



Some Tales from the Front Line

David Edelman

John Lawrence



Introduction – David Edelman

John and I have not worked together - but we have some similar experiences over our collective c. 70 years in credit risk - in modelling, implementation, validation and monitoring, training, governance, recruitment, and senior management.

We are trying to pull our collective experience into a credit scoring handbook – supported by anecdotes and cautionary tales – stories of what can go well, stories of what can go wrong, stories with a moral, etc.

The aim is to produce a body of work that will inform, and also hopefully entertain, current and future workers in the field.

Today’s presentation covers a very small selection of the anecdotes. We have three aims:

- **To inform and entertain**
- **To assess and create the market for the planned publication**
- **To encourage others to contribute their own anecdotes and tales for inclusion**



Content

John will discuss two areas of more strategic concern

I will look into three areas, all to do with data, and all at quite a micro level

John will finish off with another area at the strategic level

We then will open up the floor for questions and comments

And, once you have seen the sort of stories we have, we will welcome your individual contributions from your own experiences.

The more stories we have,

- the greater the benefit to the readership**
- the harder it is to work out, for each case, which lender was involved**



John Strategy Area 1 - Monitoring

Just how many models have you got ?

Example for a typical large retail bank:

Product life stage	Personal Banking Product				
	Cheque Acct	Credit Card	Unsecured Loan	Secured Loan	Mortgage
Pre-screen	1	1	1	1	1
Application	2	2	2	2	2
Behaviour	4	4	2	2	2
Collections	1	1	1	1	1
Recovery	1	1	1	1	1

We could be talking about 39 models to look after.



John Strategy Area 1 - Monitoring

Just how many models have you got ?

39 models excl. business related models and Basel specific

- **These are major controllers for account opening , credit granting/control and account management**
- **Each of these models has to be tracked, to ensure**
 - **Still discriminating between goods/bad as expected (Gini)**
 - **Alignment is as expected i.e. bad rate as predicted**
 - **Compliant**
 - **Profitable usage**
- **Monitoring these is a lot of work, so what could possibly go wrong ?**



John Strategy Area 1 - Monitoring

Example 1: Loan product in a large institution

Problem: Market / economy shifts were causing default rates to increase.

**Marginal bad rates at the cut-off much higher than assumed
Correct monitoring process was not in place**

Impact: A very large (and costly) bubble of bad debt was unknowingly taken on board because:

- Monitoring was devolved to product areas
- Skills/knowledge were not present and so the appropriate monitoring was not being done
- No-one realised what was happening at cohort level
- General market for the product was not followed

- - credit bureau stats for the sector were available

Actions: Move monitoring to specialised team

- Get the right reports out
- Communicate results at appropriate management control meetings
- **** Raise cut-offs significantly and pretty quickly ****



John Strategy Area 1 - Monitoring

Moral of the story

1. Monitoring is a key function

Potentially very costly to not do this properly

2. If models are not implemented correctly and tracked properly then much of the clever stuff at modelling time is wasted

Modeller “Hey - I’ve got my Gini up by 0.5%”

Real world “ Hmm, I’ll see what I can do about that !”

Centralise monitoring to maintain skills
protect against staff turnover
get the right focus – look at the right things
single point for scoring data issues
overall view of all models and issues



John Strategy Area 2 – Be part of the business

- **‘No modelling team is an island’**
- **To be successful the modelling team must be a part of the business**
- **Why :**
 - **To be known and respected by the business, and so,**
 - **To be involved and be aware of what is happening in the business, and so**
 - **To be proactive and a key part of the business**
 - e.g. be aware of new product launches and target markets, and what the scoring implications will be**
 - **To survive**
- **Model developers must get to know**
 - **How the business/products work**
 - **How the data gets into the modelling data samples**
 - **How the key data fields get populated**



David Area 1 – New Product Area

- **New credit card product – no scorecard**
- **No history – but parent company had a card product and a scorecard**
- **Parent company’s application process was completed by applicants**

- **Scorecard includes four characteristics relating to product features and enhancements:**

Do you want?

- **PPI**
- **Card Protection**
- **Price Protection**
- **Balance Transfers**




David Area 1 – New Product Area

- **Our process did not have the applicant completing the application.**
- **We had a call centre and a sales force.**
- **For example, in the parent company’s process, if an applicant elected to take PPI, they did so because they intended to. Some others may have intended to but forgot to tick the box.**
- **With our process, we had those who intended to - both groups - but also those who had not intended to but were “sold” or “encouraged”.**
- **We now had an extra group of applicants who got a lower score.**
- **This actually affected all four options.**
- **The better the sales person, the lower the score, the lower the probability of the application being approved.**
- **It was six months before we had a case where the applicant took (or was sold) all four options and was accepted.**



David Area 1 – New Product Area


- **Key Issue - Moral of the Story**
- **Understand how the data are generated**
- **Are the individual attributes telling you exactly what you think they are telling you?**



David Area 2 – Missing Data

There are always elements of missing data – blanks, zeroes where there shouldn't be, 99's, NR's, etc., but what are the reasons for these?

- **Applicant did not wish to answer the question – intrusive.**
- **Applicant did not wish to answer the question – likely to lead to a decline**
- **Options presented did not allow the applicant to answer**
- **Question was too ambiguous**
- **Question does not apply to the applicant**
- **Shortened applicant form for a marketing campaign**
- **We no longer ask that piece of information / are no longer permitted to**
- **Sales operator promises to complete the application later but does not**
- **Merging of files leading to loss of data**
- **Data lost or simply not saved**
- **Applicant did not see the question**



David Area 2 – Missing Data

So 11 different scenarios – but only the second one might be considered a potential fraud.

In only the first five might the applicant be aware that data is missing.

Can we reduce the frequency of missing data?

- **Can we even identify when it is missing?**
- **Can we do some systems analysis to help?**
- **Can we do some customer market research to identify the reasons or to reduce the effect?**
- **Can we model what is missing?**
- **How do we build the future process to reduce the scale of the problem?**



David Area 2 – Missing Data

- **Key Issue – Data is missing but we must understand why it is missing.**
- **Moral of the Story**
- **Think through your data and your processes.**
- **Review these when you carry out your regular data audits.**



David Area 3 – Up-Selling and Down-Selling

- **We have a personal loan product.**
- **Customer A and B both apply for a loan of £12K to buy a car.**
- **We assess their credit risk and also their affordability.**



David Area 3 – Up-Selling and Down-Selling

Up-Selling

- Risk is low and affordability is good.
 - We would have lent them £17K if they had applied for it.
 - We inform them and offer / sell them a loan of £17K.
 - They decide to borrow £17K and to get a more expensive car.
-
- The performance of this loan might be different from that where the applicant originally asked for £17K.

Down-Selling

- Risk is low but affordability is not good.
 - We would have lent them £9K if they had applied for it.
 - We inform them and offer them £9K.
 - They decide to borrow £9K – to get a cheaper car or perhaps to borrow the £3K shortfall from another lender.
-
- The performance of this loan might be different from that where the applicant originally applied for £9K.



David Area 3 – Up-Selling and Down-Selling

Key Issue

- **In order to analyse performance and profitability and build robust models, we need to capture**
 - **what the customer originally applied for**
 - **the size of the loan granted**



John Area 3 - Documentation

Model documentation is often a neglected area.

However, in the real world, as we have seen, all of these models are crucial to the running of the business and need serious control and management.

Advice:

1. Finalise model documentation as part of the project

(it just will not happen later!)

2. Produce and maintain a *concise* document with all scorecards and associated definitions/rules/alignments/...

This is guaranteed to impress colleagues/bosses and will be invaluable when attending meetings, unexpected audits, etc.

3. Maintain a chronology log

Keeping a record of all relevant changes post implementation will be invaluable in helping to understand the data later on and fits naturally with ongoing model monitoring. Include in this, operational problems/postal strikes affecting payment processing, cut-off changes, marketing campaigns, bureau changes, competitor actions, etc.



Round-up

- **So we have lots of thoughts and ideas and stories, many of them unfortunately, arising from cases that we have witnessed.**
- **These types of things will happen in the future – especially with the use of Big Data and AI, where the people could actually be further removed from the data.**
- **As practitioners, we need to work even harder to prevent these types of situations recurring.**

- **Questions?**
- **Contributions?**
- **Comments?**



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We welcome all contributions.

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