

Post selling project

Decision science tools for customers management (Getting busy in stressful times)

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Contents

- Project introduction
- Modelling
- Summary and conclusions



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- **Project introduction**
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Project objectives

- Develop the decision science tools for marketing to existing customers
- 2-stage problem:

1. Marketing decision science

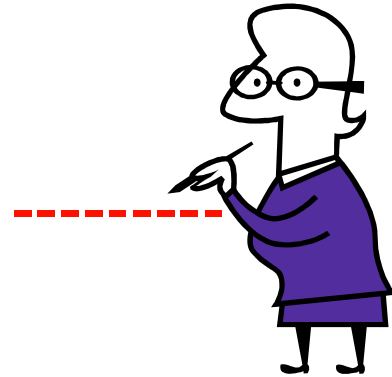
- Customer selection
- Marketing offer/channel/product
- Pre-approval of amount, price, duration, etc.



Project objectives

2. Application processing decision science

- Short application?
- Revise terms, up-selling
- Final decision-making



Project objectives

- All products/customers
 - Personal loans, car loans, credit cards, salary loans, other retail, bank accounts
- Include “lost” customers e.g. Accounts completed within last 6 months
- Delivery expected within 10 weeks from project inception

Initial situation

- No decision science in place
- Refer loan requests above €50,000
- No affordability rules
- Same credit assessment process for new and existing customers
- Behaviour score exists but covering personal loans only

Analysis options

What can we do?



Analysis options

Option 1: Build a pre-approval model using credit bureau and internal data sources

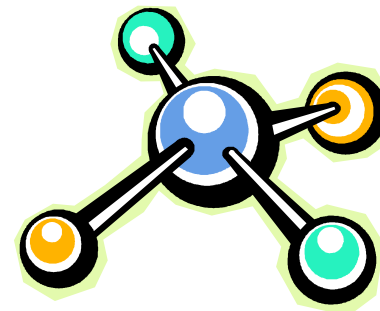
Option 2: Test if existing Behaviour score measures risk for all loan types

Option 3: Build model to evaluate how new credit facilities modify customer risk

Analysis options

Option 3 **was** undertaken using:

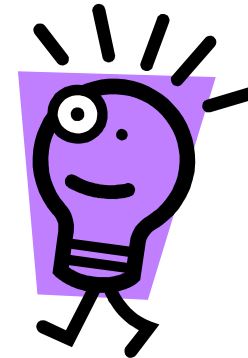
- Existing Behaviour Score
- Socio-demographics (at point of application)
- Credit bureau data (at point of application)



Analysis options

Basis for option 3 model is:

1. Marketing decision science to be based on existing Behaviour Score
2. Application stage decision science to be based on existing Behaviour Score + Socio-demographics + Credit bureau data



Project data

- Customers with new agreements opened within 15-month observation window
- 12-month performance window
- Basel compliant performance definitions



Project data

- 24,191 accounts in total
- Accounts consolidate into 5,571 customers:
 - 755 “Bad” customers, 4,816 “Non-bad”
 - 13.6% risk!

High risk overall suggests current approach is inefficient from risk perspective

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Modelling

- Scorecards
- Affordability analysis



Modelling

- **Scorecards**
- Affordability analysis



Scorecards

- Scorecards devised using SDT
- 4 scorecards devised in total to arrive at final scorecard

Scorecards

Scorecard 1: Statistical scorecard using logistic regression



- This scorecard allows all scoring candidates to enter the model as selected automatically by SDT logistic scoring algorithms

Scorecards

Is this the “best” scorecard?



Scorecards

Scorecard 1 will **only** be optimal if:

1. The past predicts the future
2. The current/future “risk environment” is the same as it was in the past
3. The sample size is sufficiently large to minimise sampling errors

Condition 2 is (almost) never true and condition 3 is not true for this project

Scorecards

Scorecard 2: Statistical scorecard using linear regression



- Similarly allows all scoring candidates to enter the model as selected automatically by SDT linear scoring algorithms
- Useful to validate the findings from the 1st scorecard (e.g. compare contents, order of entry, shape of scoring variables, power statistics, etc.)

Scorecards

Scorecard 3: Customised build



- Built upon a sub-set of scoring candidate variables (and other model parameters) as devised from the learning experience of the 1st two scorecards

Scorecards

Scorecard 4: Final scorecard



- An edited version of scorecard 3 with minor cosmetic changes
- Improves the overall “look and feel” of the scorecard without impacting scorecard power

Scorecards

Scorecard 4: Final scorecard

Risk table	<= Score		> Score		Interval	
	Known Risk	Total applicants	Known Risk	Total applicants	Known Risk	Total applicants
Upper Score Value						
-1	.	0.0	13.6	100.0	.	0.0
1580	45.6	10.1	10.0	89.9	45.6	10.1
1819	36.1	20.0	7.9	80.0	26.4	9.9
1988	30.9	30.0	6.1	70.0	20.6	10.0
2120	26.1	40.1	5.2	59.9	11.6	10.1
2246	22.6	50.2	4.4	49.8	8.9	10.1
2365	19.9	60.7	3.7	39.3	6.9	10.6
2493	18.0	70.3	3.0	29.7	6.2	9.6
2620	16.3	80.6	2.0	19.4	4.7	10.3
2838	14.8	90.3	1.7	9.7	2.4	9.7
3282	13.6	100.0	.	0.0	1.7	9.7

Scorecards

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Score organised into 10-percentiles

Scorecards

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13.6% risk overall

Scorecards

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Some customers are too risky to be profitable

Scorecards

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Some customers are highly profitable

Scorecards

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Score is strongly predictive

Modelling

- Scorecards
- **Affordability analysis**



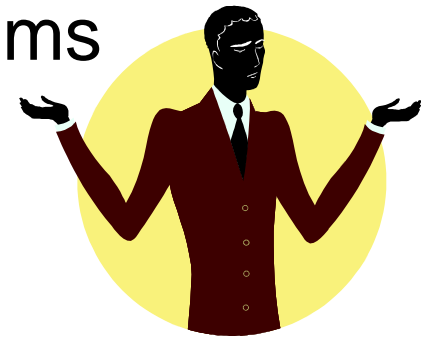
Affordability analysis

- Affordability can take into account:
 - Annual income
 - Other income e.g. Benefits, pension, etc.
 - Mortgage or home rental payments
 - Other finance commitments
 - Living costs e.g. Food, drink, work travel
 - Dependent costs
 - Lifestyle, leisure and hobbies



Affordability analysis

- Low accuracy of true affordability due to:
 - Casual or undeclared income
 - Personal preferences on living costs
 - Regional variations
 - Variations in spend on luxury items
 - Different views on “essential” items
 - Wide mix of leisure pursuits



Affordability analysis

- Keep it simple in 1st instance
- Initially measure affordability as income %
- 20-25% suggested to be reasonable income % for typical customer
- Simulation analysis to test various income multipliers



Affordability analysis

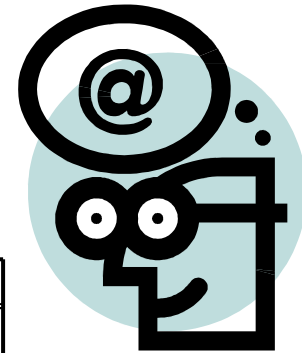
- Simple maximum credit amount is:
% income x term
- Income % should vary by risk e.g.

Behaviour score	Personal loan income multiplier
High (low risk)	23%
Medium	18%
Low (high risk)	12%
Very low	0% (no offer)



Affordability analysis

- Some other considerations:
 - Vary typical income % by product/channel
 - Vary pre-approved offer by risk
 - Target special offers by risk e.g.



Behaviour score	Pre-approval offer
High (low risk)	All products/channels/terms, attractive pricing, special offers and marketing promotions permitted
Medium	All product/channel, medium price, up to medium/long terms
Low (high risk)	Low risk products/channels, high price, short-term, no special offers or promotions
Very low	No offer

Affordability analysis

- Suggested marketing offer is:

Behaviour score	% Customers	Meaning	Maximum credit
< 1677	15%	Very high risk	No offer
1677 < 1848	10%	High risk	14% income
1848 < 2375	47%	Medium risk	21% income
2375 &+	27%	Low risk	26% income

- Business could be more aggressive since final score is highly predictive (if willing to accept more rejects at final stage)

Affordability analysis

- Suggested final offer is:

Final score	% Customers	Meaning	Maximum credit
<= 1911	25%	Very high risk	€0 - reject
1912 <= 2120	15%	High risk	14% income
2121 <= 2426	25%	Medium risk	21% income
2427 &+	35%	Low risk	30% income

- Higher maximum credits to more customers mean up-sell and/or early re-contact possible

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Summary and conclusions

- Strong scores provided but part of wider business driven solution
- Behaviour score re-build not needed
- Some customers should never be offered additional credit facilities. Others have great potential

Next steps

- Pilot testing
- Validation and monitoring
- Excellent framework for future growth



Project key points

- Good understanding of business needs
- Evaluate analysis options
- Thorough analysis prior to building
- Build robust scorecards for future needs
- Introduction of affordability



Post selling project

Thank you 😊

Questions?

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