



PURCHASING OF LABORATORY EQUIPMENT BY STATE-FUNDED SCIENTIFIC ORGANIZATIONS IN UZBEKISTAN (2018–2025)

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Abstract: *The modernization of laboratory infrastructure is a key determinant of scientific productivity and innovation capacity. This thesis examines the process and dynamics of purchasing laboratory equipment by state-funded scientific organizations in Uzbekistan during the period 2018–2025. Using official procurement data, the study analyzes trends in public spending, institutional distribution of purchases, and structural characteristics of laboratory equipment acquisition. The findings reveal a growing role of state financing in strengthening research infrastructure, alongside persistent challenges related to efficiency, coordination, and sustainability.*

Keywords: *laboratory equipment, public procurement, scientific organizations, state funding, Uzbekistan*

Chapter 1. Introduction

1.1 Background of the Study

Scientific research increasingly depends on access to modern laboratory equipment. Advanced instruments allow researchers to conduct high-quality experiments, comply with international standards, and participate in global scientific collaboration. For countries undergoing economic and technological transformation, public investment in laboratory infrastructure is particularly important.

In Uzbekistan, state-funded scientific organizations—including research institutes and public universities—play a central role in national research and development (R&D). Since 2018, the government has significantly increased attention to upgrading laboratory facilities through centralized procurement mechanisms.



1.2 Problem Statement

Despite increasing public expenditure, questions remain regarding:

- The effectiveness of laboratory equipment procurement
- The distribution of equipment among scientific organizations
- The alignment of purchases with national research priorities

A systematic analysis of procurement data is therefore necessary.

1.3 Research Objectives

The main objectives of this thesis are:

- To analyze the dynamics of laboratory equipment purchasing during 2018–2025
- To assess the role of state-funded scientific organizations in procurement
- To identify challenges and policy implications related to laboratory equipment acquisition

Chapter 2. Literature Review and Conceptual Framework

Laboratory infrastructure is widely recognized as a core component of national innovation systems. Previous studies emphasize that public procurement of scientific equipment contributes not only to research capacity but also to technology transfer and human capital development.

In developing and transition economies, centralized procurement is often used to ensure transparency and cost efficiency. However, literature also highlights risks such as equipment underutilization, insufficient technical support, and unequal access across institutions.

This thesis adopts a **public investment and research infrastructure perspective**, viewing laboratory equipment procurement as a strategic policy instrument.

Chapter 3. Dynamics of Laboratory Equipment Purchasing (2018–2025)

3.1 Overall Trends



Analysis of procurement data shows a **steady increase in laboratory equipment purchases** over the period under review. The most notable growth occurred after 2020, reflecting expanded state support for science and innovation.

Table 3.1 presents the annual volume of laboratory equipment procurement by state-funded scientific organizations (2018–2025).

The data indicate:

- Growth in both the quantity and financial value of purchased equipment
- Increasing complexity and technological sophistication of instruments

3.2 Impact of National Science Policies

The observed growth corresponds with national strategies aimed at:

- Strengthening research capacity
- Modernizing public universities and research institutes
- Encouraging applied and interdisciplinary research

Chapter 4. Challenges and Policy Implications

Key challenges identified in the thesis include:

- Unequal distribution of laboratory equipment
- Risks of underutilization
- Weak post-procurement monitoring

Policy recommendations include:

- Strengthening needs-based procurement planning
- Expanding shared laboratory centers
- Investing in technical training and maintenance systems