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THE ROLE OF WRITTEN SOURCES IN THE STUDY OF HISTORICAL METROLOGY

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A B S T R A C T	***K E Y W O R D S***
The article is devoted to the role of written sources in the study of historical metrology. The development of historical metrology in Europe and the East.	Metrology, history of metrology, standards, legislative acts, works on historical metrology, written sources.

Humanity from the very beginning of its history and is still in constant search. We can see this factor in our economic life, in all the accumulated historical experience, in our economic and scientific knowledge, in our cultural and educational values, in all the achievements of man today as a whole. So it is not a mistake to say that the excellent study and teaching of the history of mankind is one of the tools that ensure its future. And the role of education and upbringing in the steady fulfillment of this task is invaluable.

This is the main goal of the education reforms carried out in our country during the years of independence. Over the years of independent development, one of the priorities of the state policy has become the work on radical reform of the education system, raising it to the level of the requirements of the time, educating a harmonious future generation.

In addition to the subject, each science has resources that solve their problems. This opinion is also applicable to metrological science. Metrological sources include, first of all, monuments of objects. These are size standards that have come down from ancient times to the present day, such as ultra-scale rulers, coins, weight stones, packing weight stones, architectural structures and other standard size items.

Written sources are considered valuable material in the study of historical metrology. A lot of important information is contained in legislative acts.

From this point of view, the President of the Republic of Uzbekistan Sh.M. Mirziyoyev, on January 28, 2022, during a wide public discussion, presented a new development strategy for Uzbekistan for 2022-2026, consisting of seven priority areas developed on the basis of the principles "from action strategy to development strategy", and the country's program regarding its implementation in "The Year of Human Destiny and Selfless Mahalla". For the purposes of chapter 77 of the fourth strategy “pursuing a fair social policy and a strategy for the development of human capital”, the question was raised of “study and further development of the history of Uzbekistan” and “implementation of the concept of development of historical science until 2030” [1].

Today, one of the most important tasks facing every researcher of history is not only the study of history, but also its in-depth and comprehensive study based on scientifically substantiated facts, the principles of truthfulness in revealing the meaning of historical processes, as well as the proposal of the most accurate scientific conclusions. The main goal of the educational reforms being carried out in our country is the formation of a healthy and harmonious, educated generation with high spiritual and moral qualities and filling it with historical knowledge. It is precisely to achieve this goal that it is necessary to train specialists who live in a new time, think in a new way, work in new industrial and social conditions, possess modern professional skills, and be able to withstand any threats and be competitive.

The relevance of the topic - metrological knowledge and methods are of interest to various areas of natural and historical sciences. In the course of metrological research, historical sciences mainly perform cultural tasks. The study of metrology as a component and resource of folk culture, as well as the stage of formation of modern methods of natural and mathematical sciences, is important for summarizing information on historical metrology and identifying the features of metrological sources. When studying the history of metrological sources, a huge amount of material has been accumulated related to life, science and culture, socio-economic issues, but there are still no general historical and scientific studies that analyze the role of traditional metrology in the life of the people. The history of metrology has been little studied and is devoted to a number of articles and books, but there are no special scientific papers on this topic.

The study of the article we have chosen will allow us to study the history of metrology, its role in the daily life of our people in a deeper and more comprehensive way, translate them into the metric system, their scope, and compile an exhaustive list of measures and units related to standardization and metrological support. To achieve this goal, the following main goals and objectives were solved:

- to study, systematize and generalize the database of initial historical and scientific research, to present the integral structure of metrology in the daily life of people;
- determination of the application of measurement and measurement with their application in the metric system, folk chronology, in their sphere and their systematization;

The object and subject of the work are measures of mass and units of weight, capacity, length, area, size and chronology.

In the process of implementing this article, general scientific and special-historical studies were used. The systematic approach made it possible to establish measures and guidelines, to control their correct use and practical application, and to determine how the interaction of these elements contributed to the fact that metrology became an integral part of the life and culture of the people.

The retrospective method was necessary to recreate the general climatic conditions, the natural way of life in management, the meager development of commodity-money relations, historical metrology for individual parts of the sources of a holistic selection of source studies.

Scientific novelty - historical metrological information as a source was scientifically classified and systematized by periods, the characteristics of the sources of each era, researchers and metrological sources in their works were given.

The history of the formation and development of historical metrology in Uzbekistan was considered by us as a research work based on sources.

We know that the historical metrological system has evolved in connection with other ancillary areas of history. Metrology specialists usually rely on archeology and ethnography. Therefore, it should be

noted that in the Middle Ages, units of measurement were directly related to natural conditions (yield, soil fertility, climate). We see that the literature on geography, geology, astronomy, agronomy and other fields is cited in studies on metrology. The first shoots of the metrological service and the issues of metrological support began to emerge in different countries in different ways. For example, the Russian prince Svyatoslav Yaroslavich used a golden belt at the waist as a standard for measuring length. According to historical data, the prince periodically went around the market stalls, comparing length measurements from various cloth sellers with his belt. If the difference between them exceeds the limit, the seller is penalized. In Italy in the Middle Ages, a certain order was established in this regard. A certain number of pearl grains were kept in churches and temples and used to create units of volume and mass of scattered substances.

In the defeat of the correspondence there is also information about the origin of wars between states, and sometimes the reason for the disagreement was in the measurements. When studying studies and approaches in different countries, traces of ways and methods were found, in certain sensations spontaneously, in all cases, general conclusions were preserved: - the immutability (constancy) of the measurement value in other measurements; - you can create different measured values. As an initial measurement indicator for this period, it can be established that the units of measurement were not proportional, and the units of significant quantities were not taken into account by others with the composition.

Since the beginning of the Middle Ages, the practice of measuring the area of sown wheat began to take shape. choosing different qualities of rye and wheat and choosing between units of measurement is one of the most complex processes in production. There were other methods of measuring land: the crop expected to be harvested from the land area, the number of cattle fattened on the land area, and the land area determination parameter. However, it should be noted here that there is no exclusion of standards when measuring construction. That is, in nature, an uneven number of grains of wheat, peas, drops and grains of sand. A solution that was supposed to be in the development of modern science. Western calculations have made a great contribution to the development of metrology as a science and research, such as Galileo Galilei, Nicolaus Copernicus, Isaac Newton, Pascal, D. Mendeleev.[2]

The history of ancient Roman and Greek units of measurement is well studied. Because the Roman Empire was a very centralized state with a perfect tax system. That is why a lot of information about the metrology of the Roman Empire has come down to us. In addition, many units of measurement that existed in the Roman Empire were used in later periods.

In the formation and development of historical metrological science in the eastern states, the works of Abu Ali ibn Sina, Abu Raykhan Beruni, Babur, Mahmud Kashgari, Alisher Navoi occupy a special place as sources. For example, Abu Rayhan Beruni wrote in his book "The Law of Masudi" about a large globe he made, saying that "I cultivated half of the earth with a diameter of 10 centimeters, on the surface of which I drew the width and length." Naturally, the question arises of what length is 1 "segment". 1 stretch - 0.5; 0.6 meters. Then 10 segments will be 5-6 meters. So Beruni created a hemisphere with a diameter of 5-6 meters.[3]

The "Laws of Tiba" by Abu Ali ibn Sina uses dozens of units of measurement, such as dirham, davrak, shek, ritl (or ratl).[4]

Or in the 4-volume dictionary of Alisher Navoi, the word "kari" was often used, that is, it was given as a 1-kari unit of measurement from the tip of one finger to the elbow. 1 is the distance from the tip

of the hand to the elbow, equal to 6 bunches, while while 1 bunch is equal to 4 widths, and 1 bunch is equal to 6 grains of barley.

The term "ziro", used during the period of Babur, has a unit of 75 centimeters and is widely used in eastern countries. Sometimes the use of the zero unit of measurement resulted in the farab also having different values. This corresponds to the gas of the Persians and the Karichi of the Turks. The average value was taken as 54.04 cm at the moment 1 ziro is equal to 1 gas, in Turkey 65 centimeters.[5]

People have been forced to establish measurements such as length, width, height, depth, surface, volume in their daily endeavors, work, measurements, ditching and calculations in a very simple way. In this case, human body height (waist, chest, neck), (heel, ankle, knee, step), hand (elbow, ear, palm, inch, imimap fingers) and other organs were used as the main measuring instruments. Therefore, they say: "The length is about ten years, the height is the height of some uegi, the height is the height of some uegi man."

The German scientist W. Hins wrote about the history of the metrology of Muslim countries in the Middle Ages (10th-14th centuries). The second part of his book was a study by E. A. Davidovich, dedicated to the metrology of Central Asia in the 15th-18th centuries. His information is taken from historical, numismatic and epigraphic sources, and how he acknowledges this information.[6]

Due to the uniqueness of the Central Asian sources on historical metrology and the insignificance of previous studies in this direction, they are incomplete and cannot be different.

The metrology of Central Asia is not fully provided with special sources, the study of which will immediately give a clear result. These works complete the list of literature on historical metrology.

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