

Research Issues

RSC811-Assignment 8

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Research Title : العنوان

Research Proposal about

Enhancing OT Cybersecurity: A Proposed Framework to Strengthen Protection in Industrial Control System Environments

<https://link.springer.com/content/pdf/10.1365/s43439-021-00045-4.pdf>

Introduction : المقدمة

Operational Technology (OT) environments have become more connected to IT networks and cloud platforms, increasing efficiency but also expanding cyber risks.

Cyberattacks on OT systems can cause physical damage, operational disruption, and major economic impact.

Although standards such as NIST 800-82 and IEC 62443 exist, organizations still struggle to apply them effectively due to legacy systems, limited skills, and weak governance.

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Significance of the Study : أهمية الدراسة

The study supports organizations in improving OT security, especially in critical infrastructure, and helps bridge the gap between cybersecurity teams and operational teams. It provides a practical approach for improving governance and resilience.

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الاطار النظري : Theoretical Framework (Summary)

Based on recent literature (Computers & Security, 2023), the framework focuses on:

OT Threat Landscape: ransomware, unauthorized access, supply-chain attacks, protocol vulnerabilities.

Challenges: legacy systems, weak segmentation, limited expertise, patching constraints.

Solutions: segmentation, Zero Trust, anomaly detection, hardening, secure remote access.

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Methodology : منهجية الدراسة

Type: Descriptive and analytical study.

Tool: Questionnaire targeting OT engineers, cybersecurity managers, and vendors.

Sample: 20–40 professionals from OT environments.

Analysis: SPSS (descriptive statistics and correlations).

النتائج المتوقعة : Expected Results

Identification of major gaps in OT security controls.

Need for stronger governance and role clarity.

Effectiveness of the proposed OT framework in improving overall security maturity.

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الجدول الزمني : Timeline

Weeks 1–2: Literature review

Weeks 3–4: Theoretical framework

Weeks 5–6: Questionnaire design

Weeks 7–8: Data collection

Weeks 9–10: Analysis

Weeks 11–12: Writing & submission