Making next best activity (NBA) programmes a success at delivering measurable improvements in ROI

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has been involved in a significant number of NBA projects within the UK financial services industry. During his tenure as Managing Director of Berry Consulting (1990–2001) he also played a key role in the development of the pioneering financial segmentation system FRuTs and the customer decisioning software Contact Planner, the latter winning a Gold in the Royal Mail/DMA awards. Prior to founding Berry Consulting he was Head of Direct Marketing for TSB and Head of Marketing Services at Centre-file. He is currently developing with colleagues a next generation customer decision engine aimed at allowing the user to understand the financial impact *through time* of alternative communications strategies.

Abstract This paper is the one anticipated in the author's previous paper 'What stops most large customer relationship managers optimising their customer communications programmes', published in *Journal of Database Marketing*, Volume 10, Number 2. It deals with the tools and processes, as well as the obstacles involved, in implementing a next best activity (NBA) programme, and provides insights into how to deliver a successful outcome.

INTRODUCTION

The logical position that a better overall result is obtained from communicating to a database of customers by offering each individual the treatment that is predicted to deliver their best return on investment (ROI), as contrasted to finding the customers most likely to respond to each product offer, is now widely accepted within the industry. The number of cases of successful implementation of this approach is small however, and this paper is intended to address the practical issues surrounding operationalising the concept of next best activity (NBA). (Definitions of this and other terms used in this paper are shown in Table 1.)

The reason why NBA is a more desirable objective than best practice campaign management is that it assumes that, ultimately, the scarce resource for

any company is the number of customers with high propensities to buy product at any moment in time. By concentrating on offering each individual the one treatment, from a range of possible treatments, that will give the best ROI, the optimal result is achieved.

The calculation of ROI usually takes the following form:

$$((\text{Propensity} \times \text{Value}) - \text{Cost}) / \text{Cost}$$

This calculation has to be made for each combination of customer (or account) and proposition. This has significant implications in terms of insight tools and data marts. The operationalisation of NBA also requires a number of new processes and software to be introduced.

In this paper it is assumed that the starting position is one of a company

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Table 1: Definitions of terms as used in this paper

<i>Cost</i>	Marketing acquisition cost
<i>NBA</i>	The activity undertaken by a marketer to a customer that is expected to yield the best result
<i>Treatment</i>	A marketing promotion that is unique to each significant product and channel combination
<i>Value</i>	The value derived from a customer's use of a product

Figure 1: The way NBA selects the optimal treatment per customer

with good standard campaign management, ie that there are propensity models for all the significant propositions, eligibility rules have been put in place, campaign management software is being employed and campaign evaluation procedures are working.

The paper will then consider the key process and capability requirements for a successful outcome. These usually revolve around:

- scenario selection management
- setting up the data mart
- delivering insight tools
- selecting and installing the decision engine
- production
- key performance indicators (KPIs) and evaluation.

IS NBA WORTH IT?

At the outset, developing the scope and business case for NBA are essential precursors to undertaking its implementation. The first step is to set up a decision engine to simulate the impact of NBA compared to business as usual. This will produce results that show the level of benefits potentially available according to the constraints that are introduced — eg budget, numbers of contacts per customer and channel capacity.

In the example shown in Table 2 the number of contacts per customer in a period has been the constraint that has been varied. For the purposes of example, this is the only constraint imposed on the simulation — all others, including budget, remain unconstrained.

Table 2: A typical result from the simulation of different constraints imposed in an NBA process

Max volume communication per customer in period	Contribution %	Volume %	Budget %	ROI %
1	-20	-35	-22	+0.21
2	+12	+8	+15	-0.17
3	+30	+41	+38	-0.44
4	+39	+65	+51	-0.61
5	+43	+80	+61	-0.82

Clearly, an analysis of the benefits to be obtained from NBA is entirely contingent on the constraints introduced, and typically reviewing and agreeing these within an organisation represents overcoming the first obstacle on the overall pathway towards acceptance.

The author's overall experience is that compared to good practice campaign management, NBA will deliver contribution gains of between 20 per cent and 40 per cent. Benefits of this level normally easily justify the costs and change associated with introducing NBA. Every company is unique, however, and has a very different starting point so it is essential that detailed simulations are undertaken before going live.

The capability requirements must also be mapped and costed at this stage. This requires a process map, insight requirements definition and IT requirements both in terms of the data mart to support NBA and the software to run the decision engine.

WHAT DOES AN OPERATIONAL NBA PROCESS TYPICALLY LOOK LIKE?

The core difference between an NBA process and normal campaign management is that NBA offers the opportunity to build and review alternative scenarios (described in Figure 2 as 'undertake NBA decisioning'), and hence to achieve a balanced result that accords with the company's business requirements. These may include a

mixture of product sales targets, channel utilisation and customer contribution. The process map in Figure 2 is illustrative of a typical monthly cycle using NBA.

In terms of processes that are new to companies used to good practice campaign management, it is worth highlighting the following differences.

'Populate Propensity $\times$ Value-Cost (PVC) calculations': This is an entirely new process to resolve the PVC calculation for each customer (or account where customer-level data are not available) and proposition combination prior to each NBA monthly run. The insight requirements will be dealt with below but as a process it requires these to be up to date, and the necessary data marts to be available and filled with the most recent data.

'Manage overall targets': An NBA decision engine will typically produce a scenario outcome report that looks similar to a campaign report in that it has accumulated the individual level decisions into a 'row by campaign' report (see Table 3 – what is of note is that the volumes per campaign move up and down between periods due to the impact of contact interval rules). In reviewing it against performance to date there is, however, a unique opportunity to make up lost ground if required, or to adjust the balance between overall contribution provided and product sales volumes. Depending on the design of the decision engine it may be possible to

Figure 2: A typical NBA process map

roll forward through successive scenarios and to compare forward contribution to the end of the year with historic performance to date. Overall, this process enables the company to stay on track against a balanced set of objectives, stay within budget and to be able to project forward channel usage and product sales volume with reasonable accuracy.

‘Define scenarios and undertake NBA decisioning’: These processes naturally iterate with each other. The NBA decisioning as a process should follow on immediately from the selection of a particular scenario, having balanced all the required objectives in a satisfactory manner. The nature of the scenario definition stage will depend on the precise capabilities of the decision engine

but it should be expected to include such features as:

- deciding between overall contribution or ROI
- minimum contribution or ROI per contact
- product sales volume targets
- budget
- channel(s) capacity
- contact density and interval rules
- proposition eligibility rules
- mandatory campaigns.

The importance of scenario comparison is to get the best balance between these various features. They should be created and reviewed in real time by the key decision makers involved in developing

Table 3: An example output report from a decision engine showing scenarios through time

	Contact volume	Spend (£)	Contribution (£)	ROI (%)
Period 29 Jan 2003 SCENARIO1				
TR001 MAILING FOR BANK SAVINGS	29,800	14,900.00	41,018.27	175.29
TR002 MAILING FOR ISAS	5,200	2,600.00	0	-100
TR003 MAILING FOR CREDIT CARDS	8,600	4,300.00	37,909.33	781.61
TR004 MAILING FOR PERSONAL LOANS	13,300	6,650.00	34,458.33	418.17
TR005 MAILING FOR MORTGAGES	16,600	8,300.00	0	-100
TR006 MAILING FOR HOME CONTENTS INS.	19,500	9,750.00	45,656.56	368.27
Sub-Total	93,000	46,500.00	159,042.49	242.03
Period 29 Feb 2003 SCENARIO2				
TR001 MAILING FOR BANK SAVINGS	24,310	12,155.00	33,098.68	172.31
TR002 MAILING FOR ISAS	2,090	1,045.00	0	-100
TR003 MAILING FOR CREDIT CARDS	9,900	4,950.00	12,340.35	149.3
TR004 MAILING FOR PERSONAL LOANS	16,500	8,250.00	19,717.50	139
TR005 MAILING FOR MORTGAGES	31,570	15,785.00	0	-100
TR006 MAILING FOR HOME CONTENTS INS.	27,170	13,585.00	49,164.48	261.9
Sub-Total	111,540	55,770.00	114,321.01	104.99
Period 29 Mar 2003 SCENARIO3				
TR001 MAILING FOR BANK SAVINGS	23,580	11,790.00	29,356.87	149
TR002 MAILING FOR ISAS	2,790	1,395.00	0	-100
TR003 MAILING FOR CREDIT CARDS	10,890	5,445.00	12,271.05	125.36
TR004 MAILING FOR PERSONAL LOANS	10,170	5,085.00	11,795.40	131.96
TR005 MAILING FOR MORTGAGES	5,130	2,565.00	0	-100
TR006 MAILING FOR HOME CONTENTS INS.	10,170	5,085.00	13,171.66	159.03
Sub-Total	62,730	31,365.00	66,594.98	112.32
Grand Total	267,270	133,635.00	339,958.48	154.39

Planner Report
Plan Frequency: Monthly
Plancode NEWPLAN

Plan intervals: 3
Description NEW PLAN
Plan start date: 29th Jan, 2003

contact strategy. This is where unfettered customer-level optimisation is slightly 'de-optimised' to ensure a good fit with the business constraints and strategy. This second optimisation phase is essential if the plan is to perform well in the real world. For example, there is no point in over or under-loading a call centre as this will only create additional unquantified costs, not built into the original PVC calculations. This phase ensures that its real-life use remains within the model boundaries and that it is not extrapolated beyond its mathematical capabilities.

'Generate NBA lists and follow up production operations': The output from the decision engine may or may not go back into an existing campaign processing and production stream. This

will depend to a degree on whether it is being used to set flags in anticipation of inbound activity, or for outbound production of, for example, direct mail campaigns. By its nature NBA generates campaigns (groups of customers scheduled to receive the same treatment) and ideally these should go immediately into inbound or outbound production operations. The campaign management software may, however, be needed for reasons such as splitting for tests, inserting sleepers, postal sorting etc. If the output does have to be integrated with an existing production flow the key considerations are that it should not be delayed, or subjected to further eligibility processing that will distort the balanced outcome forecast in the selected scenario.

'Develop and report key performance

indicators (KPIs)': The process of generating KPIs from campaigns created as a result of NBA selections is identical to that used for campaign-based selections when dealing with response counts, net conversion rates etc. However, given that the simulation created a range of forecasts in terms of contribution or ROI, channel utilisation, product sales etc, it is important to report at this level as well which will involve extending the campaign result calculation to include these areas. There is one KPI that cannot be provided in the short term. This occurs when individual customer level 'V' values are used in the NBA calculation, as real-world Vs only emerge over time; in this case reporting will have to make do with average Vs.

KEY CAPABILITY REQUIREMENTS FOR NBA IMPLEMENTATION

The development of NBA requires some capability development which is outside that normally found in 'conventional' campaign environments. This section reviews these requirements which are additional to the process elements described above.

Developing the data mart

A substantial data mart will be required to support the development and application of the models to provide individual 'P' and potentially individual 'V' scores for all customers involved in NBA.

A choice will also need to be made as to whether to run at a true customer level, the ideal, or whether to run at account level. This will usually be based on the level of development of the existing infrastructure, and the level of multiple accounts and product ownership actually occurring.

The data mart will need to be updated

with the latest available data to feed the propensity models. It will also need to carry the data required for applying eligibility rules. And, lastly, it will need to carry the most recent contact history and, particularly, the output from the previous NBA run.

Developing insight tools

The success of NBA is largely driven by the quality of the propensity models it uses, and the accuracy of the V calculation when an average V is employed.

NBA requires, at a minimum, a separate propensity model per treatment, which is usually defined as the unique combination of product and channel, although in simpler versions a single model per product can suffice. This level of model requirement usually considerably exceeds what is found in companies, and will be seen as an important capability requirement.

Where averages are going to be used for the V and C parts of the calculation these need to be very carefully handled. This is because product management, when faced with the introduction of NBA, invariably tries to increase its V above its true level and to reduce C in order to obtain the greatest possible share of volume.

Building the input file

Most decision engines work off fixed format input files which contain all the PxV-C data they require, together with treatment eligibilities and contact history. All this information needs to be available at an individual level.

The input file needs to be built from the data mart prior to each NBA iteration and will contain a series of calculated fields for each customer or account involved in NBA.

Consequently, the quality of the input file, which is critical to a successful NBA run, is dependent entirely on the insight tools and the data mart.

Selecting and installing the decision engine

This activity is at the centre of getting NBA to work. Decision engines vary greatly in complexity from simple SQL that selects the highest scoring NPV per customer, to very sophisticated versions using linear modelling techniques to optimise across a range of criteria.

There is a small number of decision engines available in the market as software packages, and a much larger number that has been developed by individual companies to their own requirements.

There is a number of key attributes of a decision engine that should be included in the selection criteria, and the list below gives a flavour of some of these:

- what are the objective function optimisation criteria (eg $PxV - C$) and how flexible can these be
- what other optimisation criteria are available and can they be employed at the same time (eg product sales volume, channel optimisation, budget)
- what support is given to contact density and interval rules
- what other rules can be introduced (eg segment-based rules)

- can it handle multiple scenarios through time and, eg, optimise on an annual budget
- what allowance does it make for the impact of contact intervals on response propensities
- what are the scenario output reports like in terms of matching the set-up criteria
- can it be used interactively in a meeting without experts
- can the input variables be adjusted without invoking a new input file (eg seasonal adjustments)?

This represents a mere fraction of all the evaluation criteria that an organisation will need to assemble prior to design or vendor selection.

LOOKING FORWARD

Marketers are on the brink of a significant shift away from product-based campaigns to customer based, and this evolution will show huge gains in terms of efficiency and customer perception. As this paper explains, however, the change should not be undertaken without very careful planning and, possibly, live piloting.

As the 'customer campaign' becomes more widespread and there are more seasoned practitioners available it is envisaged that the perception of the obstacles will be reduced in favour of realisation of benefits; and this will be helped by the development of the market for packaged decision engine software.