http://www.jhpr.ir
Hosp Pract Res. 2026 November;11(Special Issue 1):20-21
doi 10.30491/hpr.2026.256799
HPR
Hospital Practices and Research
Policy Brief

Evidence-Based Nutrition Policy: Economic Feasibility of Establishing Comprehensive Laboratory Infrastructure to Guide Public Health Initiatives

Mehdi Mohammadi [1], Mohammad Amiri Ara [2], Sayyed Morteza Hosseini Shokouh [2], Mohammad Nejatian [3], Naeim Shokri [2*]

[1] Student Research Committee, Baqiyatallah University of Medical Sciences, Tehran, Iran
[2] Health Management Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
[3] Department of Nutrition and Food Hygiene, School of Health, Baqiyatallah University of Medical Sciences, Tehran, Iran

***Corresponding Author:** Naeim Shokri, Ph.D., Health Management Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran. Tel: +989355332533, Email: naeimshokri@gmail.com

Received October 9, 2026; **Accepted** November 6, 2026; **Online Published** November 10, 2026

Abstract

The escalating demand for accurate and standardized laboratory services in nutrition and food health necessitates the establishment of comprehensive facilities. This study assessed the economic feasibility of launching a comprehensive nutrition laboratory at Baqiyatallah University of Medical Sciences. Using key economic indicators (NPV, IRR, Payback Period) and the COMFAR III software, the project demonstrated profitability, with a Net Present Value (NPV) calculated at 962,182,466,323 Rials (2024 value). However, the Internal Rate of Return (IRR) was estimated at 7.82%, which, despite indicating basic viability, offers limited financial appeal given the high domestic inflation rate (exceeding 30%). These findings highlight the need for immediate policy interventions, such as securing public funding or adjusting service tariffs, to enhance the financial attractiveness and ensure the sustainable operation of this essential public health infrastructure.

Keywords: Economic Feasibility, Nutrition Laboratory, NPV, IRR, Policy Brief, Health Infrastructure

1. Background

The global rise in non-communicable diseases (NCDs), such as cardiovascular disease and diabetes, coupled with an increased public and regulatory awareness of food safety and quality, have driven an escalating and critical demand for highly accurate and standardized laboratory services in the fields of nutrition and food health.[1] These diseases not only diminish human capital productivity but impose a massive and unsustainable financial burden on national healthcare systems, demanding urgent policy intervention. Consequently, the establishment and equipping of robust, comprehensive laboratories are not merely academic goals, but are crucial strategic imperatives for effective public health surveillance, evidence-based clinical support, and rigorous academic research that underpins the formulation of national dietary guidelines.[2] Despite this clear public health imperative and the urgent need for local capacity building, a critical policy and knowledge gap remains: there is a profound lack of comprehensive economic assessment of such necessary infrastructure projects, particularly within the challenging context of high-inflation, developing economies.[3] Such assessments are vital for mitigating financial risks, ensuring the long-term sustainability of the asset, and proving the return on investment to public stakeholders. This study is therefore dedicated to conducting a rigorous economic feasibility assessment for the proposed comprehensive nutrition laboratory within the School of Health at Baqiyatallah University of Medical Sciences. The findings will provide the definitive data necessary to inform strategic, risk-mitigating investment decisions by government and university leadership,[4] ensuring efficient allocation of limited resources toward a national health priority.

2. Methods

This was an applied, cross-sectional economic study conducted in 2024 (1403 local calendar). Data collection focused primarily on three areas: capital expenditures (initial investment), projected operational costs, and potential revenues, the latter being calculated based on approved official service tariffs. The economic viability was analyzed using standard investment appraisal metrics, specifically the Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period. The financial modeling and calculations were executed utilizing the COMFAR III software package. The aim of this methodological approach was to capture the overall

Copyright © 2026 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

economic viability and potential added value of the project without focusing on overly technical or complex measurement details, adhering to the standard of a high-level policy assessment.

3. Results

The comprehensive economic evaluation confirmed the project's fundamental profitability and its capability to generate positive long-term value for both the academic institution and public health sector. Specifically, the cash flow analysis estimated the project's Net Present Value (NPV) to be 962,182,466,323 Rials (based on 2024 prices). This significant positive NPV indicates that the project will create substantial net surplus value over its determined lifespan and is thus considered a scientifically and technically justified investment.

However, the most important finding and critical policy point lies in the project's Internal Rate of Return (IRR), which was estimated at only 7.82%. This return constitutes a serious warning sign: under the current national economic conditions, where the domestic inflation rate consistently exceeds 30%, an IRR of 7.82% offers zero financial appeal for private sector investors or commercial banks. This stark difference between the financial return and the inflation rate reveals a vital challenge: despite the project being technically effective and socially essential, it is completely unattractive for private investment within the current macroeconomic framework. This result directly justifies the need for governmental financial support and strategic intervention through public budgets to ensure this critical public health infrastructure is established.

4. Discussion and Conclusion

The positive NPV confirms the laboratory's economic soundness and its ability to generate long-term added value, which aligns with existing literature on the sustained clinical and research benefits of robust nutritional infrastructure.[5] However, the calculated IRR of 7.82% relative to the high domestic inflation rate (over 30%) poses a serious challenge, indicating that its operation is highly dependent on subsidized capital and policy support.[6]

5. Policy Recommendations

Strategic Public Subsidy: Policymakers must recognize the essential public health nature of the laboratory and authorize direct capital subsidies or dedicated public-sector funding to mitigate the low rate of return and ensure the project's execution.

Tariff Reform: Review and adjust the approved service tariffs to realistically reflect the actual operational costs and account for high inflation. This measure is crucial for enhancing the project's self-sustainability and reducing long-term reliance on subsidies. Interventions are needed to secure necessary operational funding.

Prioritize Non-Financial Returns: Institutional leaders must prioritize the non-financial returns (improved research capacity, clinical diagnostics, and public health outcomes) as these returns significantly outweigh the limited financial profitability in the short term.

Acknowledgments

Researchers thank to guidance and advice from the "Clinical Research Development Unit of Baqiyatallah Hospital".

Author Contributions

Authors contributed equally to this work.

Conflict of Interest Disclosures

All authors declared that they have no conflict of interest.

References

1. World Health Organisation. Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: WHO. 2013.
2. Centers for Disease Control and Prevention. The role of laboratory services in public health. J Public Health Manag Pract. 2019.
3. Reber E, Norman K, Endrich O, Schuetz P, Frei A, Stanga Z. Economic challenges in nutritional management. J Clin Med. 2019;8(7):1005. doi:10.3390/jcm8071005
4. Wun J, Levin C, Kemp C, Bushnell D. Measurement of Benefits in Economic Analyses of Nutrition-Specific and-Sensitive Programs: A Systematic Review. Curr Dev Nutr. 2020;4:nzaa053_132. doi:10.1093/cdn/nzaa053_132
5. Tyler R, Barrocas A, Guenter P, Araujo Torres K, Bechtold ML, et al. Value of nutrition support therapy: impact on clinical and economic outcomes in the United States. J Parenter Enteral Nutr. 2020;44(3):395-406. doi:10.1002/jpen.1768
6. Baek Y, Ademi Z, Paudel S, Fisher J, Tran T, Romero L, et al. Economic evaluations of child nutrition interventions in low-and middle-income countries: Systematic review and quality appraisal. Adv Nutr. 2022;13(1):282-317. doi:10.1093/advances/nmab097