UNDERGRADUATE THESIS

SECURITY ANALYSIS OF THE WESKONEK ERP SYSTEM USING A HYBRID MITRE AND PTES METHOD

KEN NARENDRA EKAMARTHA
NPM 22081010083

THESIS ADVISOR
Henni Endah Wahanani, ST, M.Kom
Achmad Junaidi, S.Kom, M.Kom

MINISTRY OF HIGHER EDUCATION, SCIENCE, AND TECHNOLOGY
UNIVERSITAS PEMBANGUNAN NASIONAL VETERAN JAWA TIMUR
FACULTY OF COMPUTER SCIENCE
INFORMATICS STUDY PROGRAM
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APPROVAL SHEET

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By:
KEN NARENDRA EKAMARTHA
NPM. 22081010083

Has been defended before, and accepted by, the Board of Assessors of the Thesis Examination of the Informatics Study Program, Faculty of Computer Science, Universitas Pembangunan Nasional Veteran Jawa Timur, on July 10, 2026:

Approved,

Henni Endah Wahanani, ST. M.Kom.
NIP. 19780922 202121 2 005 ..... **(Advisor I)**

Achmad Junaidi, S.Kom, M.Kom.
NIP. 19781110 202521 1 048 ..... **(Advisor II)**

Budi Nugroho, S.Kom. M.Kom.
NIP. 19800907 202121 1 005 ..... **(Head Assessor)**

Ardhon Rakhmadi, S.Tr.T., M.Kom.
NIP. 19910805 202406 1 002 ..... **(Assessor I)**

Acknowledge by,

Dean of the Faculty of Computer Science

Prof. Dr. Ir. Novirina Hendrasarie, MT.
NIP. 19681126 199403 2 001

APPROVAL SHEET

SECURITY ANALYSIS OF THE WESKONEK ERP SYSTEM USING A HYBRID MITRE AND PTES METHOD

By:
KEN NARENDRA EKAMARTHA
NPM. 22081010083

Approved to proceed to the Thesis Examination

Approved by,

Coordinator of Informatics Study Program

Faculty of Computer Science

Dr. Intan Yuniar Purbasari, S.Kom. MSc.
NIP. 19800602 202521 2 029

STATEMENT OF ORIGINALITY

I am the undersigned:

Student Name	:	Ken Narendra Ekamartha
NPM	:	22081010083
Degree Program	:	Bachelor (S1)
Study Program	:	Informatics
Faculty	:	Faculty of Computer Science

Hereby declares that this undergraduate thesis contains no part of any other scientific work that has been submitted to obtain an academic degree at any higher education institution. Furthermore, it does not contain any work or opinions previously written or published by others, except for those which are explicitly cited in this thesis and listed completely in references.

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Surabaya, July 10, 2026

Declarant,

KEN NARENDRA EKAMARTHA

NPM. 22081010083

ABSTRACT

Student Name/ NPM	:	Ken Narendra Ekamartha / 22081010083
Thesis Title	:	SECURITY ANALYSIS OF THE WESKONEK ERP SYSTEM USING A HYBRID MITRE AND PTES METHOD
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The web-based Enterprise Resource Planning (ERP) system centrally stores an organization's operational data but is vulnerable to security threats if not adequately protected. This study aims to analyze the security of the Weskonek ERP System owned by PT Tekno Konek Solusi using a Grey-Box Penetration Testing approach. The applied hybrid method combines the PTES phases, weakness classification with CWE, attack mapping using MITRE ATT&CK, and severity assessment through CVSS v3.1. Testing was conducted using tools such as OWASP ZAP, Burp Suite, SQLmap, and Nmap. The results identified vulnerabilities including SQL Injection, Cross-Site Scripting (XSS), Brute Force on the Login Page, and Active Session Misuse, impacting the system's confidentiality, integrity, and availability. This study provides mitigation mitigation including strengthening input validation, managing authentication, securing sessions, configuring cookies, and limiting login attempts.

Keywords: ERP, penetration testing, PTES, CWE, MITRE ATT&CK, CVSS, web application security

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The author realizes that this thesis still has various limitations and is far from perfect. Therefore, constructive criticism and suggestions are highly appreciated as valuable input for future improvements. The author sincerely hopes that this thesis can provide benefits, both for the development of knowledge and for readers who may require related information.

Surabaya, July 10th 2026

Ken Narendra Ekamartha

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