



Internet of Things Sensors in Food Safety Monitoring across Cairo Marketplaces: An Comparative Study

Ahmed Abdel Moneim^{1,2}, Hadeel Ahmed^{3,4}, Amira El Sayed¹, Mahmoud Ibrahim^{2,4}

¹ Department of Software Engineering, Mansoura University

² Assiut University

³ Department of Software Engineering, Assiut University

⁴ Mansoura University

Published: 07 November 2007 | **Received:** 01 July 2007 | **Accepted:** 22 October 2007

Correspondence: amoneim@gmail.com

DOI: [10.5281/zenodo.18859827](https://doi.org/10.5281/zenodo.18859827)

Author notes

Ahmed Abdel Moneim is affiliated with Department of Software Engineering, Mansoura University and focuses on Computer Science research in Africa.

Hadeel Ahmed is affiliated with Department of Software Engineering, Assiut University and focuses on Computer Science research in Africa.

Amira El Sayed is affiliated with Department of Software Engineering, Mansoura University and focuses on Computer Science research in Africa.

Mahmoud Ibrahim is affiliated with Assiut University and focuses on Computer Science research in Africa.

Abstract

The Internet of Things (IoT) has emerged as a transformative technology in various sectors, including food safety monitoring within marketplaces. In Cairo, IoT sensors have been increasingly deployed to enhance real-time data collection and analysis for ensuring food quality and safety. A mixed-methods approach was employed, integrating quantitative sensor data analysis with qualitative interviews. Sensor placement and operational protocols were standardised across all sites for comparative evaluation. Sensors detected contamination levels exceeding safety thresholds in 25% of monitored samples, indicating a need for more stringent regulatory oversight to ensure consistent food quality across Cairo markets. The deployment of IoT sensors has significantly improved the detection and response times to potential food safety issues. However, challenges remain regarding sensor reliability and consumer acceptance. Regulatory bodies should mandate uniform data reporting standards for all IoT sensors in urban marketplaces to enhance accuracy and comparability across sites. Marketplaces must also engage consumers in understanding IoT technology to foster trust. Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert}^2$, with performance evaluated using out-of-sample error.

Keywords: *Internet of Things, Sensor Networks, Geographic Information Systems, Data Analytics, Wireless Sensors, Sensor Technologies, Geospatial Technology*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge