

# Building a scorecard system for no default or low default portfolios

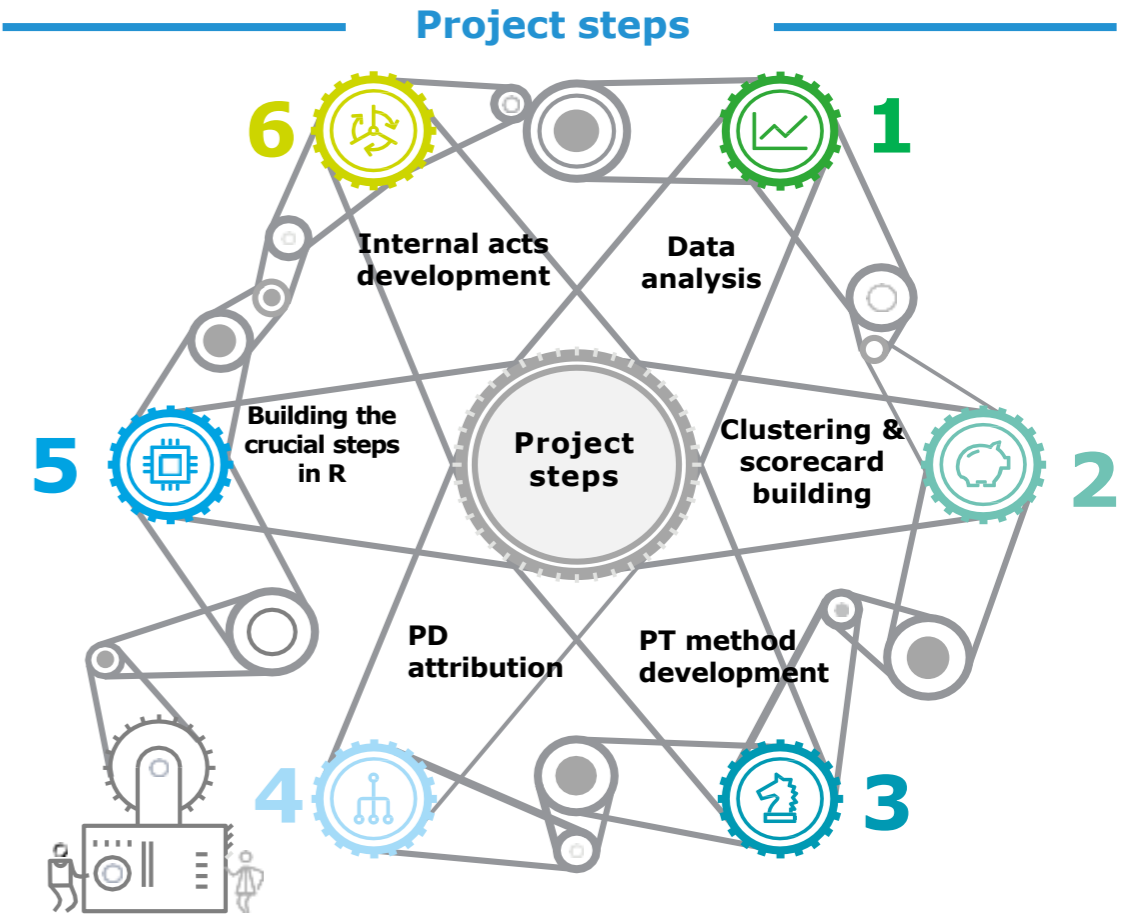
Credit risk scorecards represent integral part of each sound risk management system. Scorecard systems are used in all phases of risk management: assuming the credit risk through underwriting, credit risk measurement, control or monitoring. For some portfolios there are not enough data to build a proper statistical scorecard model. **Even for such portfolios there are business and regulatory requirements that must be fulfilled.**

## Regulatory questions to be answered to auditors, central banks and other stakeholders

- ✓ **Which indicators of client creditworthiness should be used for building scorecard system?** Although not enough data exist the Bank needs to select some quantitative and qualitative indicators for creditworthiness assessment.
- ✓ **What is the ideal number of scorecard rating categories?** Decision on number of scorecard rating categories must be based on some recognized methods for clustering
- ✓ **How to assess PD value behind scorecard/rating grades?** In order to be able to fulfill IFRS 9 requirements i.e. requirements for credit risk measurement the Bank must somehow assess PD value behind each score grade.
- ✓ **How to validate newly build scorecard systems?** Once new scorecard system logic is established validation procedures must be set in place in order to calibrate or redesign the model if necessary

## Business questions to be answered to bodies responsible for pricing and governance

- ✓ **How to determine/put a price on such portfolios?** Due to lack of data PD cannot be fully statistically determined. Department responsible for pricing must have info on credit risk premium to be included in financial instrument pricing.



## Steps to be followed by banks

- 1 Data analysis**  
We analyze data availability, data sources, update frequency, final decision for data (indicators) to be used. Weight for each indicator value is provided. Benchmark analysis with other banks on market
- 2 Clustering & scorecard building**  
Portfolio is scored. K-mean clustering is performed. Score grades are determined
- 3 PT method development**  
On the basis of the PT method (used by ECB in their on site controls) PD values are determined for each rating grade. Final decision on the method to be used is made (possible usage of logistic regression for PD attribution)
- 4 PD attribution**  
Each client in portfolio is provided with PD values further used for underwriting, credit risk measurement, control and monitoring.
- 5 Building a critical steps in R**  
Deloitte can provide the Bank with R codes that can be used for implementation to existing risk management frameworks in the Bank.
- 6 Internal act development**  
Final deliverables of the project are set of internal acts (policies and methodologies) that follow the process of scorecard building and its validation

### Data to be used

- Starting assumption is that there are not enough data to be used to build a proper statistical rating model.
- We have extensive experience in building a scorecard systems for each portfolio type. We analyze the data availability and propose list of indicators to be used together with appropriate weighting.

### Methods used for building scorecard systems

- For each step, especially for clustering and especially for PD attribution appropriate methods should be used, allowed by regulators
- For clustering purposes we use K-mean clustering method widely used for such purposes.
- For PD attribution we use PT method used by ECB to validate low default or few default portfolios' PD values.

### Main areas

#### Internal acts that follow the

- Each step of the process of building of scorecard system including process of validation of the model is followed by appropriate set of methodological documents
- Each document is officially approved by Deloitte's quality assurance team
- Adequate training is held

#### How to implement it into the current systems

Usually the Bank wants to integrate such scoring systems with existing platforms for credit risk management. We provide the Bank with codes written in R (statistical software) which can be easily read and translated into different software language or it can be used as such.





# ESSENTIAL FOR ADEQUATE RISK MANAGEMENT AND ADEQUATE PORTFOLIO PRICING

## CONTACT

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