energy supply, maintenance or processing.

In addition, from April 2021, the Prozorro system made it possible to announce procurement with the definition of the product life cycle, which contributes to improving the public procurement process. It is projected that this assessment tool will be of interest to customers, including a number of state-owned companies and institutions, such as Ukrzaliznytsia, Naftogaz, Ukroboronprom, the State Emergency Service, etc.

At the same time, changes in the current legislation on the introduction of the criterion of life cycle cost and the importance of its application have not been the subject of a separate study among domestic scientists yet, which justifies the relevance of this topic.

Analysis of recent research and publications on which the author relies. Most Ukrainian researchers focus on researching the mechanism of public procurement, their issues, but a number of specific aspects of procurement remain unexplored.

Certain issues of evaluation of tender agreements are investigated by Lagovska O.A., Legenchuk S.F. and Svirko S.V., in general, devoting their work to the study of positive and negative aspects of public procurement in Ukraine [1]. Faizov A.V. analyzes the current state of public procurement in Ukraine, and covers non-price criteria for evaluating proposals [5], which are also considered by Karlin M.I., emphasizing the need for greater use of the value of the life cycle [9].

Currently, foreign researchers have studied in more detail the nature and features of the value of the life cycle of goods, as for them this criterion is not a novelty. For example, Savich B., Miloevich I., Petrovich V. explore how to optimize agribusiness through the application of the criterion of life cycle cost [6]. Reforms in the field of public procurement are studied by Castelli A., Piga G., Saussier S., Tatrai T., who also consider the peculiarities of the application of this parameter [3].

The purpose of the article is to analyze the essence of the value of the product life cycle as an important criterion for evaluating tender proposals, which in the long run will make the procurement process more transparent and cost-effective.

Research results. Conscientious bidding is ensured by evaluating tender offers according to the certain criteria, among which the value of the product life cycle plays an important role. The decision to select a tender is no longer based solely on price and economic aspects, but is based on life-cycle cost.

First, it is due to the fact that the price does not reflect the financial and non-financial benefits offered by environmentally and socially preferred assets, as they accumulate at the stages of operation and use of the asset life cycle [3, p. 4]. Secondly, as noted by Malolitneva V.K., the implementation of horizontal goals of sustainable development through the inclusion of environmental and social aspects in the criteria for evaluating proposals allows you to strategically use public procurement [4, p. 109].

The value of a particular product and the cost of its operation are the foundation of the measure of the value of the life cycle, the essence of which is better perceived through real cases. Thus, when purchasing transport for local needs, it is necessary to determine the most advantageous offer by calculating future costs for the operation of vehicles, in particular, the cost of maintenance, staff training, and for the disposal of unusable vehicles. These costs will be assessed when considering bids, which is the value of the product life cycle.

Analyzing the research of Faizov A.V., we can establish that the life cycle cost is part of the European methodology for evaluating tender proposals, which is implemented in Ukraine to select the winner of the electronic auction based on comprehensive consideration of total benefits and possible costs during the entire period of useful life of the goods to be purchased [5, p. 73].

The calculation of the life cycle cost is justified for a number of reasons, among which, Savich B., Miloevich I. and Petrovich V. highlight the following: the need to accurately determine cost factors, support strategic decisions, improve product design, perception of the effects of the application of new technology by the entity, budget forecasts for future periods [6, p. 824].

The life cycle cost is calculated on the basis of the methodology specified in the tender documents. The development of such a methodology causes difficulties for customers who have not fully understood the essence of these innovations in legislation yet. With this in mind, the Model Methodology for Determining the Life Cycle Value [7] was developed. Clause 3 of the Methodology states that when applying the life cycle cost criterion, the customer must include in the tender documents a clear list of information for procurement participants, cost categories and their calculating parameters.

Calculating the above criterion is indeed a difficult task, as it requires assumptions about future costs and the cost of externalities, and the assessment of these costs inevitably includes an element of unpredictability [8, p. 16]

In addition, examining the Model Methodology, it seems that today it does not contain clear answers to a number of questions regarding the definition of future costs and their calculation, as it contains only general provisions that are interpreted differently by customers, and this leads to the lack of unity in the practice of applying such an evaluation criterion, which hinders the development of public procurement, making them inconsistent with international standards.

To illustrate, it is necessary to get acquainted with how the customers considered the tender proposals in 2021–2022, on which parameters they relied.

Table 1

*Application of the criterion for evaluation of tender proposals
«life cycle cost» by customers in 2021–2022*

№	Procurement ID	Subject of procurement	Expected procurement price, UAH	Agreement price, UAH
1	UA-2022-01-12-002520-c	Special foods enriched with nutrients	240 000,00	229 260,68
2	UA-2021-12-30-002485-b	Services on physical and centralized protection of the object and protection of property on the object	216 000,00	212 424,00
3	UA-2021-12-21-015188-c	Electricity supply taking into account transmission and distribution	313 300,00	260 937,22
4	UA-2021-12-20-018718-c	Winter maintenance of highways of Druzhkivka territorial community	700 000,00	541 397,96
5	UA-2021-11-11-002211-a	Gasoline brand A 92 (coupons)	195 000,00	193 302,00
6	UA-2021-11-09-005262-a	Firewood of solid breeds, fuel briquettes from wood raw materials	847 300,00	845 856,45

7	UA-2021-10-21-012429-b	Butter	190 000,00	119 992,80
8	UA-2021-10-13-002865-c	Electrical work	600 000,00	492 493,08
9	UA-2021-09-28-000655-a	Conducting a state inventory of lands in Rivne region	4 992 000,00	4 892 160,00
10	UA-2021-09-27-002743-c	Solid fuel (coal)	1 400 000,00	1 399 000,00
11	UA-2021-09-27-002697-a	Television and audiovisual equipment (Interactive LED panels with built-in PC)	4 004 662,00	3 459 000,00
12	UA-2021-09-07-008955-c	Radar antenna posts for RRS posts	31 665 833,33	31 441 600,00
13	UA-2021-08-28-001079-b	Radar stations for RRS posts	50 100 000,00	49 757 500,00
14	UA-2021-07-27-011195-b	Banking services	1 815 000,00	561 495,84
15	UA-2021-07-19-002747-c	Current (pit) road repairs	492 000,00	490 942,62
16	UA-2021-06-23-015035-c	Maintenance services of office premises	7 000 000,00	2 557 908,10
17	UA-2021-05-26-002587-a	Equipment for anesthesia and resuscitation	425 800,00	422 600,00
18	UA-2021-05-26-000711-a	HUMIRA®. solution for injections of 40 mg / 0,4 ml, №2	119 640,00	71 030,88
19	UA-2021-05-25-010231-b	Current repair of the premises of the school of I-III grades №308 of Desnianskyi district of Kyiv	821 753,00	805 361,60
20	UA-2021-05-25-003832-a	Medical materials	4 228 500,00	4 222 396,00
21	UA-2021-05-25-003688-a	Equipment for operating units	2 790 500,00	2 782 970,00

Reference: * author's development

Table 1 provides information on procurements announced in the Prozorro system, for which the customer SE "ADMINISTRATION OF SEA PORTS OF UKRAINE" only in such procurements as UA-2021-08-28-001079-b and UA-2021-09-07-008955-c the evaluation was carried out correctly, as the tender documentation provided a calculation of the life cycle cost, but other procurements were announced incorrectly, as their tender documentation states only the parameter «price – 100 %».

Probably, the reason for this is that the application of this parameter is not the responsibility of the customer. According to Carlin M.I. this is a problem due to the fact that the customer himself decides on the appropriateness of using this criterion for the evaluation of tender proposals, and he also himself chooses important for him the types of costs that will be taken into account during the calculation [9, p. 39].

On the example of procurement UA-2021-08-28-001079-b it is possible to analyze how the life cycle cost criterion is used.

Table 2

Extract from the tender documentation for the procurement of radar stations for RRS posts
(UA-2021-08-28-001079-b)

Evaluation of the tender offer		
1	List of evaluation criteria and methods of evaluation of tender proposals with indication of specific weight of each criterion	<p>Criteria and methods of evaluation of tender proposals</p> <p>The only criterion for evaluating tender proposals is the life cycle cost.</p> <p>Evaluation of tender proposals is based on the criterion: Life cycle cost (excluding VAT).</p> <p>Specific weight of the criterion Life cycle cost (excluding VAT) – 100 %.</p> <p>RESIDENT PARTICIPANT in the electronic procurement system during the submission of the tender proposal indicates the price of its tender offer in UAH without VAT in accordance with the calculation of the life cycle cost of the procurement subject (detailed information in Appendix 7 to this tender documentation).</p>

		<p>NON-RESIDENT in the electronic procurement system when submitting a tender offer in the electronic procurement system indicates the price of its tender offer in UAH without VAT at the official NBU exchange rate against the Euro or US dollar (according to the foreign currency calculated by the non-resident participant), in accordance with the calculation of the value of the life cycle of the subject of procurement (detailed information in Appendix 7 to this tender documentation).</p> <p>Methods of evaluation of tender proposals</p> <p>1. Description of all components of the cost elements of the life cycle: To calculate the value of the life cycle of the goods that are the subject of procurement (according to the criterion the value of costs associated with the acquisition), the participant must take into account the following categories of costs:</p> <ul style="list-style-type: none"> - the value of the subject of procurement (the value of the goods that are the subject of procurement in the amount (volume) determined by the customer, transport costs of the participant, insurance costs, loading, unloading, payment of taxes and fees (mandatory payments), other payments); - other one-time costs that may be borne by the participant or the customer (customs duties). <p>The value of costs connected with acquisition can be calculated by the following formula:</p> $B1 = Tspz + Tsiv, \text{ where}$ <p>B1 – the value of acquisition costs, Tspz – the value of the subject of procurement, Tsiv – the value of other costs.</p> <p>2. List of documents submitted by the bidder to confirm the value of the components of the life cycle - the bidder must provide a calculation of the value of the life cycle in the form of a completed tender form "Proposal" according to the form given in Appendix 7 to this Bidding Document.</p>
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After analyzing the extract from the documentation for this procurement, it can be seen that determining the value of the life cycle of the product consists of the following aspects:

1. The value of the subject of purchase (the value of the goods in the amount determined by the customer, the cost of transport, insurance, loading and unloading, payment of taxes and fees, etc., related to the supply of goods on the subject of purchase);

2. Other one-time costs (customs payments - the cost of customs payments in the amount of 10 % of the value of the subject of procurement, which will be paid by the Customer = paragraph I x 0.1).

Conclusions and prospects for further research. Thus, the criterion of the value of the product life cycle is a novelty for Ukrainian customers, which should be actively implemented in practice, as it helps to increase the level of transparency and efficiency of procurement practice in Ukraine.

Further research on the criteria for evaluating tender proposals seems promising, and the detailed mechanism for calculating the value of the life cycle of goods needs to be developed at the regulatory level, as the establishment of non-price criteria should have an individual approach to each subject of procurement, be based on regulations and international standards and ensure avoidance of discrimination against bidders [10, p. 71].

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Research interests:

- public administration;
- public procurement.

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Вартість життєвого циклу товару як критерій оцінки тендерних пропозицій

Необхідність обчислення вартості життєвого циклу товару для оцінки тендерних пропозицій є актуальним питанням закупівельної практики сьогодні. Метою дослідження є аналіз змістовного наповнення зазначеного критерію оцінки та його впливу на публічні закупівлі у аспекті їх перетворення на більш прозорий та економічно вигідний процес. Автор констатує, що це питання у сфері закупівель ще недостатньо досліджене українською науковою спільнотою, а тому є об'єктивна потреба у розгляді особливостей вартості життєвого циклу товару. Зазначається, що вартість певного товару та витрати з його експлуатації становлять сутність вартості життєвого циклу, за якою тендерні пропозиції оцінюються не лише за ціною, а й з урахуванням екологічності, соціальної необхідності закупівлі того чи іншого товару. Ключовим фактором впровадження зазначеного критерію є потреба в оптимізації витрат замовниками і відповідно у вдосконаленні закупівельної практики. Досліджено і проблематику визначення вартості життєвого циклу товару, оскільки Примірна методика його розрахунку потребує конкретизації, а замовники поки що уникають застосування цього критерію, що негативно впливає на прозорість та економічність вітчизняних закупівель. У той же час автор аналізує стан застосування вартості життєвого циклу товару замовниками у 2021–2022 роках та виявляє, що певні позитивні зрушення у цій сфері є, адже замовники починають цікавитися обчисленням зазначеного параметра. У подальшому необхідно продовжувати вивчати особливості нецінових критеріїв оцінки, тому перспективним видається розробка механізму обчислення вартості життєвого циклу товару.

Ключові слова: закупівлі; тендерні пропозиції; критерії оцінки; вартість життєвого циклу; методика оцінки.

Стаття надійшла до редакції 08.04.2022.