

UDC 343.98

DOI 10.31733/2078-3566-2022-5-238-246



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ALGORITHM FORMATION FOR ASSESSING VALUE OF CONSUMER GOODS BY FORENSIC MERCHANDISING EXPERT IN CASES OF CONSUMER PROTECTION

Ірина Петрова, Ольга Донцова, Тетяна Кіпушева. ФОРМУВАННЯ АЛГОРИТМУ ОЦІНЮВАННЯ ВАРТОСТІ СПОЖИВЧИХ ТОВАРІВ ЕКСПЕРТОМ-ТОВАРОЗНАВЦЕМ У СПРАВАХ ПРО ЗАХИСТ ПРАВ СПОЖИВАЧІВ. Останнім часом у зв'язку зі значним збільшенням кількості фальсифікованих або підроблених товарів, а також у зв'язку зі збільшенням кількості випадків надання неякісних послуг, на українському ринку виникла гостра потреба у проведенні експертизи споживчих товарів у випадках захисту прав споживачів, коли одним із основних питань, що постають при проведенні судової експертизи, є визначення вартості товару, наданого на дослідження.

Метою статті є розгляд загальних принципів та розробка алгоритму оцінки вартості споживчих товарів судово-товарознавчим експертом у справах захисту прав споживачів з урахуванням таких товарів. Охарактеризовано принципи, якими слід керуватися при оцінці вартості споживчих товарів, а саме: корисність, попит і пропозиція, заміщення, очікування, граничний внесок у продуктивність, найбільш ефективне використання. Зазначається, що для реалізації споживчих товарів законом визначається ринкова вартість та неринкові види вартості. Наголошується, що судовий експерт з товарознавства використовує ті методологічні підходи, які найбільш повно відповідають меті оцінки та виду вартості товару (за наявності достовірних джерел інформації для її проведення). Проаналізовано методологічні підходи, використовувані експертом для оцінки вартості товару: витратний, прибутковий, порівняльний.

Запропонований алгоритм визначення вартості товарів широкого вжитку судовим експертом-товарознавцем у справах про захист прав споживачів; містить такі етапи: 1) отримання завдання, постановка мети та розробка програми дослідження; 2) встановлення товарознавчої характеристики, товарного стану та інших показників якості продукції; 3) визначення початкової ціни; 4) дослідження рівня якості (виявлення наявних дефектів або пошкоджень); 5) уточнення споживчих характеристик товару; узагальнення інформації та розрахунок ринкової вартості на дату оцінки; 6) складання висновку судово-медичної експертизи.

Ключові слова: *судова експертиза, споживчі товари, визначення вартості товару, експерт-товарознавець, принципи оцінювання, захист прав споживачів, алгоритм оцінювання.*

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Relevance of the study. A significant increase in falsified or counterfeit products, as well as an increase in the number of cases of providing low-quality services on the market of Ukraine, required the adopting of a number of regulatories aimed at protecting consumer rights, and conducting numerous examinations of consumer goods in cases on the protection of consumer rights, with one of the main questions to commodity experts – determination of the value of products provided for research. A commodity expert determines the value of a specific product after examining its quality, establishing damages, identifying defects, etc. The variety and quality of modern consumer goods and services lead to the asking of the same type of questions to forensic experts-commodity experts, but regarding different groups of consumer goods. Therefore, we consider it expedient to propose an algorithm for determining the value of consumer goods, taking into account their quality, during expert research in cases on the protection of consumer rights.

Recent publications review. Theoreticians and practitioners of forensic expertise examined consumer goods from various scientific positions. Thus, experts-practitioners have developed methodical materials for establishing indicators of loss of quality and market value of non-food products and determining the amount of material damages incurred as a result of wear and tear defects [12]. The study guide "Protection of Consumer Rights" by N. Salukhina, O. Yazvinska and O. Bashkatova examines, in particular, the issue of consumer rights protection by state bodies and public organizations, and also characterizes the peculiarities of the inspection of business entities in the field protection of consumer rights, although no attention was paid to determining the quality and value of the investigated objects [16].

I. Litvinchuk rightly believes that it is impossible to solve the task of the investigation without the use of special knowledge (in particular, the knowledge of a commodity expert). Emphasizing the mandatory conduct of forensic examinations during the investigation of crimes, the researcher names the commodity examination among the special examinations related to the features of products that can be recognized as dangerous. In addition, she notes: in case of assigning a comprehensive examination, the investigator must provide the necessary amount of products for research, which is sometimes difficult to do (for example, due to rapid spoilage of food products) [8]. Unfortunately, this researcher did not pay attention to the issue of determining the value of products that can harm the consumer.

The authors of the monograph "Theory and practice of conducting forensic examinations in the direction of engineering, economic, commodity science types of research and evaluation activities" focused on defining the theoretical and legal basis for the appointment and conduct of forensic examinations and considered scientific and methodological approaches to conducting examinations (in particular, commodity studies). The researchers devoted a separate section to algorithms for establishing the fact of falsification and conducting identification examination of food products [7], previously thoroughly outlined in the work of T. Kundilovska and O. Kobzar [6]. However, these authors did not consider the issue of determining the value of goods taking into account their quality, which proves the relevance of the chosen topic and the need for its development.

According to the rules of the Ukrainian language, the noun "evaluation" should be used only to denote the result of the process, the quality of knowledge and behavior of students or opinions, reasoning about the quality, character of someone (something), and the adjective "evaluation" is a tracing from Russian. In the Ukrainian language, the verb "to evaluate" and the adjective "evaluative" should be used, respectively. However, the current legal acts regulating expert activity operate precisely with erroneous word forms.

The research paper's objective is to review general principles of evaluating the value of consumer goods by a commodity expert in cases of consumer rights protection and the development of an algorithm for evaluating their value taking into account quality.

Discussion. As we know, the value of consumer goods should be evaluated in accordance with a number of the following principles: usefulness, supply and demand, substitution, expectation, marginal productivity contribution, the most effective use [1, p. 46-53; 2, p. 6-7; 3, p. 13-16]. Let us briefly characterize these principles.

The principle of usefulness is based on the fact that a product has value only under the conditions of its usefulness for a potential owner or user. Utility is understood as the product's ability to satisfy the needs of the owner or user for a certain period of time. The principle of supply and demand reflects the ratio of supply and demand for a similar product. According to this principle, market price fluctuations for a similar product and other factors that may lead to changes in the ratio of demand and supply for similar products are taken into account during the

evaluation. The principle of substitution involves taking into account the behavior of buyers on the market, namely: for the purchase of a product, they do not pay more than the minimum price of a product of the same utility as offered by other products on the market. The principle of expectation is based on the dependence of the value of the object of evaluation on the amount of economic benefits expected from the ownership, use and disposal of this object. The principle of contribution (marginal productivity) is determined by the influence on the value of the object of assessment of such factors as: labor, management, capital and land, which is proportional to their contribution to the total income.

The influence of a separate factor is measured as a share of the value of the object of assessment or as a share of the value by which the total value of the object of assessment will decrease in the event of its absence. The principle of the most efficient use consists in taking into account the dependence of the market value of the object of evaluation on its most efficient use. The most effective use is understood as the use of the product, as a result of which the value of the object of evaluation is the maximum. At the same time, only those options for using the product that are technically possible, permitted and economically expedient are considered.

During forensic examinations in consumer protection cases, the commodity expert shall comply with the general requirements for conducting an independent evaluation of consumer goods [11]. The commodity expert independently searches for information sources (with the exception of documents, the provision of which must be provided by the initiator of the forensic examination), and must independently analyze: all found information sources related to a specific consumer product; trends in the market of similar goods; information about transactions with similar goods used for the application of the comparative approach, etc. In the case of incompleteness of the specified information or its absence at all, the expert's opinion notes the negative impact of this fact on the evaluation results.

Depending on the selected methodical approaches and assessment methods, the commodity expert in the course of the research:

- collects and analyzes all essential information about the consumer product, in particular: initial data about its legal status; information about the composition, technical and other characteristics; information about the state of the market for this product and similar products; information about the economic characteristics of the product (forecasted and actual income and expenses from its use, in particular from its most effective use and actual use);
- analyzes the current state of use of a specific product and determines the conditions for its most effective use;
- collects the necessary information to substantiate the capitalization rate and/or the discount rate;
- defines legal restrictions on a specific product, taking into account their impact on the value of this product;
- justifies the application of methodological approaches, methods and assessment procedures, and if necessary, the use of special assessment methods and assessment procedures (combination of several methodological approaches or methods).

The raw data and other information collected by the commodity expert should be reflected in the opinion of the expert in consumer protection cases with a reference to the source of their receipt and in its appendices. In addition, it is necessary to ensure the regime of confidentiality in accordance with the requirements of legislative and regulatory documents before conducting a forensic examination [5; 11; 14; 18].

The evaluation of consumer goods in consumer protection cases is carried out by an expert using a base corresponding to market value or non-market types of value. The evaluation base is chosen at the first stages of the expert evaluation of the product: it depends on the purpose of the forensic product examination, the features of the product, and the regulatory requirements for it. If the normative legal acts on the expert evaluation of the goods or the initiator of the forensic examination do not specify the type of value to be determined as a result of the expert study, then the market value is determined.

When determining the market value of consumer goods, the most efficient use of the object of evaluation should be taken into account. The methods of conducting expert evaluation, used when determining the market value of consumer goods in the case of using a comparative approach, should be based on the results of the analysis of sales (offer) prices for similar goods. Costs for reproduction (replacement) are determined on the valuation date taking into account market prices. Forecasting cash flow and the corresponding rate of income, experts necessarily take into account the influence of market conditions on the functioning (use) of a consumer

product, based on the principle of its most effective use [9, p. 23-25]. In the absence or insufficiency of information in the expert's opinion, it is noted to what extent this affected the reliability of the opinion about the market value of a specific product.

In the absence of reliable information on the sale prices of a similar product, the market value of the evaluated product can be determined on the basis of information on the offer prices of a similar product, taking into account the relevant amendments, which take into account the trends of changes in the sale price of a similar product compared to their offer price. If external factors (socio-economic, political, environmental, etc.) have a significant influence on the market of a similar product, which makes it difficult to provide a reasoned and reliable conclusion about the market value, the expert's opinion provides additional clarifications and caveats. At the same time, a commodity expert has the right to provide a conclusion about the market value of a specific product, which is based, in particular, on information about the previous price level on the market of a similar product or on the assumption of the restoration of a stable situation on the market. In the opinion of the expert in the information about the value of the consumer goods in cases on the protection of consumer rights, the expert-commodity expert reflects the fact that the amount of value added tax is included or not included in the market value.

When conducting forensic commodity examinations of consumer goods, the expert can also use non-market types of value, which he must justify. Non-market types include: replacement value, reproduction cost, residual replacement value (reproduction), value in use, consumer value, liquidation value, investment value, special value, liquidation value, net realizable value, appraised value, etc., the order of determination of which is determined by individual national standards. Non-market types of value as a basis for evaluation are determined using methods and evaluation procedures based on the results of analyzing the usefulness or purpose of this product, as well as on studying the impact of the conditions of its use or the method of disposal. To determine non-market types of value, information about a similar product is used as a basis for evaluation in the part in which it meets the requirements set forth for a certain non-market type of value [9, p. 31-33].

The market value and non-market types of value, determined by law for the purposes of selling consumer goods, after deducting the costs accompanying the sale (in particular, those related to the payment of value added tax), are recognized as the net sales value [11].

A commodity expert assesses the value of consumer goods in consumer protection cases using methodical approaches and valuation methods that are components of methodical approaches or a combination of several methodical approaches and valuation procedures. Most often, the expert-commodity researcher uses several methodological approaches that most fully correspond to the determined purpose of the evaluation and the type of value (if there are reliable sources of information for its implementation).

To substantiate the final conclusion about the value of the consumer product, the specialist compares the results of research obtained using different methodological approaches, by analyzing the influence of the evaluation principles that are decisive for the purpose of the examination, as well as information sources that affect the reliability of the research results. The impossibility or impracticality of using a certain methodical approach, associated with the complete absence or unreliability of the initial data on the consumer product and other information necessary for this, is separately substantiated in the expert's opinion. Other cases of restrictions on the use of certain methodological approaches to determine the market value and non-market types of value of the objects of assessment are determined by the national standards, as the expert notes in the conclusion. The following basic methodical approaches are used for expert product evaluation [11]: expendable; profitable; comparative.

The expendable approach is based on taking into account the principles of utility and replacement and provides for the determination of the current cost of the costs of reproduction or replacement of the product under study with their subsequent adjustment for the amount of wear and tear (depreciation), and its main methods are the methods of direct reproduction and replacement, when the residual cost of replacement (reproduction).

The profitable approach is based on taking into account the principles of the most efficient use and expectation, according to which the value of a consumer product is determined as the current value of the expected income from its most effective use, including income from its possible resale. The main methods of the income approach are direct capitalization of income and indirect capitalization of income (cash flow discounting), the choice of which depends on the availability of information on the expected (forecasted) income from the use of a specific product, the stability of their receipt, the purpose of evaluation, as well as the type of value to be

determined. An expert commodity researcher forecasts and substantiates the amount of income and expenses from the current use of the product under study, provided that it is more efficient, or from the possible most efficient use, provided that it is different from the actual use.

The comparative approach involves taking into account the principles of substitution and supply and demand and analyzing the selling and offering prices of a similar product with the appropriate adjustment of the differences between the objects of comparison and the specific product, as well as compliance with the stipulated criteria. The main elements of the comparison are the characteristics of a similar product based on its location; physical and functional characteristics; terms of sale, etc. The value of a similar product is adjusted by adding or subtracting a sum of money using a coefficient (percentage) to the selling price (offer) of a specific product or by combining them.

During the examination in cases of consumer rights protection the commodity expert relies on the fact that all consumer goods offered on the market of Ukraine have a price and a value: price is a monetary expression of the value of the product (necessary, expected or paid for a certain product or service in money sum); value is an estimated amount of the value of specific goods and services at a specific time in accordance with the chosen interpretation of value, which reflects the market's view of the benefits received by those who own these goods or use these services on the date of validity of the value.

The main factors of price formation are the size and dynamics of demand and supply of products, which make up a complex of economic interests that have a decisive influence on the prices formation. At the same time, during the commodity examinations in cases of consumer rights protection for a specific type of product, the commodity expert needs to know the direct factors under the influence of which prices were formed, namely:

- demand factors that determine the price of the product offered by the buyer (payable demand - the funds that the buyer can allocate for the purchase of this product; the volume of purchases; the level of savings and accumulations; consumer characteristics of the product that characterize its usefulness and quality);

- factors of consumer choice – comparing the market of this product with goods supplemented by accompanying goods, determine the competitiveness of this product compared to products that replace it with goods of better quality; needs and opportunities of buyers of this product and competitive product;

- supply factors – determine the price of the product offered by the seller (the quantity of the product offered for sale in general and the quantity of the product offered by the seller).

For pricing, the level of prices determined by a direct comparison of the prices of this period with the prices of the base period for the same or similar products with the application of the appropriate adjustment coefficients is important – the price of analogues-sale [11]. To analyze the level of prices in the forensic examination, the primary market value of a consumer product is calculated based on data on the primary prices of a similar product presented on the Ukrainian market. After that, the results are summarized and the maximum, average, or minimum market price is calculated for the types of products, or the method of expert evaluation based on professional experience is used, where descriptive, qualitative evaluations of processes and phenomena that affected the state of the object of research cannot be directly measured and calculate by mathematical or numerical method or with the help of regulatory documents.

In order to set up the value of consumer goods in the course of conducting forensic-commodity examinations in consumer protection cases, the following stages of calculating the price of the examined goods should be foreseen:

- 1) determining pricing goals – the price of goods plays an extremely important role, which consists in obtaining income from the sale of goods; the more clearly the goal is formulated, the more precisely the price will be set;

- 2) demand assessment – the price can increase when the demand is significant and decrease when the demand is insignificant, so the commodity expert must estimate the price elasticity of demand, determine the probable quantity of goods that can be sold during a certain time at prices of different levels;

- 3) analysis of costs and determination of the relationship between price, sales volume and profit – such a price should be set up that compensates for all costs during the sale of the product and ensures a fair profit;

- 4) study of the market, analysis of the prices and quality of goods similar to those under investigation, only after studying the prices and quality of similar goods, the expert can objectively determine the value of the goods;

5) choosing a pricing method – allows to correctly determine the price of a specific product;

6) determining the primary cost based on the selected method – setting the price of the product taking into account: discounts, markups, location of buyers, wholesale prices of the manufacturer, as well as the amount of VAT, customs duties, costs and profits of trading enterprises (trade mark-up);

7) study of the product quality level. Determination of the residual price taking into account the loss of quality (if available);

8) generalization of the product data obtained at the previous stages;

9) issuance of an expert's opinion.

On the basis of these stages, it is possible to propose an algorithm for assessing the value of consumer goods, which is appropriate for implementation in expert practice of conducting forensic commodity examinations of consumer goods in cases of consumer protection.

1. The first stage. Receiving the task; setting the purpose of the research; development of the research program (the expert-commodity expert thoroughly familiarizes himself with the document on the basis of which he will conduct the research, as well as studies all other materials related to the object of the research. After studying these documents, the expert determines the purpose of the research and develops a program for its implementation).

2. The second stage. Determination of product characteristics, product condition, and other indicators of products (the expert-commodity expert must select the parameters that need to be clarified, as they will influence the expert's conclusion; conducts research using organoleptic methods, starting with an inspection of the provided objects, their packaging (if available), as well as the premises where the objects are located, studies their storage conditions; examining the packaging, singles out the parameters that make it possible to resolve the issue of the actual condition of the goods subject to expert examination and their compliance with regulatory requirements (type, means of packaging, materials used, availability of necessary elements), labeling marks and their content, the actual condition of the packaging (damages, their location, size and degree of expressiveness), in case of detection of packaging damage, studies the locations of defects on the products and their coincidence with traces of packaging damage – such research is important for clarifying the causes of occurrence defects; during the direct examination of the product, first of all, it is detected by signs of those characteristics (their quantitative and qualitative determination) that make it possible to classify the product (name, material of manufacture, design features, etc.); studying the marking and appearance, solves the question of the commercial property of the object according to the appropriate classifiers [4, 10, 15, 17].

3. The third stage. Determination of the initial price (the main approach to determining the market (initial) value is a comparative approach, which is based on the analysis of the sale prices (offers) of goods identical or similar to the evaluated goods, on the primary or secondary sales markets, with the appropriate adjustment that takes into account the differences between objects of comparison and a specific product, for which the averaged price data that worked and are working in Ukraine are used, under conditions that correspond to the content of the concept of "market value" (that is, it is based on open market data and is presented in reference books that meet the requirements for scientific objectivity and volume of information).

At the current stage of the development of the market economy, free (market), selling and contractual prices operate. The variety of prices requires that when evaluating goods, the criterion of availability of information about the price of the goods is taken as a basis, therefore the methods of evaluating goods can be combined into the following groups: 1) by actual prices (based on the use of reliable information about the price of a specific product on the domestic consumer market); 2) analog (applied in the absence of a specific product and information about its price on the domestic market, in this case such a product is compared with a similar product available on the domestic market); 3) subjective – expert evaluation (used when evaluating products of outdated design, withdrawn from production, which do not correspond to modern fashion at all (taking into account the time of manufacture, residual consumer characteristics, demand), and new goods that have qualitatively new consumer characteristics, the analogues of which are absent on the domestic market, in this case, you can use price catalogs of foreign countries, information on market conditions and consumer demand).

The initial price (using a specific method) is determined after establishing the product characteristics of the object of research, the manufacturer, marking and other indicators, using price data, taking into account the market situation and consumer demand for a specific period

of time necessary for research, for which it is expedient for the expert to use information about the assortment, price, market conditions of Ukraine, etc. Such data can be obtained at specialized exhibitions, in branded stores, from manufacturing companies or sales companies, from dealers, from specialized periodicals and catalogs, from Internet sites).

4. The fourth stage. Research of the quality level (establish the presence (absence) of defects, the degree of their detection, size, location and nature. At the same time, they solve tasks related to determining the actual state of the object and the reasons for changes in its characteristics. found in signs-traces of negative influences that caused a change or loss of consumer characteristics. Then these characteristics are compared with the basic data. It is important not only to establish deviations from the norm, but also to determine the level of product quality, taking into account the percentage of loss of quality, the degree of suitability for intended use etc. Determining the level of product quality consists in evaluating the set of indicators (deviations) established during expert research from the standpoint of their impact on product quality).

5. The fifth stage. In the case of finding out the inappropriate level of quality of research objects or other negative circumstances, the correlation coefficient is used to establish the real value. In the conclusion, the expert-commodity expert describes the defects or shortcomings of the products, determines the cause of their occurrence (if necessary) and the percentage of loss of quality. It is possible to detect: manufacturing or non-manufacturing defects; mechanical damage; defects caused by negative factors or natural wear and tear, etc. [13, p. 31-32]. If there are several defects in the product, the percentage of quality loss is set according to the largest defect. There are several methods of calculating wear and tear as a total loss of value of the object under the influence of various factors, the main ones of which are: the method of breakdown (physical, functional and external (economic) wear and tear) and the method of the remaining period of economic life (based on the assumption that it is possible to fairly reliably set the remaining service life).

6. The sixth stage. Summarization of data on the product under study obtained at the previous stages. Calculation of the actual cost, taking into account the loss of quality (if any). At this stage, the specialist summarizes all the data on the studied products, as received earlier. For different groups of consumer goods, different sizes of correction coefficients are used, which are recommended for use depending on the condition of the examined products [9, p. 45; 13, p. 33].

7. The seventh stage. The final stage is "Generalization of examination results. Drawing up an "expert's opinion" is a summary of all conducted research, a written expert's opinion based on the results of a forensic examination in accordance with the requirements of current legal acts.

Conclusions. It has been emphasized that the commodity expert uses several methodological approaches that most fully correspond to the determined purpose of the evaluation and the type of value (if there are reliable sources of information for its implementation). Approaches and methods for spreading their use in expert practice during forensic product examinations are given and characterized (if necessary, to establish the value of consumer goods in consumer protection cases).

The algorithm for determining the value of consumer goods was developed on the basis of the generalization of the experience of conducting forensic commodity examinations on consumer, confiscated and other goods. The application of the proposed algorithm is considered expedient when conducting forensic expert examinations in consumer protection cases, as well as useful for preventing deficiencies that reduce the probative value of experts' opinions.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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ABSTRACT

Recently, in connection with a significant increase in the number of falsified or counterfeit goods, as well as in connection with an increase in the number of cases of providing low-quality services, an urgent need arose on the Ukrainian market to carry out an examination of consumer goods in cases of consumer rights protection, when one of the main one of the questions that arise during the forensic examination is the determination of the value of the goods submitted for examination.

The purpose of the article is to consider the general principles and develop an algorithm for evaluating the value of consumer goods by a forensic expert in consumer protection cases, taking into account such goods. The principles that should be followed when evaluating the value of consumer goods are characterized, namely: utility, supply and demand, substitution, expectation, marginal contribution to productivity, the most efficient use. It is noted that the market value and non-market types of value are determined by law for the sale of consumer goods. It is emphasized that the forensic expert in commodity studies uses those methodological approaches that most fully correspond to the purpose of the assessment and the type of value of the goods (if there are reliable sources of information for its implementation).

The methodological approaches used by the expert to estimate the value of the product were analyzed: cost, profit, comparative. The proposed algorithm for determining the value of widely used goods by a forensic expert-commodity expert in consumer protection cases; includes the following stages: 1) obtaining a task, setting a goal and developing a research program; 2) establishment of commodity characteristics, commodity condition and other indicators of product quality; 3) determination of the initial price; 4) quality level research (detection of existing defects or damage); 5) clarification of consumer characteristics of the product; summarization of information and calculation of the market value as of the valuation date; 6) drawing up the conclusion of the forensic medical examination.

Keywords: *forensic examination, consumer goods, determination of the value of goods, commodity expert, principles of evaluation, protection of consumer rights, evaluation algorithm.*