What Are You Doing with Your Data?

Do you have a list of prior customers or vendors? How do you compile that information, and do you use it to benefit your business? In this article, Linda begins to look at how data mining can help increase your sales and services.

Mining for Marketing

I never was an organized person, and my ability to keep tabs on various resources is minimal. I've always relied on searches to find what I needed, but things have changed lately. My contacts now may not be on the Internet, and some resources aren't in the phone book. My need for a database that can help me find what I need quickly and use it to my advantage is now a priority.

So I'm delving into data mining, a branch of computer science that extracts patterns from data. This practice already is in wide use for marketing, surveillance, fraud detection, scientific discovery and profiling. You and I both have been "mined" by social media tools and search engines and other algorithms that extract data from our Internet use. You can see this evidence when you visit a page that offers deals only in your area...or with your interests in mind.

While many individuals consider data mining a violation of privacy, that objection already is a moot issue. Unless you use an anonymous browser (like Anonymouse), any company that utilizes data mining can say, "Ur data is ourz." While collecting data itself may seem neutral, it is how that data is used that may raise questions and eyebrows.

For all intents and purposes, you can conduct your own data mining and be fairly innocuous about it. When you use Google Analytics or Facebook's Fan Page Insights, you're using data extraction. It's HOW you use it that is the key...do you just look at it and frown when figures are down and smile when numbers are up? Or, do you utilize that information to change content, refocus on sales or add more services?

Data Mining Explained

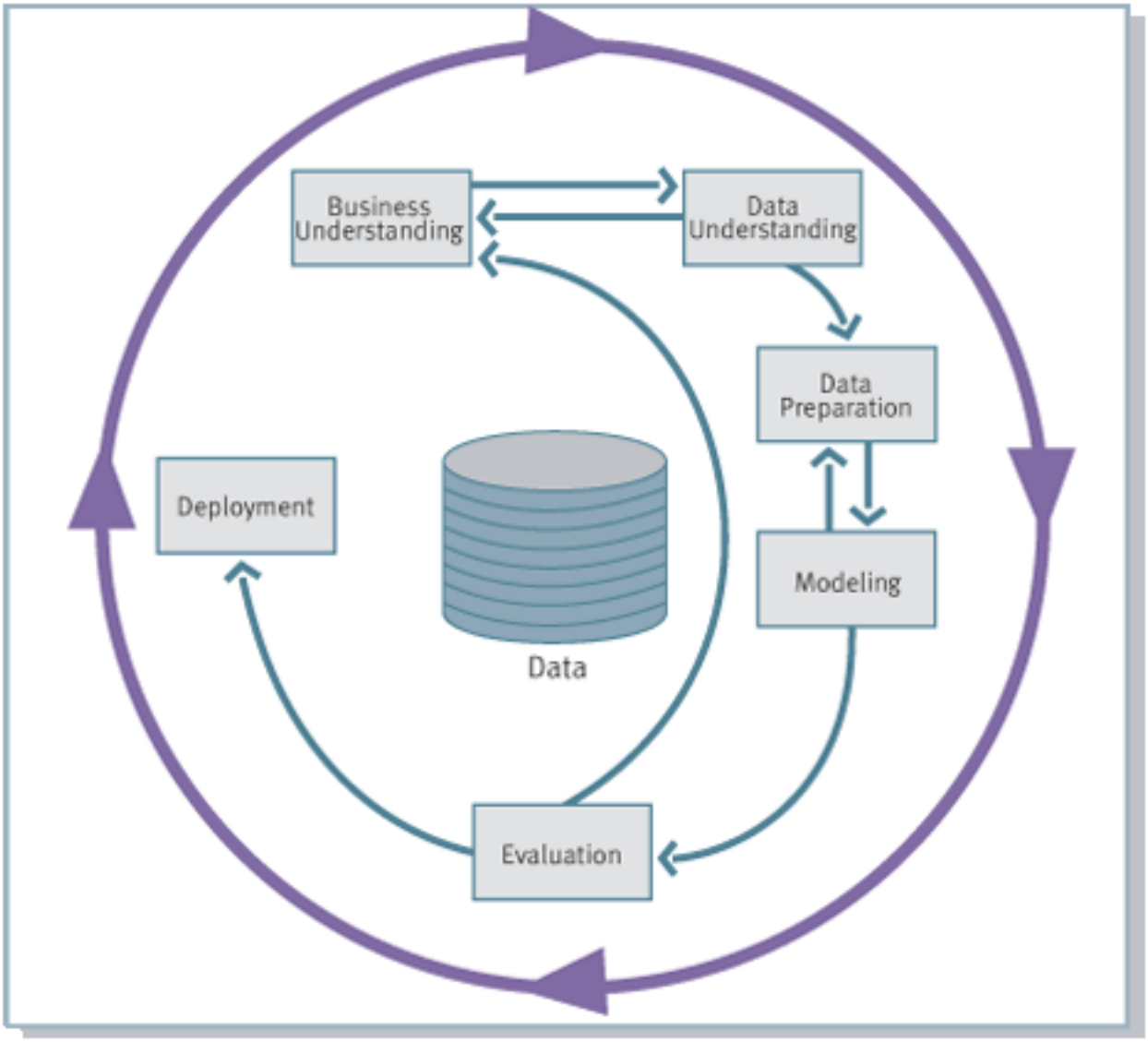


Figure: Phases of the CRISP-DM Process Model

You may think that data mining is insignificant if you are a graphic designer...maybe less so if you are a developer. But, if you do your own marketing, then data retrieval, storage and analysis is vital. Once you begin to realize how data farming can alter your sales, you may wonder how people get along without it.

But, first to understand data mining at a level where you can use it without it taking over your time, let alone your life? The first way to get a grip on data mining is to understand what it is, and how it might affect your business. The following 25 articles cover a wide range of data mining issues, listed in no particular order. These articles can explain the depth and breadth of data mining and what it means for today's – and tomorrow's – society:

1. Data Mining: An Introduction. About.com provides a overview of data mining techniques for the general public.

2. Software Ethics: Data Mining & Privacy Issues. This link provides a brief overview of uses for data mining techniques, including its use by businesses, government agencies, and medical practitioners. It examines the ethical questions surrounding the use of data mining.
3. Information Week: The Ethics of Data. Discusses some of the issues surrounding data mining, including an increasing concern over invasion of privacy and the role of IT professionals.
4. Where Data Mining, Privacy Policies, and Identity Theft Intersect. A researcher discusses the use data mining applications by research institutions, such as universities.
5. Data Mining vs Privacy. A site that weighs the pros and cons of data mining for insurance companies.
6. Toward Standardization in Privacy-Preserving Data Mining. An article [pdf] discussing the standardization of privacy-preserving techniques in data mining.
7. Customer Acquisition and Data Mining. An article that explains how data mining is used to attract new customers.
8. An Introduction to Data Mining. Aimed primarily at businesses that might use data mining, this article provides an in-depth look at what data mining is and how it works.
9. Data Mining. Also aimed at businesses, this article gives a brief overview of data mining, touches on the social issues raised, including privacy issues, and provides links to more information
10. Data Mining and Customer Relationships. This site explains the basic ideas behind data mining in fairly simple terms and examines the reasons businesses now use data mining techniques.
11. Understanding Data Mining. Another look at how data mining works, focusing on understanding how to read the data.
12. Visualising Data Mining Models. A further, in-depth look at reading and understanding data mining models.
13. An Overview of Data Mining Techniques. A discussion of different techniques used in data mining and how these different from certain other concepts, such as statistics.
14. WiseGeek: Different Data Mining Techniques. A brief article outlining the different methods used in data mining. It also provides links to further information.
15. Data Mining: The Benefits. A site that examines the up-side of data mining for businesses.
16. If Only I Knew. A somewhat simpler guide to using data mining techniques in your own business.
17. Investor Home: Data Mining. An article discussing some of the technical pitfalls of data mining, including the possibility that a company can misinterpret data or form business plans around false assumptions.
18. Some Thoughts on the Current State of Data Mining Softward Applications. A former developer discusses changes need in data mining software to adapt what was basically an academic endeavour to business use.
19. Data Mining Poses Security Risks. A brief article on the need for caution in sharing private information on social networks, focussed on data mining of online health communities.
20. Controversy Over Data Mining. An article which examines concerns raised over data mining due to the U.S. Government's increased use of this technique in counter-terrorism measures.
21. How to Protect Yourself Against Data Mining. An article outlining the little things we do on-line that expose us to risk of privacy violations by data mining. Aimed at owners of small businesses.
22. Increasing Customer Value by Integrating Data Mining and Campaign Management Software. An article discussing how to find the customers with the highest potential value amid the piles of information data mining produces, and how to use that information once you've found it.

23. Data Mining Can Bring Pinpoin Accuracy to Sales. Another article outlining how best to use the information that data mining can gather.
24. Scoring Your Customers. An article discussing how to actually use a data mining model once it has been created.
25. From Data Mining to Database Marketing. An article that envisions the future of data mining.

At this point, you might ask where you go from here to tap into a marketing tool that could benefit your small business. How can you gather data, and how do you "read" it? What tools might you use and how can you be sure that you are reading the data correctly?

Clarifying Data Mining Objectives

Large-scale enterprises use data mining extraction to connect transaction and analytical systems. In other words, when a grocery store uses data mining to determine sales, they may find that more men than women buy diapers on Thursdays, but that beer sales also escalate on Thursdays. This might mean that women are preparing for the weekend, sending husbands out for errands. While out, the husband buys beer for whatever physical or psychological reason at the same time as they buy the diapers for the babies.

What that store does with that information depends upon how relationships are analysed. They can use data mining software to analyse those relationships and patterns. Several types of analytical software are available: statistical, machine learning, and neural networks. Generally, any of four types of relationships are sought:

- **Classes**: Stored data is used to locate data in predetermined groups. For example, a restaurant chain could mine customer purchase data to determine when customers visit and what they typically order. This information could be used to increase traffic by having daily specials.
- **Clusters**: Data items are grouped according to logical relationships or consumer preferences. For example, data can be mined to identify market segments or consumer affinities.
- **Associations**: Data can be mined to identify associations. The beer-diaper example is an example of associative mining.
- **Sequential patterns**: Data is mined to anticipate behaviour patterns and trends. For example, an outdoor equipment retailer could predict the likelihood of a backpack being purchased based on a consumer's purchase of sleeping bags and hiking shoes.

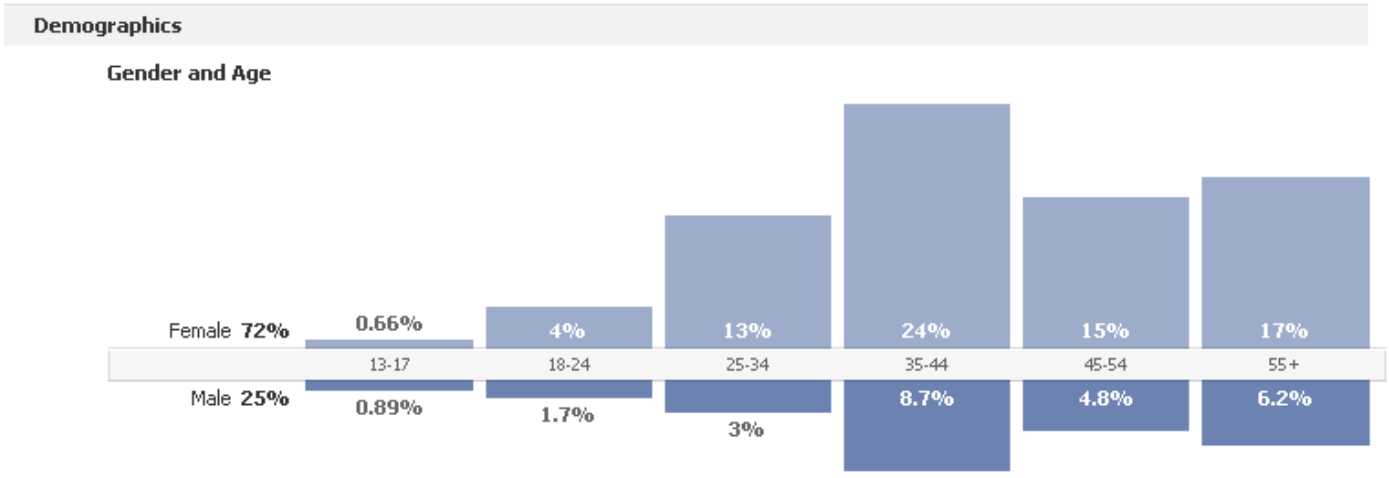
Just to go one step further (as this may make sense to visual communicators), data mining consists of five major elements:

- Extract, transform, and load transaction data onto the data warehouse system.
- Store and manage the data in a multidimensional database system.
- Provide data access to business analysts and information technology professionals.
- Analyse the data by application software.
- Present the data in a useful format, such as a graph or table.

"Ah-ha!" you might exclaim. Visual imaging! Information graphics, or infographics, are the end result of many of these analysing efforts:

Every image shown above was created from analysed databases. That information was simplified and made visual, or "pretty," so people who needed to learn from that data could easily read it. So, if you've created infographics in the past, or if you create them now, you are part of that analysing process.

This same process is computerized, and an example is when you view maps and diagrams at Google Analytics or on your Facebook Fan Page's Insights. In fact, it doesn't take much analytical savvy to realize that the following information can offer some clues about readers and possible shoppers:



The information shown above displays the gender and age of a Fan Page at Facebook that focuses on a group of retail businesses in a small town. It doesn't take a rocket scientist to understand that the largest readership is between ages 35-44, and that most of all readers at any age are female (except the 13-17 year-old males, which is curious to me).

But, what do I do with that data? Do I want to increase male readership? If so, why? Do I want to cultivate and increase the female readership from ages 44 and up? If so, then why?

At this point, I realize I need more data to inform any further progress. All I have at this point is classes of information (from the previous list). What I want to do now is cluster that information with other statistics that might tell me why this page's readership is classed as it currently stands. And, I can begin to make associations as well...

For instance, I might want to learn if these individuals are shopping at the stores represented by this Facebook Fan Page. That information is not available through Facebook. Therefore, I might need to create a survey. In that survey, I would ask for ages and gender...so I can make associations with the data shown above.

Then, I can continue those surveys to make sequential patterns. But, at that point, I might realize that I need to save data from previous weeks, months or years for comparison. While I could collect this data and analyse it manually, I don't have that amount of time on my hands. Instead, I would use software where data could be input and where comparisons and sequential patterns could be spit out at my convenience.

Stay tuned for that information, upcoming in the next article...

Conclusion

I could go through life not knowing my customers or – using data mining and analysing – I can learn more about my customers so they will buy more of my products and services. I'd prefer the latter, as my time is precious, and if I can discover the "low hanging fruit," or the easy customer who loves my products or services, then I can have more time to create more product or to find appropriate customers.

In the next article, I'll show some tools you already may use to determine your market, and introduce you to other tools that may work for you to help you learn more about your clients. As usual, I won't gouge your wallet – it's amazing the available tools that can help you increase your sales that won't cost an arm and a leg...