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# Asset Quality Assessment in a Dynamic and Uncertain Environment for Optimal Credit Intermediation

## 1. Executive Summary

*With the absence of high frequency, reliable and quality information, the traditional frameworks fail to fully reflect the pandemic's impact on financial institutions' portfolios on account of consequences of their outbreaks not being symmetrically distributed throughout, with some sectors of the economy suffering disproportionately. Using high frequency transactional data as well as data obtained through web scraping, this brief provides a purview into alternative and novel approaches towards asset quality assessment in a dynamic and uncertain environment for optimal credit intermediation that supports economic recovery. Our findings reveal that this approach predicts behavioral dynamics of a firm's performance with a high degree of accuracy, and thus is critical given the evolving nature of the crisis, delays by customers in submitting their books of accounts and the impact lock-down and government interventions adopted to mitigate against the pandemic's adverse effects. These developments undermine the ability of risk managers to accurately forecast the performance of their portfolios. The dearth of quality data, more so in an environment characterized by uncertainty, makes this approach useful in prescreening and actual lending decisions, and more so, risk-based pricing for MSME borrowers that are often informationally opaque.*

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## 1. Context and Importance

The portfolio risk assessment during the COVID pandemic has proved to be a significant challenge for financial institutions and lenders. This is due to the rapid pace at which the risks are evolving, and the impact of the pandemic delaying the availability of critical information amidst the measures implemented by authorities to support the borrowers. Various measures such as relief on loan servicing, non-submission of data to bureaus, and late provision of financial data by customers have also rendered the traditional risk management approaches inadequate. This brief therefore spotlights on the appropriateness of using alternative approaches by using high frequency data, and web traffic data to assess the quality of the assets of a financial institution. Towards that end this brief addresses itself to two important issues:
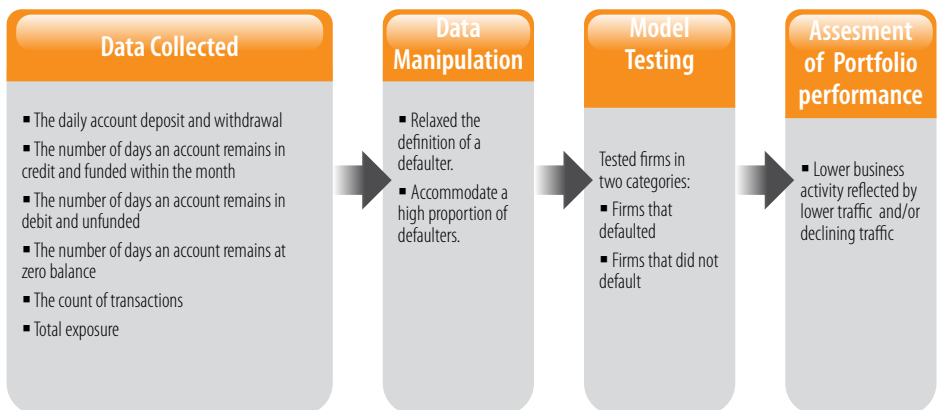
- First, can high frequency cashflow data and bank account activity of borrower be used as a predictor of the changes in asset quality in the absence of good quality and reliable data?

- Second, is web traffic data an alternative source of data important in tracking and predicting asset quality changes of borrower's portfolio?

## 2. Methods, and Findings

Based on transactional data from a sample of 254 MSMEs for the period between October 2019 and October 2020, and presented in **Figure 1**. Using this information and Logistic regression, MSME's scorecard is developed. Each borrower's score is binned per default probability with a final probability assigned to each customer based on their binned range. The binned probability is then used for risk-based pricing.

In our approach, we define a defaulter by using the restructured loans even when the enterprise may not become delinquent and merge it with those of delinquent enterprises. Using account-level information, we are able to predict enterprise's default by examining traffic in their accounts, that is, the frequency in transactional account activity, and

**Figure 1: A Methodological Framework**



| Data Collected | Data Manipulation | Model Testing | Assesment of Portfolio performance |
|---|---|---|---|
| ■ The daily account deposit and withdrawal<br>■ The number of days an account remains in credit and funded within the month<br>■ The number of days an account remains in debit and unfunded<br>■ The number of days an account remains at zero balance<br>■ The count of transactions<br>■ Total exposure | ■ Relaxed the definition of a defaulter.<br>■ Accommodate a high proportion of defaulters. | Tested firms in two categories:<br>■ Firms that defaulted<br>■ Firms that did not default | ■ Lower business activity reflected by lower traffic and/or declining traffic |

even more importantly behaviour showing account balances that tends to zero or overdrawn. The enterprises' transactional business activity tended to also decline, which is a predictor of delinquency. The underlying methodological framework is summarized in **Figure 1**.

Based on the methodological framework summarised in **Figure 1,** our analysis of high frequency transactional account data proved to have a higher predictive power than conventional approaches in the absence of default indicators. The Gini coefficient of 71.2 is high given the low count of borrowers in the sample. In particular, the model accurately classified 67.7% of the defaulters (**Table 1**).

**Table 1:** Actual vs Predicted default by Borrowers

| | | Predicted | | |
|---|---|---|---|---|
| | | 0 | 1 | Σ |
| **Actual** | 0 | 87.8 % | 12.2 % | 178 |
| | 1 | 32.3 % | 67.7 % | 116 |
| | Σ | 194 | 100 | 294 |

Based on the Logistic regression and the scorecard derived therefrom, **Figure 2** shows a clear split between borrowers who would struggle to meet repayments and those who had no difficulties servicing their financial obligations. For example, at the low score of 0, the majority of the borrowers (90.14 percent) had difficulties servicing their obligations.

## 3. Conclusions and Policy Implications

Based on the findings, we conclude that this approach has proved to be useful as an alternative tool for assessment of the health of a portfolio besides the traditional use of the scorecard for lending and prescreening of customers. Similarly, this framework can also be extended to support differentiated pricing either at an individual level or portfolio level for cohorts of customers with similar risk levels. Lastly, in view of the model's predictive ability there is need for financial institutions to invest in data collection and modelling exercises to enhance customer assessment. This would enhance lending firms' efficiency in meeting IFRS-9 standards.

**Figure 2:** Good /Bad Borrowers Distribution
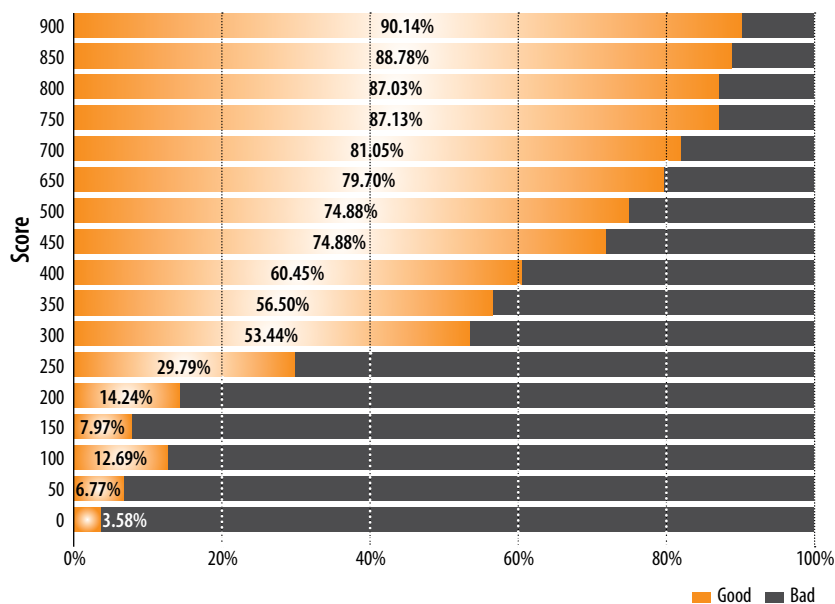


> **The model is powerful enough to predict the performance at a high degree of accuracy, and it can also be adopted for prescreening and actual decision making, including the risk-based pricing for MSME borrowers.**

### Reference

Njeru A.K., 2022. *Asset Quality Assessment in a Dynamic and Uncertain Environment for Optimal Credit Intermediation, KBA Working Paper Series (WPS/08/2022)*

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