

***7 Myths of Common Data Warehousing Practices:
An Examination of Consumer, Business, and Societal Value***

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ABSTRACT

This paper begins a dialog on the ethical usage of data warehousing practices. Seven myths are explored and counter-myths are provided. Three myths focus on consumer value including data collection (privacy), customer profiling, and persuasive (targeted) marketing. Two business value myths focus on productivity and reputation. Two additional myths focus on societal values that include discussion on the economy and environmental issues and finally national security issue. This paper is presented in a discussion-based format designed to further discussion of information ethics in the context of data warehousing practices.

Keywords: *Business Value, Consumer Value, Data Warehousing, Information Ethics, Societal Value*

INTRODUCTION

“Privacy issues have now replaced credit card security issues as the number one impediment to building an online business”

- Judson and Kelly, 1999

“Innovations in web technologies, data warehousing and data mining enable Internet marketers to collect, process and analyze personal data gathered from web users browsing and online purchase habits on a much greater scale as it is now quicker and more economical to do so.”

- Rose, 2001

With the current advances in technology increasing the amount and type of information gathered by organizations through innovations in e-business, data warehousing, and data mining, it is becoming increasingly important to look at the impact of that information gathering on consumers, businesses, and society. The free flow of information about consumers within organization and between different organizations can be both an asset and liability for consumers, businesses, and society.

This paper explores the role of e-business, data warehousing, and data mining, along with the flow of that information on consumer, business, and societal value. It does this by presenting the arguments for both sides of seven myths or misconception of the use of this data in a myth, counter-myth format letting the reader judge the issues.

CUSTOMER VALUE FOCUS

It is generally accepted that successful data warehousing projects can benefit the businesses that implements them. Less recognized however, are the benefits to the consumer. In this section we examine three myths on how data warehouses may positively or negatively affect the consumer.

Myth 1: *The merging of current customer data with secondary sources ultimately increases value for the consumer.*

The general argument for the first myth is that by acquiring data from secondary sources about customers, and adding it to their existing data, businesses can better understand their customers and more accurately target their needs. The collection and merging of this data is a good business practice that helps the customer find products and services they desire.

Customer satisfaction is increased because their service is more customized and tailored to their needs and desires. Offers that they receive from companies are more likely to be things they are interested in.

Counter Myth 1: *The merging of current customer data with secondary sources ultimately hurts the consumer.*

The counter argument is that there is a loss of privacy to the consumer that has a value to it. As long as the consumer owns the information they have the right to disclose it, potentially for a benefit. Once a company owns and controls that information, the consumer has lost the benefit of the option to disclose the information and consumer value is reduced.

Recently Qwest had some issues in the state of Arizona when they disclosed plans to share customer information with their business partners. The customer information included details about the customer acquired from normal business transaction and included information about personal calling information (Schwartz, 2002). There was a significant public outcry and Qwest eventually relented and modified its plans.

If consumers object so strongly to having some of their information used in this way, how can it increase value for them? If it did increase value for them you would expect that they would welcome the practice.

Myth 2: *Customer profiling, leading to more customized service, creates consumer value.*

Participating in commerce with Amazon.com provides an experience that is more and more focused to the individual consumer. With their advanced data mining techniques, the use of clustering provides individualized website experiences with products more likely to be desired by the consumer.

Counter Myth 2: *Customer profiling, leading to more customized service, reduces consumer value.*

With limited numbers of interactions to a customized web site, such as Amazon.com individuals may become frustrated with the “wrong” personalization. Two examples come to mind. Suppose that you want to buy a baby names book for a friend who is about to have her first child. The website might incorrectly profile you as having (or about to have) a newborn, and over the next several (100’s) of visits you are deluged with baby products. Similarly, suppose you’re an older person, not particularly fond of children’s fantasy books, but you purchase a Harry Potter book for your grandchild. Because you do not go online to shop very often limited information is captured about your true habits, furthermore, because you were not asked your preferences, you are continually bombarded with the latest in Harry Potter memorabilia and children’s fantasy books.

Another issue to consider is what if somebody uses your account? As an example, suppose my wife buys a woman’s turtleneck sweater at EddieBauer.com. Since that purchase I get more emails from EddieBauer.com and they are constantly offering me women’s apparel, which I am not interested in.

A Suggested Solution: With limited numbers of transactions, websites should not profile too aggressively. Having bought 15 books on data warehousing, they could, rightfully so, assume that I would be interested in any new books that come out on that topic. They should not assume that because I bought an ABBA CD for my parents as a gift that I care about that group or their specific musical genre. Furthermore, if websites are going to profile they should provide the collected categorizations to the consumer for acceptance or rejection.

Myth 3: *Using persuasive marketing techniques increases consumer value.*

Persuasive technologies are computing devices designed to change human attitudes and behaviors (King & Tester, 1999). In some cases this could be good, as in the case of www.dole5aday.com, an interactive website designed to get kids to eat more fruit and vegetables, which are products Dole sells. If children eat more fruit and vegetables, Dole stands to benefit. Most would agree that using technology for this purpose is okay, because it is something most societies see as a benefit that promotes healthier children.

Some businesses would argue that by using data warehouse and data mining technologies, they are locating customers that have a need for their product and are creating value for the customer by meeting and fulfilling their unmet needs. Marketers

may believe that customers really need their products to be happy and if they knew about it they would buy it. By persuading them to buy their products, they are not simply lining their own pockets; they are performing a service to the customer.

Counter Myth 3: *Using persuasive marketing techniques reduces consumer value.*

There are a couple of problems with persuasive marketing. If it is unethical to persuade someone to do something without technology, should it not also be unethical to persuade them to do something with technology (Berdichevsky and Neuenschwander, 1999)?

Imagine a case where someone is struggling with an addiction to gambling, alcohol, pornography or something else. Some of these people really want to stop, especially if it is hurting their family. What happens if, in a moment of weakness, they lapse into this behavior and the site they visit records their name and other identifying information?

They then use this information to market this behavior to that person, sending email, calling or mailing advertisement to continue with the behavior. Furthermore, they sell the name to others who also want to exploit this weakness. If the person really wants to quit, and it is in their long-term best interest to do so, is it right to use the technology to exploit weaknesses and continually try to engage people in an activity they are trying to avoid?

Another case in point, what about the individual struggling with consumer debt? Is it ethical to use technology to try to get them to buy luxuries they do not need if it puts them further in debt beyond their ability to pay? If they go into bankruptcy the loss hurts the consumer, the business, and society as a whole.

BUSINESS VALUE FOCUS

Data warehousing projects have similar attributes to any information systems project undertaken by an organization. Implementation issues arise, there are costs associated with the development, user acceptance is tenuous, and ultimately the question of whether or not the data warehouse is profitable for the organization is asked. In this section on business value we focus on two myths; one concerning productivity and one concerning image.

Myth 4: *Data warehousing improves organizational productivity.*

There are numerous anecdotal reports that data warehouses can generate 1000-fold return on investments. Indeed there are entire books written on the success of a single DW implementation (Westerman, 2000). Wal-Mart, Sears, MCI, Microsoft, and others all have their success stories documented in one form or another. Many are asking if the data warehouse can become the “killer application” that breaks the IT productivity paradox (Hitt & Brynjolfsson, 1996).

Counter Myth 4: *Data warehousing reduces organizational productivity.*

For every data warehouse success story, there is failure to match. While these numbers have just recently come under scrutiny, various reports suggest that 50-66% of all initial DW projects fail (Wixom & Watson, 2001; Boon, 1997). Data warehousing projects are not small investments, often they take years to implement correctly and require millions of dollars in hardware, software, and consulting services.

Myth 5: *Data warehousing improves your organizational image.*

A well-run data warehouse program can help improve your corporate image. Your company may be seen as a technology leader. You may be able to do relevant data mining that will help meet your customer's needs. Wal-Mart has arguably benefited in increased prestige through their skilled use of technology. Can you imagine doing business in today's economy with a company that did not use current tools to compete?

Counter Myth 5: *Data warehousing hurts your organizational image.*

While wise use of technology can help your corporate image, misuse of information can cause a public backlash. When Lotus Development Corp tried to release its Market Place Household product making names, addresses, demographic information and purchase behavior data available for 120 million Americans on CD-Rom, there was a huge public opposition that eventually led to the cancellation of the product (Culnan, 1993).

Amazon recently came under fire when they changed their privacy policy to allow the sale of gathered data third parties, which they had previously stated that they would not sell (Richman, 2002). If the use, storage, and sale of data in a company's data warehouse is not carefully monitored and controlled, it can lead to consumer group out cries that could harm the company's image.

SOCIETAL VALUE FOCUS

The collection and use of information by organizations continues to have an important impact on society. Cazier et al. (2003) found that the perceived values of an organization and how well they matched with the consumer's values plays an important role in an individual's willingness to disclose information. For information systems to be successful and interact well with the public, they should be aware of how they are perceived as affecting society. This section explores some of the ways organizations can use technology to affect society and how they might be perceived in society.

Myth 6: *Data warehousing reduces waste and helps the environment.*

With target marketing and tighter budgets many companies have ever shrinking budgets to spend on their direct marketing endeavors. Given that, the mining of a data warehouse can lead to customers with a higher propensity to purchase goods and services, businesses can target fewer people with the same, or more, potential volume of sales. This leads to

less waste of resources. Instead of 1,000,000 flyers, a company might send out only 50,000, a 20-times reduction in paper, ink, stamps suggesting both fiscal and environment responsibility.

Counter Myth 6: *Data warehousing increases waste and harms the environment.*

On the other hand, lowering the cost of marketing by increasing the chances of success with more accurate target market may lead to further waste and ultimately more harmful to the environment. Through technology, and the price drop of the hardware and software, barrier of entry drop in the development of data warehouses (LaBrie et al., 2002). This leads to increasing numbers of firms being able to afford to mine their data. As such more and more business will begin engaging in direct marketing. We see this in the increase of “junk mail” that fills not only our electronic but also traditional postal mailboxes. This ultimately leads to further use of more resources including paper, ink, etc., which in turn gets discarded with the trash and eventually finds its way to the landfills.

Myth 7: *Governmental use of data warehousing technologies is good for society.*

Data warehouse and data mining systems play an important role in the US government’s fight against terrorism (Koerner, 2002), also in the battle for homeland security and in the fight to catch criminals in general. The US government is currently working on a project called Total Information Awareness that would track everything from people’s credit card purchases to plane tickets to help with the war on terror (Linder, 2002).

Counter Myth 7: *Governmental use of data warehousing technologies is not good for society.*

While some use of data warehousing by the government can be helpful to aid in defense and protection, there are also times when it could go too far. What would Adolf Hitler have done if he had this type of technology to track and eliminate his enemies? Could a government use this type of technology to identify, track and persecute sub classes of the population based on racial, ethnic, or religious profiling? How would this benefit society?

CONCLUSION

Data warehousing projects can be likened to a double-edged sword. They can help businesses and consumers cut through the chase and provide a more meaningful service to both consumer and business, or they can be used in such a way as to harm the business, the consumer, or both. With this potentially tremendous power comes tremendous responsibility. Companies that choose to engage in data warehousing activities should have in place not only a technical team for implementation, but also a sound data security policy as well as an ethical use policy. These policies should be made available to the consumers whose information is stored within the data warehouse.

The following table summarizes the seven myths and counter-myths discussed in this paper, organized by value to the consumer, business, and society as a whole.

	Myth	Counter-Myth
Consumer	<i>The merging of current customer data with secondary sources ultimately increases value for the consumer.</i>	<i>The merging of current customer data with secondary sources ultimately hurts the consumer.</i>
	<i>Customer profiling, leading to more customized service, creates consumer value.</i>	<i>Customer profiling, leading to more customized service, reduces consumer value.</i>
	<i>Using persuasive marketing techniques increases consumer value.</i>	<i>Using persuasive marketing techniques reduces consumer value.</i>
Business	<i>Data warehousing improves organizational productivity.</i>	<i>Data warehousing reduces organizational productivity.</i>
	<i>Data warehousing improves your organizational image.</i>	<i>Data warehousing hurts your organizational image.</i>
Societal	<i>Data warehousing reduces waste and helps the environment.</i>	<i>Data warehousing increases waste and harms the environment.</i>
	<i>Governmental use of data warehousing technologies is good for society.</i>	<i>Governmental use of data warehousing technologies is not good for society.</i>

Table 1 - Consumer, Business, and Societal Value of Data Warehousing Practices

The myths examined in this research-in-progress paper are meant to begin a dialog on what the key factors are surrounding the ethical use of data warehouses. It is argued that companies should carefully consider both sides of each myth when deciding to implement a data warehouse. Furthermore, as data warehousing practices evolve there may be a potential need for government to evaluate the impact on society and consider if any regulatory action is warranted.

Limitations: While we have attempted to logically examine ethical data warehouse use at three distinct levels, consumer, business, and societal, we do not claim that these myths are an exhaustive and/or exclusive list of all the ethical dilemmas facing data warehouse usage, we fully expect that others may exist. As such, we present this paper to open the dialog for further examination.

Future Research: Upon further discussion and a more detailed level of analysis within this stream of research the authors seek to produce a more empirical investigations of data warehousing practices with regards to ethical use including issues involving privacy, security, and business value. Further theoretical development of the myth, counter-myth arguments will be developed as well as an accompanying survey to be sent out to both users (consumers) and developers (business) of data warehouses.

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