BIG DATA IN BANKING

Pravin Burra, Sept 2018

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Data

Banks have large volumes of data available across multiple domains.

Use Cases

In any large organisation including banks the number of available use cases is both exhilarating and daunting.

Capacity

Budgets, technology and capacity will guide the number of projects that can be attempted in a given period.

Alignment

IT scheduling is critical to getting work plugged in. Once plugged in business change management is essential for adoption.

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Data

External data

Credit bureaus, loyalty scheme partners, data vendors etc..

Geospatial Data

Available if you look (ATM, POS, APP).

Digital data

Web and app data is highly valuable but requires investment in infrastructure

Risk & finance data

Rich & well curated risk data stores are widely available (credit scoring, Basel capital & financial reporting)

Know your customer

Base data is good but in its infancy. Contact information could be better curated, e.g. active updating

Transaction data

Rich for primary banked customers with lots of opportunity for data mining (e.g. merchant spend analysis)

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Data Governance

Must read GDPR & BCBS239

Data Ownership

Business owner & technical curator

Master data management

How the data comes together

Lineage

Path of information from source to application

Data quality

Profiling, exception reporting

Access rights

Permissions, masking, deletion

Metadata

Purpose, timeliness etc.

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IT Decisions

01

PERSONAL COMPUTER VS SERVER

Mininimise under the desk computing by creating appropriate server environment

02

TRADITIONAL SERVER VS DISTRIBUTED PROCESSING

Technical skills needed to establish and use environment

e.g. Hadoop

03

MY SERVER VS RENTED

Convenience vs security of cloud. Also consider bandwidth

04

OTHER CONSIDERATIONS

In memory computing

Serverless architecture

Cold vs warm storage

Real time processing

USE CASES

Know My Customer

Single view of the customer, customers like me, ideal customer, features & triggers

Know My Organisation

Segment level BI, issues & opportunities, what we really do (listening)

Know My Market

Market view, benchmarking, micro segmentation, scenario analysis

Manage Risk

Credit, fraud, operations, churn, compliance

Make Money

New to bank, cross & up sell, pricing, product design

Improve Experience

Reduce friction, vend better, listen better

Do the right thing the right way

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Understand the Customer

- Consistent vs single view
  - Portfolio view
  - Merchant view
- Clustering
- Features & triggers
  - Feature library
  - Value scoring
  - Pay away analysis
  - What the customer wants

Personalisation

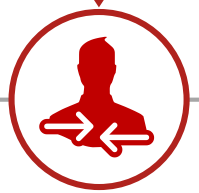
The use of data to personalise customer interactions and improve experience

Need

A customer has a need

- ✓ I need to send money
- ✓ I need a place to live
- ✓ I need to pay for my child's education

Behavior



The need drives behavior

- ✓ Borrow money
- ✓ Cut back on spending & save
- ✓ Past behavior may have been driven by what we sold

Value

Our purpose is to generate value

- ✓ Better user experience
- ✓ Responsible funding of life goals
- ✓ Advice in setting life goals

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Personalisation

Good use case for in memory computing

Decision Engine

Global rules, business rules, lead store, scores, optimization algorithm

Channel Integration

Real time & consistent, content store, ability to interact, fulfilment

Customer Data

Product holding, profitability, recent touchpoints, contact info.

Measurement

Response modelling, who responds to what and why

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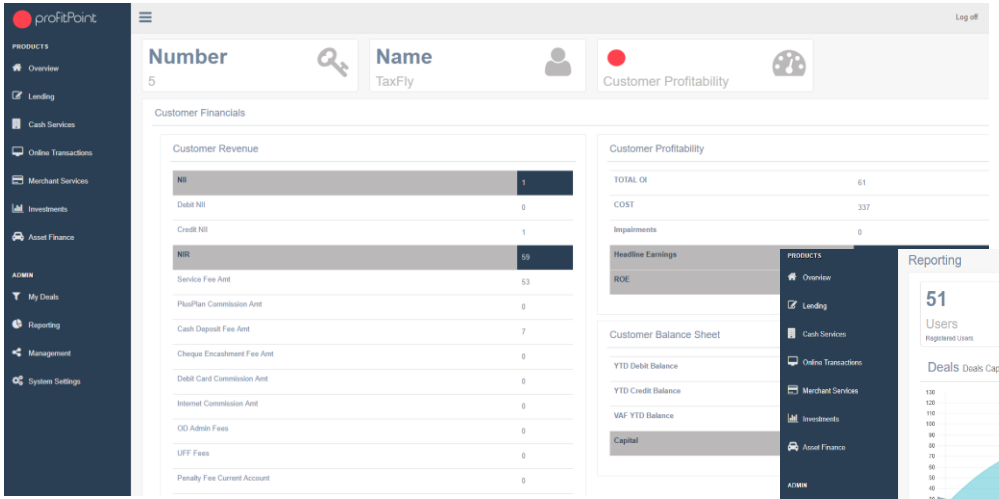
Pricing & Profitability Tools



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Credit Loss Reserving

Globally there has been a move to expected credit loss provisioning for accounting purposes (IFRS 9).

This is a combination of general insurance techniques:

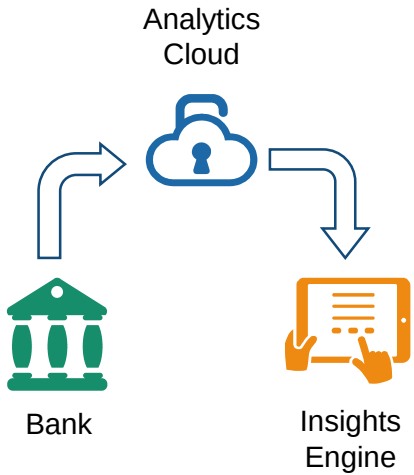
- Probability of default (frequency)
- Loss given default (severity)

And life/pension techniques:

- Survival modelling to derive lifetime expected loss

Because of the data volumes (millions of rows) this calculation can take material time at banks often measured in days as opposed to hours or minutes.

Using big data techniques we have been able to perform the assumption derivation in seconds on gigabytes of data. This allows management to explore more microsegments to better manage credit risk appetite.



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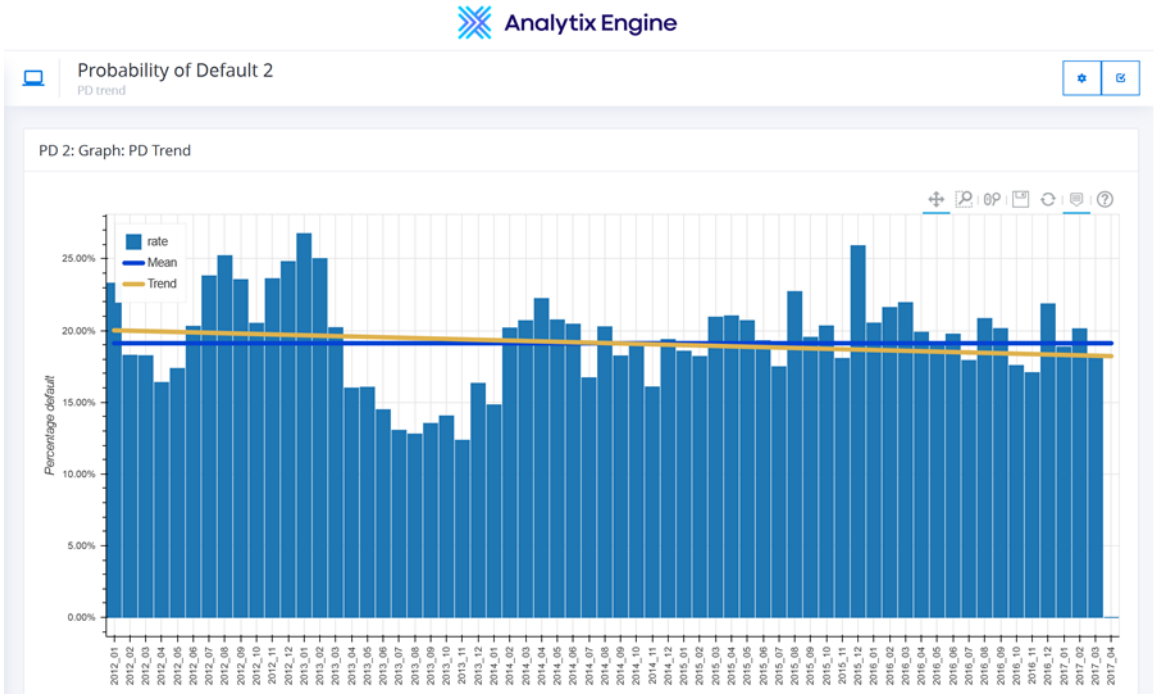
Credit Loss Reserving



Frequency of default calculation on 70gigs of data in a few seconds without caching.

This allows for more scenarios to be generated for more micro segments to better manage risk appetite.

Also useful for IFRS 9 to run multiple scenarios on the fly to determine bucket 1 bucket 2 segmentation.

Technique can easily be extended to runoff triangle generation and claims investigations by micro segments.

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Non-Traditional Data

Voice data

What was said, how it was said, when was it said, in what context was it said

Email data

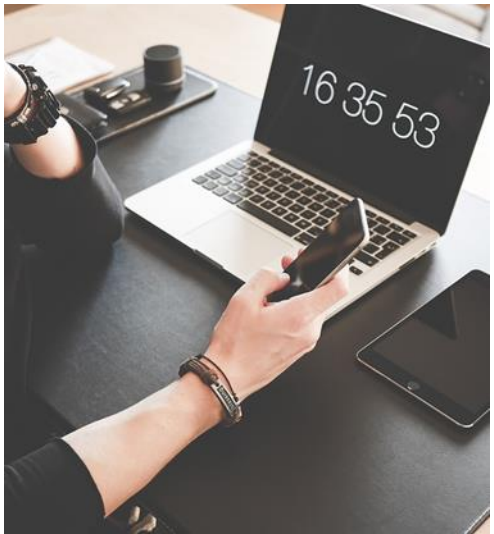
Categorization, routing, sequencing

System log data

Demand forecasting, sequencing, route cause analysis

Image data

FICA, identification, emotion

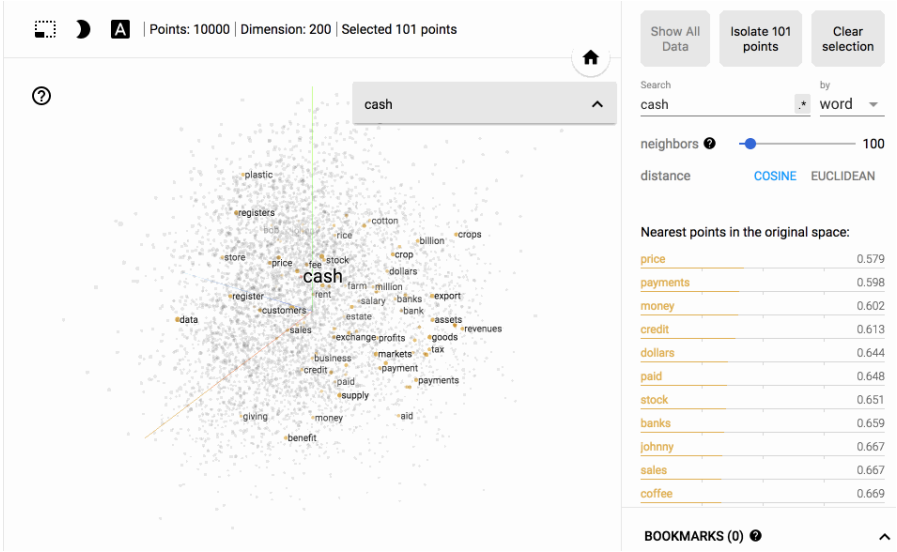


Natural language processing

Neural net example

Call centre logs

Emails



Classification of contact messaging:

- Root cause analysis
- Optimised routing
- Demand planning
- Focused training on high demand requests

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How Change Happens

According to Google

1

INDIVIDUAL CONTRIBUTOR

- One person does the task

2

DELEGATION

- Many people do the task
- The task needs to be defined and standardised

3

DIGITISATION

- We teach a computer to do the task
- Automate mundane
- It needs to be well codified, e.g. ATM
- Not every task needs to be digitised

4

ANALYTICS

- Machine learning
- Continuous review
- Human in the loop

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Team

Data Engineer

Data production

Production Engineers

Join the bits together

App building

Data Scientist

Widgets, (modules) APIs

Classification, scoring, forecasting

Business

Strategy, trade offs,

Channel execution

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Path to success

Quality Production & Measurement

Clear measurement of success buys further investment. Stable production avoids embarrassment and allows you to build on early wins.

Be Use Case Driven

Short sprints prioritized on ease of implementation, alignment with strategy and expected value.

Build Strategic Capability

Data, systems, people & process
Invest in architecture & governance.

Focus on adoption

Business sponsorship & channel/customer user experience.

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The VALUE of data lies in its ability to inform decisions.

The POWER of an organisation lies in its ability to execute its decisions.

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Questions

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Pravin Burra

CEO, Analytix Engine

Over 25 years of analytics experience

Ex partner at big 4 audit firm

Previous executive head of customer analytics at leading retail bank

CONTACT

Email: pravin@analytixengine.com

Mobile: +27 82 336 1515

www.analytixengine.com

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