

Certain features of determining the market price of a vehicle when carrying out forensic commodity examination

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The article discusses characteristic features of forensic commodity examination of vehicles. As a research task, an attempt was made to develop a step-by-step methodological retrospective assessment for the same year of manufacture, changed modification and generation of a vehicle. The article proposes an algorithm for determining the market price of a vehicle during forensic commodity examination at the time of its sale during a specific past period, i.e., a retrospective assessment of expert research object. The experience of retrospective assessment of vehicles already accumulated in Forensic Commodity Expertise Department of the “National Bureau of Expertise” of the National Academy of Sciences of the Republic of Armenia has been summarized. Based on the results of the studies, practical-tested methodological guidelines are proposed that allow to increase the reliability of determining the average market price of a vehicle as at the past period, taking into account the fact that the information base does not contain the necessary comparative initial data on sales of vehicles similar to this vehicle for the specified period.

Keywords: forensic commodity examination; retrospective assessment; vehicle; object of forensic examination; market value; information base; pricing factor; identification; distinguishing feature; modification.

Деякі особливості визначення ринкової вартості транспортного засобу під час проведення товарознавчої експертизи Гарегін Тавадян, Оганес Габриелян, Карен Назарян

Розглянуто характерні особливості проведення товарознавчої експертизи транспортних засобів. Як дослідницьке завдання було визначено спроба розроблення покрокового методологічно-ретроспективного оцінювання для того самого року випуску, зміненої модифікації та покоління транспортного засобу. Запропоновано алгоритм визначення ринкової вартості транспортного засобу під час проведення товарознавчої експертизи на момент реалізації певного минулого періоду, тобто ретроспективне оцінювання об'єкту експертного дослідження. Узагальнено досвід, напрацьований у відділі судових товарознавчих експертиз «Національного бюро експертиз» Національної академії наук Республіки Армєнія щодо ретроспективної вартісної оцінки транспортних засобів. За результатами виконаних досліджень запропоновано апробовані на практиці методичні рекомендації, що дають змогу підвищити достовірність визначення середньоринкової вартості транспортного засобу станом на минулий період із урахуванням того, що на зазначений період в інформаційній базі відсутні необхідні порівняльні вихідні дані з продажу транспортних засобів, аналогічних досліджуваному.

Ключові слова: товарна експертиза; ретроспективна експертиза; транспортний засіб; об'єкт експертизи; ринкова вартість; інформаційна база; чинник ціноутворення; ідентифікація; відмінна ознака; модифікація.

Expert research on identifying authentic materials that testify to product characteristics, including determination of both the market value of various types of products and calculation of the extent of material damage caused as a result of their damage in the "National Bureau of Expertise" of the National Academy of Sciences of the Republic of Armenia (hereinafter referred to as NBE NAS RA), are mostly carried out in the department of forensic commodity expertise (hereinafter referred to as FCE) [1]. Different types of vehicles (studied within the framework of forensic commodity examination), in particular, cars, trucks, trailers and semi-trailers, motorcycles, tractors, etc., which often become objects of commodity research in the course of criminal, civil and arbitration cases, require assessment of their condition, quality and value. Oftentimes, when commodity experts resolve specific value tasks during FCE, there is a need to prepare answers to typical questions related to clarification of the market value of vehicles both at the time of initiation or trial of criminal or civil cases and at the time of sale (value of goods) during a specific past period.

In order to determine market value of vehicles, which are objects of expert research, in most cases, a commodity expert should do the following:

- assess appearance and condition of the body, mechanical parts of the vehicle in order to establish actual condition of vehicle equipment;
- determine the availability of both defects, their impact on quality, and traces of changes in car specifications;
- identify data specified in the registration certificate with the vehicle under research and/or records made by the manufacturer;
- determine suitability of the vehicle for use as intended (excluding semi-trailers) at that specific point in time [2].

At the same time, when determining the average market value of vehicles, the most important price-forming components are the vehicle brand, model, year of manufacture, speedometer readings, engine capacity and power, transmission type, working condition, appearance, equipment, color, tire wear, tire type, and other price factors. The vehicle equipment, additional lightning alarm and sound alarm systems, presence of off-road systems, which implies certain modifications of the suspension

system, braking and electrical systems, etc., are also taken into account. Overall, considering studied materials and documents submitted by competent authorities for forensic examination, diagnostic tasks are solved within the framework of FCE. This allows forensic experts to obtain data about the research object. Also, cause-and-effect relationships between non-observance of the rules of implementation of processes, operations and occurred events [3] are identified.

However, while determining the vehicle market value at the time of forensic examination, the forensic expert is frequently faced with tasks associated with assessment of market value of the vehicle at the time of its sale during a certain past period, the so-called retrospective object assessment. The reason for appointing similar commodity examination is the need for this value estimate when selling or buying a vehicle, in insurance cases, for estimating the value during inheritance and other legal procedures. As part of the retrospective assessment of an object to determine its market value, all the expert measures mentioned above are carried out during the inspection. However, it should be stressed that certain initial data obtained during forensic examination cannot be unequivocally interpreted when determining the market value of a vehicle as some characteristics may differ. The main distinguishing features should include speedometer readings, working condition of mechanical parts and assemblies, appearance, equipment and a number of other initial data about the vehicle obtained both during expert research and review of materials and documents submitted for forensic examination by the authority carrying out proceedings.

For this specific subtype of commodity vehicle examination involving retrospective assessment, the FCE department uses a comprehensive approach, which further includes:

- analysis of operation history, including registration documents, quality certificates and service documentation;
- value estimation, including determination of the market value and estimation of value for restoration;
- assessment of mileage and operating condition of a car, including determination of frequency and conditions of operation [4].

During the search and analysis of literary sources related to determining the market value of a motor vehicle (hereinafter referred to as MV), and in the course of conducting expert research and retrospective assessment, it was found that assessing the market value of a MV of a specific manufacturing year as of the moment of sale during a specified past period (especially the previous year) is typically determined in expert practice using the following methodological approach [5, 6]. Thus, when determining the market value of MV as of the year preceding the date under study, an indicator associated with the period of MV operation should be considered while expert research. For example, if the car was manufactured in 2018, then when assessing a MV in 2023, it is essential to take into account the operation period as of 2022 since at the time of assessment it was four years old, that is, a MV was manufactured in 2019. At the same time, it is important to note that a MV manufactured in 2018 and a MV manufactured in 2019 must have the same body modification and belong to the same generation.

Therefore, taking into account the above-mentioned methodological approach, it is essential to stress that the methodological approach adopted by the forensic experts is applicable in limited cases, namely only in those cases when we are dealing with MVs of one brand, model, modification (body) and one generation. When within the same year there is a change in body modification and generation of the manufactured car of the same brand and model, other methodological solutions need to be considered. By the way, it's worth noting that automobile factories in the former Soviet Union applied the conversion factor from the previous generation to the next when releasing MVs.

Given the circumstances in which individual criminal/civil cases may not provide a sufficient level of veracity for retrospective assessment of a MV (within FCE), over the past few years the FCE Department of the NBE NAS RA has conducted research within the framework of a specialized scientific and methodological topic aimed at developing a methodological approach for retrospective assessment of a MV. The developed methodological approach allows to perform a value estimate of a vehicle, modification and generation change of which took place within

the same year, i.e., production of a MV of the old generation was completed in 2009, but production of the next generation started in 2009 as well. The developed methodological approach is based on the listed below important principles and assumptions, which presence makes it possible to ensure a qualitative retrospective assessment of an object within expert research. Thus, for this classification commodity research, we have proposed the following step-by-step algorithm for use during FCE:

1. Determine the manufacture year and / or age of the vehicle that is the object of retrospective assessment (for the period of assessment established by the Resolution).
2. Set modification date and the date of the next MV generation studied within FCE.
3. During the forensic examination of a motor vehicle (which is the object of expert research), market values should be separately determined for the old and new modifications and generations of the same year of manufacture, in accordance with date of change in modification or generation.
4. To determine the market value of a motor vehicle with old and new modifications of the same year of manufacture, apply a conversion factor from the corresponding previous generation to the next generation.
5. During expert research on a motor vehicle, estimate the market value of a similar vehicle of the same age, taking into account any changes made to its modification or generation.
6. Calculate the market value of a MV, which is the object of forensic examination with a changed modification and generation, for the same (identical) generation and the market value of the studied MV as of the period specified in the Resolution, applying the conversion factor from the previous generation to the next generation.

Let's illustrate the above-mentioned algorithm with one specific example from forensic expert practice. In 2021, in the criminal case N, a decision was issued to conduct a FCE, according to which it was necessary to determine the average market value of the LEXUS RX 350 MV brand with a release date of 2006 for a period of time dated 2015. During the research and necessary expert actions, visual inspection and photography of the

MV were carried out. Also, results of the research as of 2015 set out in case files and documents submitted for consideration to the body carrying out proceedings were used as a basis. After, based on the results of studying corresponding thematic sites on the Internet which display information about the market of the region where the price of MV was determined, it was found that the LEXUS RX 350 car, which is the subject of expert research and was manufactured in 2006, should be classified as the 2nd generation vehicle. This is because it was modified in 2009 and transitioned to the next modification, which is the 3rd generation. Considering the necessary initial data characterizing the nine-year age of the LEXUS RX 350 motor vehicle, as well as the fact that the researched object had been modified and belonged to the third generation, at the time of FCE conducted in 2021, the motor vehicle had to be nine years old, that is, it had to correspond to the motor vehicle manufactured in 2012 and have the same characteristics as LEXUS RX 350 of the second generation with a nine-year manufacturing age. Using the method of comparative assessment, which allows adjusting technical specifications of MVs of the same brand and of the same manufacturing year, the average market value of the 9-year-old LEXUS RX 350 car of the new modification and the 3rd generation at the time of forensic examination was determined, which amounted to 10,000,000 AMD. Later, using the aforementioned method, at the time of forensic examination the individual average market value of the LEXUS RX 350 car of 2009 of both old and new modifications and generations was determined, given the fact that in both cases the indicated cars had the same mileage, speedometer readings, appearance, equipment and were in working condition. In the course of calculations, the average market value of the car of the 2nd generation car and modification for the period of expert research amounted to 6,950,000 AMD. The average market value of a car of the 3rd generation and modification at the time of forensic examination

amounted to 8,600,000 AMD. Based on obtained average market values, the conversion factor from the old modification and the 2nd generation to the new modification and the 3rd generation of the same manufacturing year was calculated, which equals $8,600,000/6,950,000=1.24$. According to the average market value of a 9-year-old Lexus RX 350 car of the 3rd generation with a changed modification and the calculated conversion factor, the price of the LEXUS RX 350 for 2015 was calculated, which amounted to $10,000,000/1.24=8,064,516$ AMD.

To conclude, based on gained practical experience, it is possible to note that the methodological guidelines of step-by-step value retrospective assessment proposed in this paper allow to increase veracity of calculation results and can be changed depending on cases of determining the market value of cars, modification and generation change of which took place within the same year.

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