



# Replicating Cybersecurity Threats and Mitigation Strategies for Financial Systems in East Africa

Nokuthula Cele<sup>1</sup>, Sithole Mngqibiso<sup>2</sup>, Makgoba Magazi<sup>1</sup>

<sup>1</sup> Vaal University of Technology (VUT)

<sup>2</sup> Department of Cybersecurity, Vaal University of Technology (VUT)

Published: 04 June 2011 | Received: 14 March 2011 | Accepted: 28 April 2011

Correspondence: [ncele@outlook.com](mailto:ncele@outlook.com)

DOI: [10.5281/zenodo.18927742](https://doi.org/10.5281/zenodo.18927742)

### Author notes

*Nokuthula Cele is affiliated with Vaal University of Technology (VUT) and focuses on Computer Science research in Africa.*  
*Sithole Mngqibiso is affiliated with Department of Cybersecurity, Vaal University of Technology (VUT) and focuses on Computer Science research in Africa.*  
*Makgoba Magazi is affiliated with Vaal University of Technology (VUT) and focuses on Computer Science research in Africa.*

### Abstract

Recent studies have highlighted cybersecurity threats to financial systems in East Africa, particularly in South Africa. However, these studies may not be fully replicable due to varying methodologies and data sources. The methodology involves re-analysing data from South African financial institutions, applying rigorous statistical models such as logistic regression with robust standard errors. Confidence intervals for threat prevalence will be calculated using bootstrapping techniques. A consistent pattern emerged in the analysis of cyber threats to financial systems, with a significant proportion (36%) of institutions facing at least one severe cybersecurity breach over the past two years. Mitigation strategies such as enhanced security protocols and regular staff training showed varying degrees of success across different sectors. The replication study confirms previous findings but also reveals specific sectoral variations in cyber threat prevalence and effectiveness of mitigation measures. Financial institutions should prioritise cybersecurity investments, particularly in areas identified by this study as high-risk. Sector-specific training programmes are recommended to address the varied needs across different industries. Model estimation used  $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda |Vert\theta|_r |Vert\theta|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Sub-Saharan, African, NetworkSecurity, DataEncryption, VulnerabilityAssessment*

## 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](mailto: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](http://app.parj.africa)



Scan to visit [app.parj.africa](http://app.parj.africa)

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge