

ABSTRACT

The rapid advancement of digital transformation in the regional financial sector has expanded the cybersecurity attack surface, necessitating a more comprehensive risk assessment mechanism. However, existing assessments typically focus on internal aspects, potentially overlooking threats identifiable from an external perspective. To address this gap, this study aims to develop a quantitative framework based on Open-Source Intelligence to construct an external risk estimation profile for the IT services of Regional Financial Institutions. The approach involves passive reconnaissance on 20 official Regional Financial Institution IT service domains, where vulnerability data (V) was identified using 11 OSINT tools. The proposed risk estimation model adopts the risk analysis structure of CRAMM, functionally integrating three main variables to produce a risk score: (1) the number of identified Vulnerabilities (V), (2) hypothetical Threats (T) derived from those vulnerabilities, and (3) Asset value (A) estimated based on each institution's total financial assets. The results reveal a significant variation in risk scores among the analyzed institutions, ranging from the lowest score of 2 (Regional Financial Institution N and Regional Financial Institution O) to the highest score of 105 (Regional Financial Institution J), highlighting the disparity in external risk exposure. The final classification places one institution (5%) in the High Risk category (score 71-105), namely Regional Financial Institution J; three institutions (15%) in the Medium Risk category (score 37-70), namely Regional Financial Institution A, Regional Financial Institution E, and Regional Financial Institution F; and sixteen institutions (80%) in the Low Risk category (score 2-36), including Regional Financial Institution B, Regional Financial Institution H, Regional Financial Institution D, Regional Financial Institution K, Regional Financial Institution O, and others. The main finding of this analysis indicates that the technical security posture reflected in the Vulnerability (V) and Threat (T) scores plays a more dominant role in determining external risk levels than the financial Asset (A) value.

Keywords—Open-source intelligence, reconnaissance, risk estimation, IT services, Regional Financial Institution.