

ReviewForm3

JournalName:	JournalofEngineeringResearchandReports
ManuscriptNumber:	Ms_JERR_126308
TitleoftheManuscript:	CYBERSECURITYINPETROLEUMINDUSTRY:AREVIEWOFTHREATSANDCOUNTERMEASURES
TypeoftheArticle	

PART1: ReviewComments

Compulsory REVISIONcomments	Reviewer'scomment	Author'sFeedback (Pleasecorrectthemanuscriptandhighlightthatpartinthemanuscript.Itismandatorythatauthorsshouldwritehis/herfeedbackhere)
<p>Pleasewriteafewsentencesregardingtheimportanceofthismanuscriptforthescientificcommunity.Whydoyoulike(or dislike)thismanuscript?Aminimumof3-4sentencesmayberequiredforthispart.</p>	<p>Thismanuscriptisvaluableforthescientificcommunityasitprovidesacomprehensiveoverviewofcybersecurityrisksandcountermeasuresinthepetroleumindustry,acriticallyethhighlyvulnerablesector.The reviewsynthesizescurrentknowledgeonprevalentthreats,suchasransomwareandICSattacks,andevaluatesadvanceddefensivetactics,includingAI-enhancedincidentresponseandemployeetraining.Byfocusingonsector-specificchallengesandhighlightingcompliancewithindustrystandards,themanuscriptunderscorestheneedfortailoredcybersecuritystrategiesinthe faceofevolvingdigitalthreats.Thisresearchfillsasignificantgapbyofferinginsightsthatcoulddriveenhancedresilienceandsecureoperationalcontinuity,makingitarelevantandimpactfulcontributionto bothacademiaandindustrypractitioners.</p>	
<p>Isthetitleofthearticlesuitable?(Ifnotpleasesuggestanalternativetitle)</p>	<p>itseemsclearandrelevantbutcouldbeslightlyrefinedforreadabilityandimpact.Here'sarefined suggestion:</p> <p>"CybersecurityinthePetroleumIndustry:A ComprehensiveReviewofThreatsandMitigationStrategies"</p>	
<p>Istheabstractofthearticlecomprehensive?Doyousuggesttheadition(ordeletion)ofsomepointsinthissection?Pleasewriteyoursuggestionshere.</p>	<p>Theabstractiswell-structured,offeringacomprehensiveoverviewofthecybersecuritylandscapeinthe petroleumindustry,detailingthreatsandcountermeasures.However,I suggestthefollowingadjustmentsto refineitsclarityandimpact:</p> <p>ClarifyThreatsandCountermeasures:Specifythatthreatsincludenotonlyphishingandransomwarebutalso OT-specificrisks,likeattacksonSCADAandICSsystems,toemphasizetheindustry'sunique vulnerabilities.</p> <p>HighlightCybersecurityStandardsandProtocols:Integratementionof specificstandards,suchasIECor ISOcertifications,toemphasizecomplianceimportanceindirectly.</p> <p>FocusonOutcomesforIndustryLeaders:Shiftlanguagetounderscorehowthisreviewservesasaguidefor leadershiponresilienceandproactivethreatmanagement,addressingcriticalvulnerabilities.</p>	

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<p>Are subsections and structure of the manuscript appropriate?</p>	<p>The structure of the manuscript is generally appropriate and covers key areas of cybersecurity concerns in the petroleum industry. Here's a concise assessment of its subsections and flow:</p> <p>Abstract: The abstract effectively outlines the focus on cyber threats and countermeasures, though it might be shortened slightly for conciseness.</p> <p>Introduction: This section provides a strong context about the petroleum industry's digital evolution and associated vulnerabilities. However, it could be condensed to avoid repetition.</p> <p>Importance of Petroleum Industry: This segment is well-organized, but the points can be further streamlined, perhaps in list form, to enhance readability.</p> <p>Overview of Digital Transformation: The digital advancements and their uses are clearly presented. This could include a subsection summary to emphasize how these advances introduce specific cyber risks.</p> <p>Benefits and Challenges of Digital Technology: This section effectively covers both sides but could be condensed, as it overlaps with earlier content on the industry's digital transformation.</p> <p>Cyber Threats: Clear categorization and tabulation of threat types is appropriate. Ensure consistency in detailing threat impacts.</p> <p>Safety Challenges, Vulnerabilities, and Attack Vectors: These sections give a thorough overview of various risks. Combining attack vectors with specific examples of incidents may improve clarity and impact.</p> <p>Overall, the manuscript's structure is logical and covers the necessary points effectively. Minor edits to eliminate redundancies and enhance flow would strengthen the clarity and conciseness.</p>	
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<p>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</p>	<p>The manuscript titled CYBERSECURITY IN PETROLEUM INDUSTRY: A REVIEW OF THREATS AND COUNTERMEASURES demonstrates scientific rigor and robustness by providing a comprehensive overview of cybersecurity challenges specific to the petroleum sector. It integrates well-established industry references and recent case studies, highlighting both the complexity of cybersecurity threats and the effectiveness of various countermeasures. The technical depth, evidenced by a breakdown of attack types, vulnerabilities, and counteractive strategies like AI-driven defenses, reinforces the manuscript's applicability and accuracy. Furthermore, the clear focus on industry-specific cybersecurity standards and the practical recommendations for future resilience underscore the</p>	
<p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. -</p>	<p>Your references include strong foundational sources, but a few recent additions would improve depth and update the latest trends in cybersecurity specific to the petroleum industry. Here are suggestions:</p> <p>Breach and Attack Simulation (BAS): Exploring BAS technology could enrich your section on advanced security measures. BAS tools help simulate cyber-attacks to assess vulnerabilities, offering a proactive defense for critical infrastructure (e.g., Martinez et al., 2023, Journal of Cybersecurity).</p> <p>Threat Landscape Reports: Newer editions of threat intelligence reports from CrowdStrike or FireEye (2022-2023) would provide updated insights into specific threats and emerging tactics affecting ICS/SCADA systems in energy sectors.</p> <p>AI and ML in Cyber Defense: A recent review or case study on AI-powered predictive security in industrial control systems (ICS) could add value (e.g., Gozzi et al., 2023, IEEE Access), focusing on anomaly detection, incident response, and data integrity.</p> <p>Ransomware Resilience: Ransomware attacks continue to evolve, especially in industrial sectors. Recent publications on ransomware defense in OT environments (e.g., Lee et al., 2022, Journal of Information Security) would strengthen your countermeasures section.</p> <p>Zero Trust Architecture in OT: Integrating Zero Trust principles into OT cybersecurity strategies is increasingly relevant. The latest NIST guidelines or industry studies could offer practical recommendations.</p> <p>Adding these would ensure a broader, up-to-date perspective and help cover the evolving nature of cyber threats in the petroleum industry.</p>	

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<p><u>Minor</u>REVISIONcomments</p> <p>Isthe language/English quality of the articles suitable for scholarly communications?</p>	<p>The language and English quality of this article are recurrently not fully aligned with scholarly standards for several reasons:</p> <p>Redundancy: The text repeats information, particularly in the introduction, such as the industry's dependence on digital technologies and vulnerabilities to cyber threats. Streamlining these sections would improve conciseness.</p> <p>Structure: The structure needs refinement. For instance, the "Importance of Petroleum Industry" and "Overview of Industry's Reliance on Digital Technologies" could be better integrated into the introduction to provide a smoother, cohesive narrative.</p> <p>Language Use: The use of terms like "usefulness" in "Importance of Petroleum Industry" should be replaced with more precise scholarly terms, such as "significance" or "role." Similarly, some phrasing ("lots of challenges") is informal and could be rephrased to reflect a more academic tone ("numerous challenges").</p> <p>Consistency: The document's style varies, with some sections more descriptive and others more technically precise. The phrasings should be consistent, focusing on formal, clear, and concise language.</p> <p>Grammar and Punctuation: Minor grammar issues are present, such as missing articles and punctuation errors ("mEncrypting sensitive data" should be "Encrypting sensitive data").</p> <p>Eloquence and Clarity: Some benefits and challenges are vaguely described. For example, instead of "Improved Customer Experience: Improved customer engagement," a clearer explanation, such as "Enhanced customer satisfaction through responsive digital solutions," would be more effective.</p> <p>A refined draft focusing on conciseness, avoiding redundancy, and enhancing clarity would improve the scholarly quality and readability of this review.</p>	
<p><u>Optional/General</u>comments</p>	<p>The review on "Cyber Security in Petroleum Industry: A Review of Threats and Counter Measures" effectively emphasizes the critical importance of robust cybersecurity in the petroleum sector, given its vulnerability to diverse threats such as malware, ransomware, and insider attacks. It presents a balanced view of digital transformation, acknowledging the benefits of modern technologies while highlighting the associated cybersecurity risks. The identification of effective countermeasures, including advanced security measures and employee training, aligns well with best practices. Additionally, the focus on compliance with industry standards and the proposed future research directions, particularly concerning AI and human factors in cybersecurity, are timely and pertinent. Overall, the review underscores the necessity for a holistic cybersecurity strategy to ensure the industry's resilience against evolving threats.</p>	

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	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

ne:	Ahmet Efe
partment, University & Country	Turkey

