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Database marketing connects to the Internet

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Received: 15 June 2000

Keywords: Database marketing,
customer relationship
management (CRM), Internet
marketing

Abstract

Long before the advent of the commercial Internet in the late 1990s, the concept of database marketing pushed forward a revolution in marketing. Leading marketers struggled with the implications of three key database marketing concepts:

- individual, addressable customers are the central focus of marketing
- customer data can be collected, analysed and then used to drive marketing
- customer management should be long-term oriented.

As a result, marketing processes were re-engineered, a more technical cadre of professionals joined marketing departments, software products were created and new types of service businesses emerged.

This first generation of database marketing emerged when computer technology could support three important functions.

First generation database marketing technology enablers

- Very large-scale collection of customer data, especially transactional data, from multiple sources. Computerisation of operations reached the point where virtually every customer interaction resulted in a digital trail that could be linked to a customer master record.
- Affordable retention and processing of marketing databases. Marketing databases often contain millions of customers and tens of millions of related records in order to be effective drivers of marketing programmes. To a large degree, the requirements of database marketing forced the creation of online databases in place of tape-based, offline files.
- Analysis and access tools that enabled decision support and statistical modelling and targeting of marketing communications. These provided the business pay-off needed to justify investments in database building.

Many experts quite appropriately called the infusion of both concepts and technology into the marketing realm 'revolutionary'. However, by the beginning of the new millennium this revolution became an accepted, even everyday, component of corporate marketing. Given the force, speed and trajectory of today's Internet-driven changes in marketing, it might be more appropriate to call this a hyper-revolution.

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Whenever change happens so dramatically, it is easy get both immersed and lost in the details of what is occurring. This paper attempts to show the connections between Internet-driven changes in marketing practice and the earlier foundation of database marketing.

Internet database business issues

The word 'Internet' reflects the historical intention of providing a technology for linking together computer networks. Quite literally, today's Internet is well on its way to making most computer systems into one large, interconnected, online network. As businesses and consumers become linked together in one online network, what marketing opportunities emerge? Both the words 'one' and 'online' are instructive in describing the emerging Internet-based marketing environment.

An information technology world of *one* network is replacing the world of very separate, stand-alone systems engineered to carry out specific tasks such as order taking, merchandise fulfilment, decision support and marketing selections. In addition, the one network enables integration of cooperative demographic or behavioural databases produced by third-party data management entities. Each application can become more effective when it is informed by comprehensive and very recent data from the other applications. Marketers, in particular, can do a better job with a range of key activities.

Data integration strengthens marketing applications

- Modelling and scoring. Model building benefits from having better, more predictive variables available for incorporation into scoring formulas. Calculated predictive model scores are almost always more effective with more recently collected data. As data flow over networks rather than through conventional media such as tapes, the fresher and more comprehensive the usable datasets will be.
- Customer classification and profiling. Marketers have a never-ending need to classify customers into segments, for which specialised marketing strategies are developed. Companies always need to understand not only the overall profile of their buyers, but also the more specific profiles of buyers of particular products, buyers from particular sources, buyers in particular geographies, etc. Better data result in richer, more interesting and more actionable classifications and profiles.
- Order processing. Customer satisfaction with order placement and processing is very much a marketing issue, as it forms the foundation for stimulating future business. Customer ordering is often faster, more accurate and more pleasant when reference can be made to previously collected information, rather than forcing a repetitive re-entry of data. Priority processing or service may also be extended to particularly important customers.
- Personalised communications. These may include direct references to customer-supplied information or prior buying activities that make the customer feel known and appreciated when contacted.

Personalisation may also be implicit in the timing or trigger for the communication.

Online technology opens to marketing a whole new world of involvement in customer interactions as they are occurring. Database marketing has always been a driver of long-term strategy as well as a support for tactical segmentation and targeting decisions, but these are fundamentally one-way processes based on a static view of the customer. The speed with which marketing data can be accessed and analysed enables support for interactive processes. A number of interactive, data-driven types of marketing are emerging.

New interactive data driven applications

- Recommender systems. These are systems which look at buying patterns in a company overall and combine them with the known history of an individual customer to make recommendations as to which new purchases are most likely to be of interest. It is a genuine added value for customers if the marketing system can provide intelligent recommendations regarding products that may be of interest to them. These draw on the more traditional database marketing product-affinity analysis, but make results available in real time as the customer is interacting with the website or call centre.
- Cross-selling and up-selling. When a customer is actively developing an order online or by phone, targeted suggestions can be made that reflect a combination of the customer's known characteristics, product characteristics and frequently observed 'market basket' combinations.
- Browser-to-buyer analysis and stimulation. Understanding the optimal page composition and messages for each individual customer that stimulate buying can be a key to increasing the productivity of websites. Since website capabilities have been developing so rapidly, marketing science is just at the early stages of understanding how to analyse clickstream data.

The online nature of the Internet will speed up all marketing activities, actions and reactions. Marketers will increasingly be defining and testing customer communication rules that are ready to be executed, so that when events occur or combinations of information are found a marketing activity is automatically triggered.

The Internet as a marketing medium has two additional characteristics that are more extreme than other targeted, database-driven media.

The Internet medium has two specific characteristics

- Internet marketing is very high fixed-cost, low variable-cost marketing. There are large costs associated with getting systems set up than can capture large volumes of data, analyse them and set up marketing campaigns. However, the incremental cost of an additional e-mail contact is extremely small. This will inevitably concentrate markets so that they consist of a small number of high-volume players. For the next few years there will be a major

Database marketing ideas extend into CRM

need for marketers to build their revenue base in order to survive the consolidation.

- Systems can generate and send huge volumes of e-mail where each message has minimal impact. The marketing challenge is how to break through the very large and growing clutter of irrelevant communications.

Many of the new, Internet-enabled marketing opportunities are referred to by the now-trendy term 'customer relationship management' (CRM). CRM systems apply the basic database marketing ideas to each interaction with the customer:

- Each customer is related to individually, rather than by anonymous operational rules. Whenever possible, interactions are personalised and reference is made to the customer's prior business relationship. Customer service levels and approaches are set to be appropriate for the individual customer.
- Database facts drive the customer interactions. Using the Internet's rapid communications capacity and high-speed database look-up technology, marketing databases support operations (such as ordering), not just marketing. Recommender systems built on extensive database analyses are often deployed to make immediate, customer-specific buying suggestions.
- There is a recognition that long-term customer retention is critical to business success. The quality of the customer relationship and its ultimate value is shaped by each interaction. To maximise customer lifetime value, each interaction needs to be viewed not as a stand-alone event, but as part of a long-term relationship.

While the philosophy is very much derived from database marketing, what is particularly new in today's CRM systems is the extent to which marketing database information and analytical inferences address a new set of highly interactive applications. Most prominent among these are the following:

Key CRM applications

- e-commerce
- call centre scripts and dialogues
- customer service interactions
- marketing automation
- salesforce automation.

It is only now that Internet-based technology can support real-time linkage of marketing databases and application systems that CRM ideas can be put into practice.

Application service provider (ASP) model becomes more attractive

A very practical operational question that database marketers have struggled with is whether to implement the database internally or at a service bureau. The traditional service bureau is evolving into (or being replaced by) an Internet-based application service provider

(ASP) hosting marketing applications. Since the Internet sharply reduces the data communications costs associated with outsourcing systems, there is less advantage to having all systems in-house. At the same time, the increasing sophistication and specialisation of today's applications are often most efficiently handled by specialised outsource vendors. The economic reasons for this include the following.

- Sophisticated software is often expensive to install, maintain and update. An ASP that makes this investment can amortise it over many clients.
- Training technical personnel to support software systems is similarly expensive. To maintain stability in operations it is advantageous to have many people trained on a software product; this expense is often most efficiently amortised in an ASP environment.
- Efficient operations often require configuring and integrating multiple closely related packages. Substantial efficiencies with respect to these costs can also be achieved in an ASP environment.

For marketing applications these general information technology rationales are strengthened by the leading outsourcing vendors' abilities to undertake other important functions.

ASP vendors added values

- Dynamically link demographic and cooperative data sources. Conventional overlays and shipping of these data are expensive and time consuming. These linked data may be part of sophisticated modelling and scoring systems.
- Make available and segment large pools of names for targeted customer-acquisition marketing. Efficient prospecting requires fluent linkage to the customer database for suppressing names as well as for analysing best-customer characteristics.
- Satisfy legal and public policy requirements for safeguarding consumer privacy.

The net effect is likely to be a heavier reliance on outsourcing of marketing databases and related systems than has been common in the pre-Internet world.

The advent of the commercial Internet has dramatically increased public concern with the protection and guidelines for use of personal information. In both the USA and Europe, a number of recent legislative and legal actions have already reduced the database marketing industry's freedom of action in important ways. There are several important implications for database marketers.

Privacy and public policy business implications

- Information collection that the consumer is not informed of and has not consented to will be particularly suspect. Use of 'cookies' which allow websites to track user sessions and clickstreams over time will be under public policy scrutiny for some time to come. While use of cookies for tracking sessions when a customer visits a

website will probably endure as an acceptable practice, any action to share these data among companies without opt-in consumer consent is very likely to be prohibited.

- Access control to data will need to be very seriously engineered into systems and operating procedures. The potential costs associated with a breach of security are rising dramatically, so the defensive measures must be more thorough than ever before. More files will need to be encrypted.
- Database marketing systems will need to be engineered to keep track of data sources and data uses. Companies will need to know where their data come from (to show that they are obtained legally and have integrity), and how each element is being used (to show security and compliance with permitted uses). For most companies this will require significant systems re-engineering.
- Access to and involvement of knowledgeable, specialised legal services is mandatory. Credit marketers have had this requirement for some time, but now it applies to all database marketers.
- Participation in voluntary industry-based standards setting is in everyone's best interests. The Direct Marketing Associations in the USA and the UK have been very active on this front and deserve support in all their efforts from all database marketers.

The respective political systems are capable of inflicting substantial harm on the database marketing world if these privacy issues are not handled well.

Internet database marketing system capabilities

Database marketers incorporating Internet technology can think of data flows to and from the marketing database in three dimensions, as illustrated in Figure 1.

The foundation for Internet-based marketing databases is the flow of primary data to and from the operational systems. Whereas traditional marketing database systems receive data from operational systems using

**Marketing database
Internet enabled
data flows**

Figure 1: Internet database marketing system capabilities

tapes or other media, the Internet makes it faster, cheaper, more accurate and easier to have data flowing through electronic connections. It also opens up the reverse flow of data from the marketing database to the operational systems. The technology platform for the marketing database usually needs to be re-engineered to take advantage of this new functionality.

Most importantly, the marketing database must be in an online, 24/7, relational database environment. Legacy systems that may have been extended and enhanced over many years usually need to be totally replaced by systems that can support an online environment. The commercial reality is that the Oracle database management software technology is today far and away the market leader for Internet-based applications, so it is often the starting point for system architecture decisions. Data-centre operations also fundamentally change from their traditional focus on throughput and machine utilisation to measuring the following services.

Key data centre metrics

- Real (wall clock) response time for queries or other operational requirements. Reducing variability in response times becomes an important operating characteristic.
- Support and helpdesk availability. When users are empowered to interact directly with the marketing database and need to accomplish tasks on tight time schedules, they need to reach support personnel at any time.
- System reliability. Systems that are dependent on each other must have near-perfect reliability that can only be assured by engineering redundancy and failover capabilities.

These requirements can be costly, and can put a substantial stress on legacy data-centre management perspectives.

In order to take advantage of frequent, small-volume, real-time or near-real-time transmission of data, marketing databases must be updated much more often than in the past. Having an online relational platform is a necessary, but not sufficient, foundation for frequent updating, since a number of issues get more complex.

Online updating adds management issues

- Auditing and other data integrity controls need to be redesigned for an environment with many relatively small updates. Traditional large-batch updates could use a fixed set of manually intelligently inspected auditing reports to verify the correctness of an update. These can be replaced by periodic point-in-time audits, but in an online, frequent-update environment there is a much higher requirement to catch problematic data as they arrive and before they are introduced into the database. Each updating process needs to have its own error-checking protocols and backout procedures.
- Performance optimisation strategies in relational databases often require updating not just the base data tables, but also indices or other structures. This increases the needed computer resources and must be done in a manner that maintains database integrity.

- User expectations need to be managed. Marketing users who are used to batch environments expect that counts, response reports or analyses will stay constant whenever they are run against a particular version (update) of the marketing database. When the marketing database is changing frequently the query results will necessarily change as well. Sometimes companies produce static snapshots of the database (or a sample of it) that are used for many informational data queries.

The imperative for frequent updates has been a primary driver for the development of universal identifier systems produced by several vendors. Updating systems require at their core a matching mechanism that can associate new data records with the correct existing customer records. In a traditional batch environment this would involve running a large-scale name-and-address deduplication involving all the records being processed. These types of processes are being replaced by systems that take records with names and addresses (either individually or in large batches) and attach to them a unique, permanent identifier. There are several key benefits of this approach.

Universal identifiers support key process improvements

- Frequent updates are less costly, since updating itself is made simpler with record matching and identification performed separately. The update system, then, only has the simpler task of dealing with identifier fields. This separation of processes may also ease system bottlenecks and facilitate load balancing among servers.
- Consistency in identification among separate application systems is maintained if they all draw on the same core process. Consistency over time can also be managed through the core process.
- Once identifiers have been applied, many subsequent processes can be faster and less computationally expensive since there is no need for additional name-and-address matching steps. Identifiers can be direct keys into various relational tables.
- Linkages among data sources can be made dynamically as needed. This both eliminates unneeded processing and ensures that the freshest data are being used.
- Higher-quality identification may be enabled by efficient use of more pieces of information and more historical data.

In the future, identifier systems may also radically change the merge/purge processing used in direct mail campaigns.

Capturing Internet activity at websites tends to generate very large data volumes. Including this category of data in the marketing database can, therefore, increase its aggregate size very substantially. There are complex new software technologies emerging that pull together clickstream data, which may come from multiple servers, and put them into forms that are more readily analysed and used. Since everything related to e-commerce is very new, there are as yet no good rules regarding how long website activity data should be retained.

Internet-oriented marketing users need to access the data using

Web technologies capture and can disseminate huge datasets

browser technology. Queries are issued, records are examined and reports are viewed using the standard, ubiquitous Internet browser tools. This facilitates marketers interacting with the databases from wherever they happen to be and at whatever instant they choose. Having this standard greatly reduces the need to move large datasets from one system (at an ASP or internal data centre) to another (local network or desktop), which can be costly and time consuming. With increased ease of access comes an increased need for data security controls to make sure that only authorised use or data export takes place.

Internet marketing, most notably e-mail campaigns, needs to be supported through effective software tools. Over the last few years a number of campaign management software systems have come to market that fill the need to define rapidly and extract a file for a marketing campaign. Beyond simple file extraction, the best tools personalise messages and track campaign effectiveness using marketing database information. The market leaders in this category have incorporated more specific capabilities to integrate and speed up the steps in an Internet-based campaign. There is also an increasing convergence between these campaign management software tools and the suites of CRM tools.

Companies which adopt a comprehensive CRM philosophy have a major need to integrate an array of data sources and software tools in such a way that data are passed easily and used consistently among applications. Besides internal customers or prospect data sources, a CRM-oriented company may want to link enhancement data from one or more third-party vendors. The software tools for business intelligence (such as Cognos and Microstrategies), data mining (SAS, Model 1, Net Perceptions) and clickstream analysis (Net Genesis, Personify) are all available.

CRM requires comprehensive integration

Conclusion

The Internet has taken database marketing to new levels of success and sophistication by extending several of its basic concepts. Database marketing's customer-centric, data-driven, long-term-oriented approach to marketing readily makes use of the Internet's capabilities to move data rapidly among different systems and users. The emerging technological world of one online network leads to more and better marketing applications. Internet technology delivers the infrastructure for full implementation of the CRM business philosophy of infusing all customer interactions with data-driven facts and analysis. As long as privacy concerns do not lead to damaging legislation, there should be a very exciting decade of implementation and refinement for Internet-driven database marketing.