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Developing a Data Analytics Framework Using Python for Internal Audit Functions of the Accountant General's Department of Malaysia

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Abstract

Purpose: This study aims to develop a data analytics framework that incorporates Python for continuous auditing purposes. This initiative involves revisiting the existing audit framework to incorporate data analytics with Python capabilities. This comprehensive audit framework will be the foundation for a robust and continuous auditing system, maximising Python's potential due to its versatility, efficiency, and powerful data analysis capabilities. The proposed framework is designed to significantly enhance the effectiveness and efficiency of continuous auditing practices, specifically within the BPAD of the Accountant General's Department of Malaysia (AGD).

Design/ Methodology/ Approach: This study employs a qualitative methodology to develop a comprehensive audit framework integrating Python for continuous auditing. The approach consists of focus group interviews, in-depth discussions with key stakeholders from the BPAD, and a thorough examination of the current audit procedures and guidelines within existing audit documents. This method facilitates the understanding and identification of current practices and opportunities for improvement tailored to the BPAD's (Bahagian Pengurusan Audit Dalam [BPAD]) requirements while leveraging Python's robust capabilities in data analysis and process automation.

Findings: This study discovers several challenges and limitations in the existing audit framework that warrant the development of an analytical data

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framework using Python for internal audit functions in the public sector. The proposed framework is expected to reduce manual data processing and analysis through automation, increase accuracy in audit results, and provide continuous real-time monitoring, potentially significantly enhancing the division's continuous auditing capabilities, leading to more efficient, effective, and comprehensive audit processes.

Originality/ Value: This study proposes an analytical data framework that incorporates Python for continuous auditing purposes tailored to government agencies' unique requirements and challenges. The framework focuses on integrating data analytics in audit processes, providing a novel approach to enhance internal audit effectiveness in the public sector. The traditional audit fieldwork is divided into two (2) sub-stages: Pre-Audit Analytics and Audit Analytics Fieldwork, following the Extract, Transform, Load (ETL) process for data preparation and analysis. This approach allows for real-time insights, proactive risk management, and improved decision-making. By automating data analysis with Python, the framework also enables the identification of anomalies, fraud detection, and more effective compliance than traditional methods.

Keywords: Data analytics, continuous audit, public sector, Python, government