



IPS Paper

DEVELOPMENT OF INTELLIGENT PRIORITIZATION OF ACCOUNT FRAMEWORK FOR AUDIT PROCESSING OF FOREIGN EXCHANGE RECORDS

Author: Mrs BERNICE VYTIACO

Coauthors: Charles R. Morales, Anton M. Callangan, Prof. Francisco De los Reyes

Submission ID: 378

Reference Number: 378

Presentation File

[abstracts/ottawa-2023.125a360a1dce20f887a64d437c4f1d8e.pdf](https://abstracts.ottawa-2023.125a360a1dce20f887a64d437c4f1d8e.pdf)

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Brief Description

Finding irregularities or detecting “not-normal” instances or sometimes called anomaly detection or outlier detection is the main process of audit processing (Liu, 2019).

In this project, a potential anomalous record is defined as a record that deviates from the “normal” behavior of all the records of a bank; a data point that is inconsistent with either the item or customer historical behavior.

These records could be a possible indication of errors in the report.

This project proposes a framework that will serve as a guide in identifying which audit items are potentially anomalous and need to be prioritized.

The proposed methodology seeks to augment the existing audit process and reduce processing time in auditing monthly foreign exchange records and not necessarily replace the current audit process.

Abstract

Finding irregularities or detecting “not-normal” instances in a small amount of time is the main objective of an audit. This can be cumbersome if it involves a voluminous amount of data. It takes three (3) days on the average for auditors to manually produce an audit report. Thus, anomalous cases take time to determine and full investigation of these cases were delayed. Also, auditors are having difficulty in prioritizing which item should come first thus it is important to have a formal framework that auditors can use to conduct the audit more efficiently.

To fulfill its mandate as a regulating body, BSP uses several systems to monitor all banking records not only within the Philippines but also all foreign records coming from and to the Philippines. One of these systems being used by BSP is the International Transaction Reporting System (ITRS). The data collected by ITRS is significant in the compilation of Balance of Payments Position (BOP) of a country in making comprehensive analysis to support policy formulation and implementation. BOP is a statistical overview that systematically summarizes the economic records of an economy with other countries of the world during a certain period. With the available data in ITRS, management wants to gain insights from it in a timely manner to be able to make informed policy decisions. This paper proposed an alternative framework for intelligent prioritization of account. Statistical and machine learning techniques were used in identifying the priority level of audit of foreign exchange records. These techniques involve data decomposition using Seasonal and Trend decomposition using Loess (STL), Cubic Spline Smoothing, Automatic autoregressive integrated moving average (ARIMA), Generalized Extreme Studentized Deviate (GESD) test, unsupervised outlier detection model using Isolation Forest and Density-based spatial clustering of applications with noise (DBSCAN) and Clustering Large Applications based on RANdomized Search (CLARANS) with Recency, Frequency and Monetary (RFM) Analysis for its customer segmentation. The proposed methodology seeks to augment the existing audit process and reduce processing time in auditing monthly foreign exchange records and not necessarily replace the current audit process. Since each component investigated different aspect that influences a record, scoring of a record was done equally. While results of each component was produced independently, results were designed to be read as one output, each complementing the other. The proposed framework performed well, at 93%, with No Information Rate.

ISI, International Statistical Institute
 ISI Permanent Office, P.O. Box 24070, 2490 AB The Hague, The Netherlands
info@isi2023.org

Furthermore, adopting the framework supported the objective of an audit, which is to have a more holistic view of records compared to the traditional method.