

CHAPTER FIVE

Customer Intelligence

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By Jerzy Surma (A Business Expert Press Book)



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CHAPTER 5

Customer Intelligence

5.1. Introduction

In chapter 3, the application of information in sales and marketing was discussed, and in chapter 4, the business applications of advanced analysis were examined.

Traditionally, business intelligence (BI) analysis focused on an enterprise and its environment. People as a subject were not researched, unless as anonymous clients through their shopping habits. However, when clients began to be unambiguously identified and their behavior registered (e.g., in banking or telecom operators' billing systems), a close analysis of an individual client emerged. Analyses clustered mainly around analytical systems for client relationship management. The notable benefits resulting from close behavioral analysis of clients inspired similar solutions in Internet and mobile marketing, as well as in what is broadly understood as e-business.

The identification of an individual client enables the full application of the techniques of direct marketing (database marketing),¹ which is defined as directly interacting with a present or potential purchaser of the company's product. The revolutionary qualities that BI techniques introduced into direct marketing are as follows:

- Monitoring and full recording of a client's behavior patterns
- Application of advanced analytical techniques
- The chance to integrate data about the client that comes from different sources (i.e., information about transactions by credit cards along with information about his interests taken from social networks)

New telecommunication technologies related to potential constant access to a client by using mobile systems and access to information about the

client's location provide additional possibilities.² As observed by Sean Kelly,³ the marketing message profile (in accordance with the below-the-line, or BTL,⁴ approach), which results from the departure from mass marketing (the above-the-line, or ATL,⁵ approach), is based on one-to-one communication founded on BI techniques.

5.2 Customer Intelligence and Data Mining

The development of direct marketing along with the application of e-business and BI technologies resulted in the emergence of a subdiscipline of marketing based on client analysis, which is called customer intelligence (CI). One may interpret this as the analytical processing of data about a client for marketing purposes. This approach entails the collection, analysis, and use of data about a client. The client's behavioral history is investigated in order to determine his or her profile, preferences, and needs. This serves as the basis for the creation of a marketing message customized for a specific client. The main areas of support for marketing client analysis by BI techniques within CI are as follows:

1. The identification of potential clients (target group)
2. The selection of communication channels
3. The choice of a relevant message and time to convey it

Each of these areas may be supported by the application of data-mining methods. These techniques, which allow the possibility of classification, enjoy considerable popularity. It is possible to build precise models of either communication channel selection or the choice of the message itself. It is worth mentioning that there are methods that enable one to compute the correspondence between a real client profile (a de facto recognized profile) and the pattern profile of the client who is a purchaser of a given product. It permits one to carry out an efficient selection of clients and recipients of a given advertising campaign, and it delivers adequate results. The campaign is targeted at clients who correspond to the pattern profile (in the context of similarity measure).⁶ The advertising campaign is then reviewed by a response model, which enables you to prove the hypothesis that there is a higher response from clients who are

selected according to a correspondence with the pattern profile compared with clients selected at random.⁷

To illustrate the issues discussed, let us consider the following examples of their application:

1. *Selling cosmetics in perfume chain stores*

- *Client identification.* It was determined that the client is keen on beauty care (information obtained from analysis of posts on the Internet forum), and her profile meets the requirements of the following pattern profile: sex = woman, and age = 25+.
- *Channel of communication.* Short message service (SMS) or multimedia messaging service (MMS) can be used, depending on the model of the client's phone.
- *Time of message.* The message can be transmitted when the client enters a shopping mall.
- *Message.* The information will be about a special offer of a new line of cosmetics in a store located in a shopping mall.

2. *Selling of financial products by a retail bank*

- *Client identification.* The pattern profile consists of clients with a high income, in managerial positions, age = 40+. Purchasers of cars make α model β were observed to have a corresponding profile. Thanks to an agreement with a car dealer of make α , access to the e-mail addresses of customers of model β was obtained.
- *Channel of communication.* E-mail.
- *Time of message.* Simultaneously with an invitation to join an enthusiast club for owners of car make α .
- *Message.* Personalized offer of a long-term deposit account.

5.3. Personalization of the Marketing Message

The aforementioned examples are close to fulfilling a marketing manager's dreams, in which clients receive, at the right place and at the right time, a marketing message that is adjusted to their needs. Still, it is not an easy task, and badly targeted marketing messages are more usual:⁸

- *Untimely message.* A client is identified properly, but the message reaches him or her too late.
- *Irrelevant message.* A client is identified properly, but when he or she receives the message, he or she takes no interest in an offer.
- *Repeat message.* A client repeatedly receives the same message.
- *Unqualified message.* A message sent to a client is misunderstood; it may also happen that there is no chance to serve him or her when he or she responds positively.
- *Discordant message.* A message is relevant, but it is interwoven with other messages that are unsuitable, although they come from the same source.

A suitable marketing message should therefore

- correspond to a client's needs,
- correspond to a client's profile,
- be consistent with other marketing messages sent to a client,
- meet the client's requirements concerning obtained permission,
- be sent at the right time and in context the client understands,
- be sent in a manner that is most compatible with its content and the client's preferences,
- make a response easier for a client.

Both the content and form of a suitable marketing message are a consequence of a client's profile.⁹ The profile itself is worked out on the basis of the data collected about a client. However, the data are not always collected directly, and in many cases they are collected when a client is unaware that a profile is being registered or deduced from previous data. In principle, collecting data about a client falls into one of four categories:¹⁰

- *Perfect data.* These are actual information registered through contact with a client, such as full name, address, and so on, which is obtained directly from a client when a contract with a client is being concluded.

- *Imperfect data.* Data that is unreliable because they are connected with a product or service that may be used by more than one person (i.e., prepaid mobile phones).
- *Passive data.* Data that are not provided consciously by a client but are registered by monitoring his or her behavior—that is, buying preferences registered when he or she conducts transactions by a credit card or client preferences determined on the basis of registration of so-called click streams (which are a sequence of visits to websites and registered keywords used in search engines). Yet another example is the determining of the intensity and the nature of social contacts on the basis of a contact map, which is built through analysis of telephone calls, traffic, and SMS content.¹¹
- *Derived data.* Data about a client deduced informally from other data; for example, age might be concluded from registered interests or previous shopping. Obviously, such data has limited credibility.

5.4. On the Eve of Revolution

At present, telecom providers, banks, and so on build their own local and closed database about clients. A given client is registered individually in each of the systems, and these data are closely guarded (see example in Figure 5.1). Companies do not usually exchange these data with one another¹² due to legal restrictions (e.g., data protection), obligations to a client in the scope of confidentiality, the fear of losing clients, or legal claims due to data leakage.

Figure 5.2 shows hypothetical warehouse data about clients, where Ω is identified as a client:

- α in a cellular telecommunications provider A
- β in a retail bank B
- γ in an Internet social media portal C

Thanks to this integration, the data of a client's banking operations, telephone contacts, and social media activity are connected. What is most significant here is the synergy effect: the fact that we learn more from the

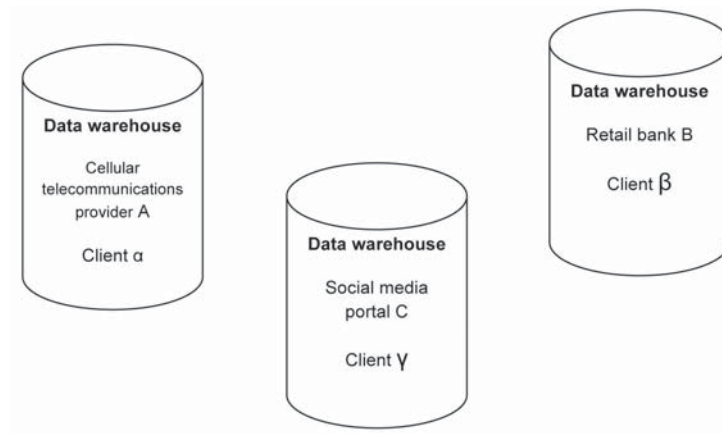


Figure 5.1. Local data warehouses—client data are stored independently.

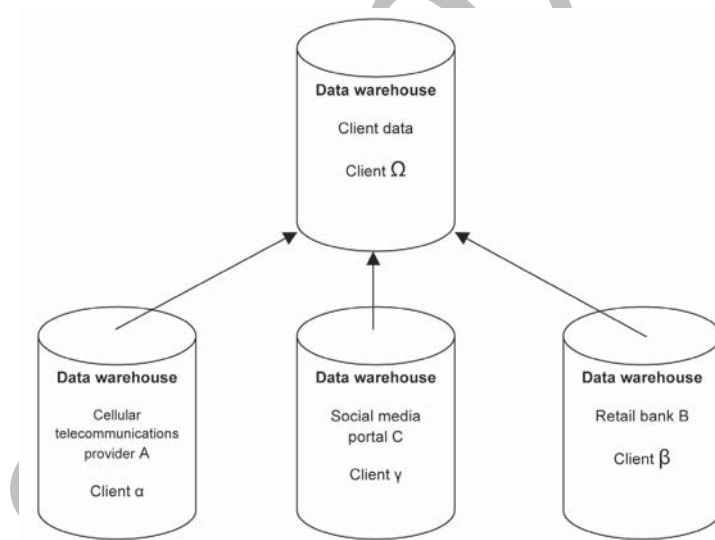


Figure 5.2. Client data integration in the one global warehouse.

two pieces of information combined than we would have learned from them individually.¹³ Is the situation shown in Figure 5.2 possible at all?¹⁴ Refraining from considering this issue from the formal and legal angle or in the context of works conducted by governmental institutions,¹⁵ let us ponder it on a purely technical basis and consider the possible business consequences of such a solution. The idea of the registration of data connected from all aspects of an individual's life took shape in

the MyLifeBits project.¹⁶ Its author, Gordon Bell, formulated the concept of tracing events from the life of a specific person. These events can be stored on a computer and searched. The following events from a person's life could be registered:

- Written documents (e-mails, articles, notes, letters, blogs, bills, etc.)
- Viewed e-mails, newspapers, websites, studies, books, etc.
- Viewed photos, images, and posters
- Music (radio, CDs, MP3s, etc.)
- Movies
- All owned files
- All telephone calls and sent or received texts and MMS
- Shopping done
- Places visited
- Results of both periodic medical tests and day-to-day monitoring of one's pulse, body temperature, etc.

In the final phase of the project, it was even tested to see whether it would be possible to register all the events in a person's life by means of a head-mounted camera. Data warehouses with a large memory capacity, which are able to store the data provided for a person's whole life, are cheap and easily available. For a better understanding, let us consider two possible applications:

1. *Recommendation of an optimal diet and warnings of dangerous dietary practices on the basis of*
 - analysis of day-to-day monitoring and history of consumed products;
 - health;
 - availability of recommended products;
 - analysis of the diet and its results for people with similar health problems.
2. *Support for a high school graduate in selecting a university and major on the basis of*
 - evolution of interests;
 - ranking and kind of high school he or she graduated from;

- availability of universities and analysis of their graduates' careers;
- data about employment, demography, and forecasts about the developments of different sectors;
- career paths of people with similar career profiles.

All in all, the vision of a total-surveillance society in a totalitarian state ruled by Big Brother, as described in *Nineteen Eighty-Four* by George Orwell, is at present technically viable. However, the so-called paradox of privacy and confidentiality emerges.¹⁷ There is a natural contradiction between clients' concerns about their privacy and their desire to receive messages that are adjusted to their needs. It is impossible to satisfy these two mutually opposite needs at the same time. Clients can consent to their personal data being processed and even support the process of building their profile if, for instance, they are given

- a possibility to sell their profile, for example, to companies that manage marketing databases for direct marketing purposes;
- special offers, bonuses, discounts, promotions, and so on;
- a high-quality personalized message in the area they are particularly interested in, provided that they have a guarantee that the information about them will remain confidential.

Google products may become an interesting platform for the application of customer intelligence techniques. Let us consider its business model and current solutions as an example of potential analytical possibilities. The basic business model provided by Google consists of offering Internet advertisement related to specific keywords. Therefore, these advertisements reach users by means of sponsored links, among other things, and Google matches their interests expressed by entries in the search engine.

As mentioned before, it is important for advertisers to adjust their marketing message to match the targeted user's profile. Therefore, the collection of information about clients enables Google to profile clients potentially very precisely. This should result in Google being able to offer advertisers numerous target groups that are interested in advertised products and services. One of the ways to achieve this could be to ensure

Internet users free access to a number of Internet applications. If registered users take advantage of such an offer and use the search engine, a notepad, blogs, and documents, it is possible to determine their interests, views, opinions, career profile, and so on, and then their contact groups and the nature of those personal contacts, business contacts, interests, and so on might be determined when they make use of discussion groups, e-mail, or calendars. Subsequently, it is highly probable to be able to determine age, sex, education, occupation, place of residence, income, and so on. Requiring an ID¹⁸ to allow the client access to all the applications solves the problem of identifying a specific person. Giving one's ID plays a key role in, inter alia, linkage of a client's various activities.

As a result, personalized marketing activities as shown in Figure 5.3 become possible. The clients' activities can be monitored and their data stored in the data warehouse. Consequently, the history of clients' behavior is retained and their profile discovered. Such a profile is dynamic by nature and is updated after each activity at fixed intervals. The creation of the profile might be supported by BI methods. It's worth remembering that the cross- and upsell proposals for a given target group can make use of data-mining methods. Single profiles can be grouped accordingly, and that might be the basis for determining the regularity and rules for client segments. A lot of items in a profile are derived data, which means that this knowledge is unreliable. This is due to the fact that there is a great quantity of text data (i.e., blogs, e-mails, documents). It is essential to use text data-mining methods. The profile of a given client is the basis for the selection of an advertised product.¹⁹

In this context, virtual reality simulators such as Second Life²⁰ seem to be an interesting research laboratory. In such artificial worlds, total surveillance is possible, which translates into extremely precise profiling. Consequences for marketing are remarkable, but consequences for mankind are alarming.

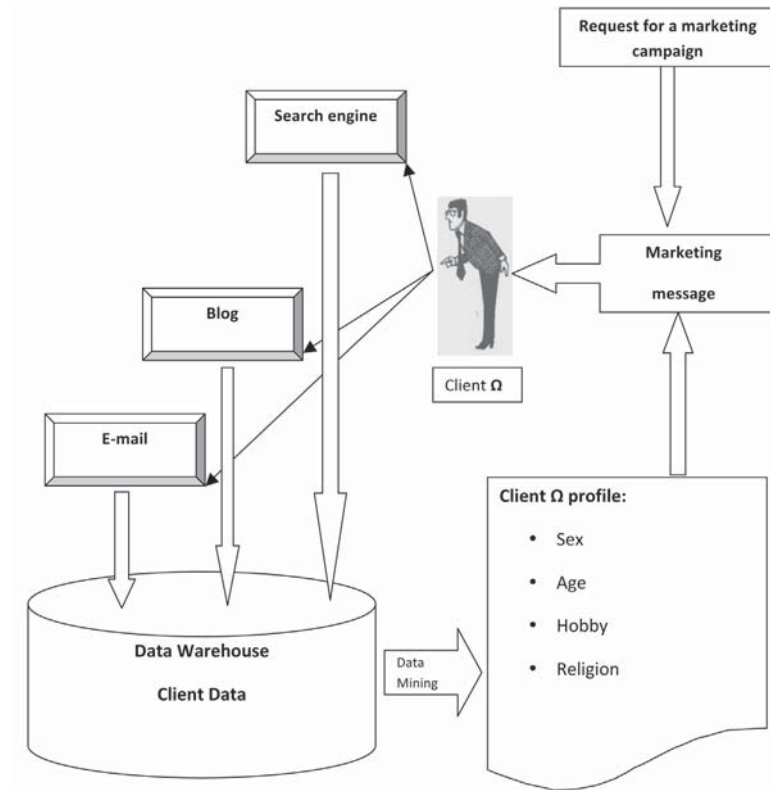


Figure 5.3. Possible architecture for targeting personal message in the integrated internet environment.

Source: author.

Recommended Literature

One-to-One Business

- Kelly, S. (2006). *Customer intelligence: From data to dialogue*. New York, NY: Wiley.
- Prahalad, C. K., & Krishnan, M. S. (2008). Analytics: Insight for innovation. In *The new age of innovation* (chap. 3). New York, NY: McGraw-Hill.

Understanding of Human Behavior Based on Digital Footprints

- González, M. C, Hidalgo, C. A., & Barabási, A. L. (2008). Understanding individual human mobility patterns. *Nature*, 453, 479–482.
- Lazer, D., et al. (2009). Life in the network: The coming age of computational social science. *Science* 323(6), 721–723.

- Mitchell, T. M. (2009). Mining our reality. *Science*, 326(18), 1644–1645.
- Petland, A. (2008). *Honest signals: How they shape our world*. Cambridge, MA: MIT Press.

Privacy, Futurology, and Popular Books

- Attali, J. A. (2009). *Brief history of the future: A brave and controversial look at the twenty-first century*. New York, NY: Arcade Publishing.
- Baker, S. (2008). *The numerati*. Boston, MA: Mariner Books.
- O'Harrow, R. (2006). *No place to hide*. New York, NY: Free Press.
- Solove, D. J. (2004). *The digital person: Technology and privacy in the information age*. New York, NY: New York University Press.

Internet Resources

- Reality Mining Project. <http://reality.media.mit.edu/>
- SocialNets. <http://www.social-nets.eu/>
- SocioPatterns. <http://sociopatterns.org/>
- Life Analytics Blog. <http://lifeanalytics.blogspot.com/>
- Digital Footprints Mining. <http://surma.edu.pl/>