

Peter Hinssen, editor

ANALYZING CUSTOMER BEHAVIOR

PREDICTING
WHAT HAPPENS
NEXT



“Analyzing customer behavior in the age of big data”

is the third in a series of thought-provoking booklets that Across Technology will be publishing this year, sponsored by EMC Greenplum. These booklets are elements in the Data Science Series, which is also a series of events, and a website:

www.datascienceseries.com

Publisher:
Across Technology

Editor:
Peter Hinssen

Executive editor:
Philippe Gosseye

Contributing editors:
José Delameilleure, Laurence Van Elegem

Layout:
Stijn Van Herck

SPONSORED BY



GREENPLUM

EMC²



Dear reader

Consumers are no longer what they used to be. Before they buy, they look around. A lot. And when they buy, they talk about it. To everybody. They want to be treated as unique. They want you to listen to them. They want you to talk to them. They want you to thank them. In short, they are influencers and mini-tyrants who will leave you in the blink of an eye if you don't do as they please. And that's the easy part. The problem is that they change so fast that you actually need to know what they want, before they do. Your organization needs to outrun them. It needs to be agile and fast.

The good news is that you have all the information needed to understand, catch and nurture these empowered consumers. Because they literally leave traces everywhere. Not just inside your company, nicely stacked in shiny databases, but outside as well, in a colossal mass of unstructured external data. I'm talking about data from Twitter, Facebook, industrial sensors, geotracking data, voter registrations, sports statistics, website logs and much much more. They are there for the taking. You only need to link the two and unlock their value. And be able to store them, of course.

Not only does Big Data come with real predictive insights but with actions and results as well. Churn prediction, in-store behavior analysis and recommendation engines are just some of the cool possibilities that it fuels. It's customer-centricity on speed.

With this booklet, we want to offer you views on the way markets are changing and how you can make informed use of these trends to strengthen your company's position. To keep you informed on a constant basis, we have created the Data Science Series website (www.datascienceseries.com), offering you case stories from your peers, valuable insight into market research and an overview of the Catalyst partners that help EMC Greenplum bring the right building blocks to the market. Allowing you to build the right 'refinery' for all the information that is coming your way.



Make sure you don't miss the installments of the series. Please contact your local EMC Greenplum organization to obtain all of these booklets.



Fast Customers + Big Data = Big Marketing

It is a plain and simple truth: you need customers, and loads of them, to function (in the worst case) and thrive (in the best case).

The problem is that, these days, your customers are changing at the speed of light: faster than the market, faster than individual companies and maybe even faster than you. If that is the case, your company better become agile and nimble in order to keep up with them ... and your competition. It's a 'sink or swim' kind of situation. There's no in between.

**The good news is that you have all
the information you need - for a 360° view of your
customers - staring you right in the face.**

I'm not only talking about the valuable information that resides inside your company – and which is not always used to its full potential – but also about the massive amount of external information that can give you superior insights into your customers' minds and behavior. I'm talking about the gargantuan quantity of data coming from Twitter, Facebook, industrial sensors, geotracking data, voter registrations, sports statistics, website logs and much much more.

And it gets even more exciting when the internal and external bits and bytes are combined and turned into consumer insights that were just plain impossible only a few years ago. Gone are the days of intelligence that can only help understanding the past. Say 'hello' to predictive analytics. Say 'hi' to speed and actionable knowledge.

**A RETAILER
USING BIG DATA
ANALYTICS TO ITS
FULL POTENTIAL CAN
ADD 60 % TO ITS
OPERATING MARGIN**

Meet Big Data. If you think that ignoring it, will make it go away. Think again. It is here to stay.

Deloitte values the size of the Big Data market at about \$1.3-\$1.5 billion in 2012, and it is growing fast. In 2009 there were only a handful of Big Data projects and total industry revenues were under \$100 million, while by the end of 2012 more than 90 % of the Fortune 500 are estimated to invest in Big Data initiatives one way or another.

According to McKinsey & Company, a retailer using Big Data analytics to its full potential can add 60 % to its operating margin. If you don't, don't forget that your competition will.

Big Data can help you to:

- Gain a 360° view of customer activity across channels
- Discover what influences buying behavior
- Tailor your services and products to what your customer wants
- Improve customer satisfaction
- Drive customer loyalty
- Optimize existing customers
- Adapt your prices to the market
- Drive the ROI and performance of your marketing campaigns
- Cut budget without cutting performance

... and all this at the speed of change.

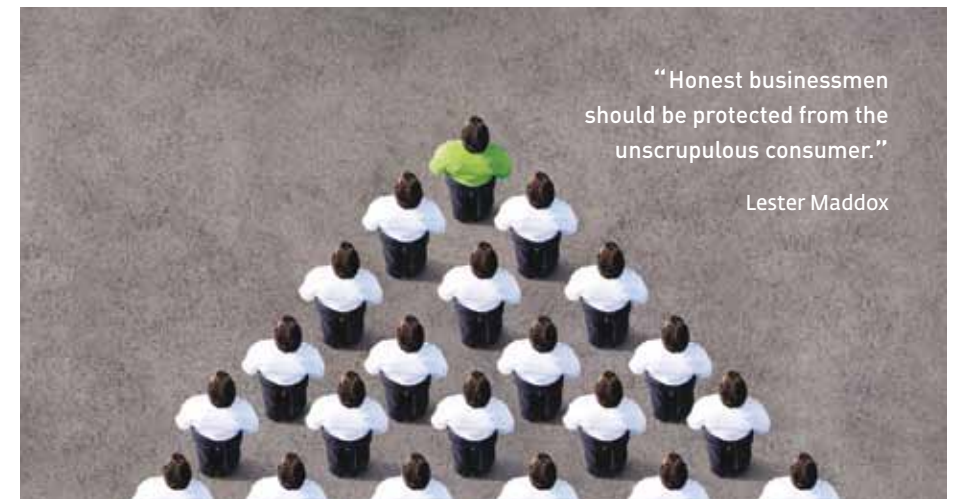
The tyranny of the empowered consumer

Today's consumers have evolved beyond being merely 'buyers'. They have grown into 'influencers', and highly critical ones at that.

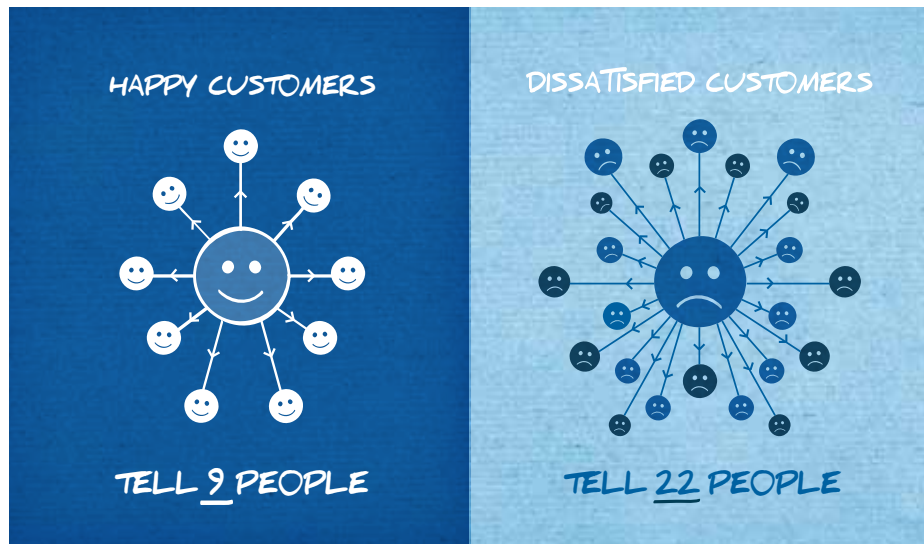
The customer as influencer

While only 6% of all purchases are done online today, no less than 37% of all offline purchases are inspired by online research. Today's consumers know the market and your competition through and through. So you better know what they want if you want them to buy what you're offering.

When consumers do actually acquire your product or service, they are very vocal about it, in all their networks of intelligence. And their reviews – be it positive or negative – will be sure to influence their friends, family and peers who, in turn, will influence others, etc., etc.



Gone are the 'markets' of yore. Say hello to the 'networks of intelligence', where consumers have turned into extremely informed and hard-to-please, networked thinkers.



According to Allbusiness.com happy customers tell, on average, 9 people about their experience while dissatisfied ones vent their frustrations to 22 persons. Just one airline passenger complaint letter republished by the 'Telegraph' resulted in more than 1,100 retweets and over 3,000 backlinks.

Today's organizations are facing a very public cycle of buying and influencing which can turn into a retailer's worst nightmare if he is not careful.

Loyalty, so last season

Forget about brand loyalty. Loyalty is no longer relevant. You need to keep consumers interested, surprised and satisfied or they'll go elsewhere, in the blink of an eye. And if they stay, they expect you to reward them, in exactly the way that they want.

Ask not what the customer can do for you; ask what you can do for him. Customer centricity is not just a buzzword. It's how your organization will survive.

The customer as leader

It used to be companies that led the market with their innovations and deciding what was best for the consumers. Now the customer is in the driver's seat of the most successful companies. Even more so in emerging markets, where their expectation rates are even higher and they are even more likely to switch brands.

A 2011 survey of the 'Economist Intelligence Unit' revealed that - according to 30 % of business leaders across financial services, education, public sector, IT and manufacturing industries - by 2020 customers will be the main source of new product or service ideas, with online communities in second and R&D in third place. Yes, by then we will be a long way from Henry Ford's "If I had asked people what they wanted, they would have said faster horses" -approach.

From monologue to dialogue

With consumers of today being such volatile and vocal influencers and leaders, monologue is no longer an option. Smart marketers engage in dialogue with their target groups, if possible in a one-to-one relationship.

"When you focus on the consumer, the consumer responds."

Alexander Wang

But there are not only challenges to deal with here. Difficult as they may be to catch and please, consumers that talk about products and services on social networks, leave traces everywhere. And unlike word of mouth and casual conversations, their 'breadcrumbs' can be found, analyzed and measured.



BIG DATA TECHNOLOGY
IS REMOLDING CONSUMER-
VENDOR RELATIONSHIPS
INTO SOMETHING
PERSONAL, DYNAMIC
AND DIALECTIC

03

Back to the future: one-on-one contact is back with a vengeance

"Sometimes you want to go where everybody knows your name", so the song goes.

And it used to be like that when you went to your neighborhood shop: the manager knew who you were, what you wanted and what you might like.

ConsYOUmerization!

Today's consumers want that back. They need to be treated as unique. They want a far-reaching personal experience. Calculating averages will no longer do. In today's seller's market it's 'Customize or Bust!'. We are back to virtual one-to-one marketing and hyper segmentation.

Dialogue and personalization are what consumers want. Big Data is how you can achieve that.

Contradictory as it might seem, the digital age and powerful Big Data technology are remolding consumer-vendor relationships into something personal, dynamic and dialectic.

With all the data you need to understand your customer at hand, you only have to unlock their intelligence. Today it is possible to make a full digital footprint analysis of purchasers by auditing and merging internal and external data feeds, turning those into real insight and making real-time decisions based on individual profiles. Just think of Amazon which generates about 20% more revenue since it started recommending products to its customers.

**"The first step in exceeding your customer's expectations is
to know those expectations."**

Roy H. Williams

You need kNOWledge about your customers

Tuning is not just fueled by correct information; it needs to be driven by speed. Your customer will have changed already if you took your time to react. There is no time to react. Consumers are all about the 'Now!'.

If they receive your recommendations or your discounts at the right time, they will be happy. If the tips come too late, they will just annoy them. In a 2012 survey by the Radicati Group, on average, 19% of emails received were considered spam by the recipient. So you better hope they were not talking about you.

There is a fine line between welcome advice and spam, and it is defined by veracity and velocity.



Pretty databases filled with lazy data and lethargic intelligence that takes hours, days and even weeks to be delivered will no longer do. When markets become networks of intelligence you don't have that luxury anymore.

You need to keep moving faster. You need systems that can - NOW - deliver the intelligence you need for closing the gap between your promises or intentions and what the consumer wants.

Making new customers AND keeping them

McKinsey claims that 55% of the current marketing budget is spent on new customer acquisition and only 12% on customer retention. However, according to 'Leading on the Edge of Chaos' (Emmet Murphy & Mark Murphy), you have only a 5-20% chance of selling to a prospect. The probability of selling to an existing customer is between 60 and 70%. So money spent on preventing churn, is better spent than that which is invested in acquisition.

Smart companies are increasingly betting their money on cherishing their existing customers, while the smartest ones find out which customers deliver the most revenue and focus on those, while ignoring the ones that are too expensive to keep.

Big Data can warn you which customers are on the verge of switching to the competition.

How? Among other things, Big Data tools tell you when customers are making negative comments about you online, when they have partially switched to the competition or when their shopping basket has changed in content or size. Big Data solutions ring the alarm **before** the damage has been done and give you the opportunity to prevent.

Reducing your customer defection rate by 5% can increase your profitability by 25 to 125%. A 2% increase in customer retention has the same effect as decreasing costs by 10%.

The availability of Big Data is the best and most convincing argument for empowering customer centricity rather than relying on a one-sided acquisition strategy.

Big Data can help you thank customers for their loyalty.

Consumers that abide with you expect to be rewarded for that, or they will move to pastures new. Big Data fuels the world's most successful customer loyalty programs. It can help create member micro-segments based on loyalty data and identify which marketing channels, products and services work best for which segments or evaluate how effective a campaign is or if and how it needs to be fine-tuned.

And a 'smart' loyalty program can have a far-reaching effect. For example, it helped a specialized US grocery store increase its sales by 58 % in less than 4 years, while its gross margin grew by 3%. A European mobile phone brand succeeded in reducing customer churn by 30% that way, while a European telecom operator saw a 14% increase in revenue per customer for those following the program.



05

So where does this BIG DATA hide?



To fully understand the Big Data phenomenon, you need to picture the three Vs that drive its value.

There's '**Volume**', of course, as Big Data comes in staggering numbers:

- 2.2 million terabytes of new data created every day
- By 2013 approximately 507 billion e-mail messages will be sent per day (Radicati Group)
- In December 2010 there were more than 267 billion websites (Netcraft)
- Twitter: more than 230 million tweets per day
- Facebook: 100 terabytes of data uploaded daily
- YouTube: 3 billion visitors per day & 48 hours of video is uploaded per minute
- Walmart processes a million customer transactions every hour and incorporates it into its 2.5 petabytes of data. That is 167 times the information contained in all the books in the US Library of Congress!

Next up is '**Velocity**'. Because Big Data is fast. It is being generated at an incredible speed and (should be) collected and turned into intelligence as fast.

Last but not least comes **'Variety'**. Because Big Data is very complex and comes in all types: from neatly structured into the column- and row-based databases of your company, to a wildly soaring chaos of unstructured, external information. Powerful as they each are, there is no telling what they can do when they interconnect.

Internal (semi)structured data

Your company is sitting on top of a goldmine of information, coming from all kinds of different sources: point of sales, online transactions, logistics data, sourcing information, market research CRM solutions, satisfaction surveys, customer service, pre-sales histories, e-mails, call data records loyalty cards, call and contact center interactions, salesforce automation data, traditional advertising response, credit card purchases, web clickstreams and many more...

One of the biggest issues is storing the data. A lot of companies do not have the necessary technological power to keep all current and historical material. So they sift and only keep what is vital for them now, not always realizing that something that might not be useful now, can prove to be a real blessing later.

Break the silo-nce and start sharing!

Another challenge is that most of these data residing within companies is unconnected. A lot of departments and their respective leaders often seem to have missed the life lesson on sharing and are storing 'their' information in completely closed off and therefore – pardon my French – stupid (I mean that quite literally) siloes.

Possessing information that you cannot interconnect and compare is the true death of dynamism and intelligence and will cost you a lot in lost revenue.

External unstructured data

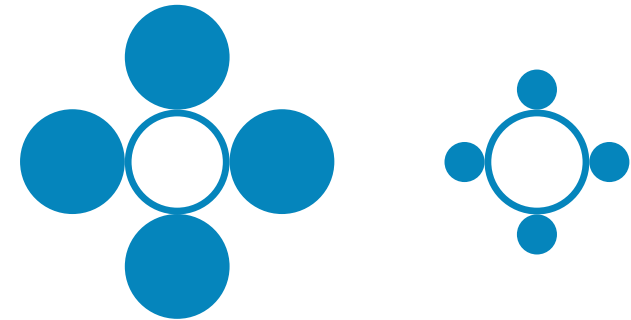
You cannot understand and engage consumers by looking in the mirror – by which I mean (often very slowly) analyzing data that reflects your own company – but have to look beyond yourself, through the windows of your organization, at the even vaster sea of data that is available out there.

Some companies are scared and paralyzed by the sheer number and size of Big Data. They need to realize that Big Data is not the enemy; it is their ally against customer churn and their assistant for driving revenue.

There is no getting around it: unstructured data constitutes a mountain of input: emanating from chat records, text messages, website logs, Twitter, Facebook, LinkedIn, Google+, blogs, the sports season, medical records, smartphone analytics, geotracking data, news articles, industrial sensors, weather satellites, economic data sets, location data, voter registrations, photographs, movies,... I could go on and on for pages here, but I believe you get my drift.

Data is expected to grow over 800% in the next 5 years. No less than 80% of it will be unstructured. And you can put them to work to better understand your target group.

Context is everything



Always put your information in the right context. Finding out how your organization performs against its own benchmarks is good, but knowing how its performance compares to the 'real' world is even more crucial. Mix, match and compare data from within and from outside.

A report might show that 50 cents' profit is made on every item that your company manufactures. It could also reveal that this has increased year on year, and that volumes have grown by 5%. You would then probably assume that everything is fine and that profitability will be sustained in the coming years.

However. If analysis of external data showed that your competitors made 60 cents' profit on the same items, that their volumes were growing by 20% making them the market leader, and they were planning to drop their prices by 70%, then the outlook wouldn't be so rosy.

Big Data gives you the context you need to make correct decisions.

Big Data, Big Brother?

Before I go any further, we need a moment of reflection on the issue of privacy.

I am not so much talking about compliance with local and federal data regulations, as about striking the right balance between privacy and utility when using big consumer data.

Disclosing personal information is part of modern life. Most consumers have come to terms with that, but that does not mean they are happy about it.

Privacy versus enhanced consumer experience

The key is to use their on- and offline tracks for 'Good'. By enhancing the customer experience with better advice and less impersonal spam and junk mail. Or through special offers and loyalty bonuses. It is a clean-cut give and take situation, really.

But do not overstep any boundaries...

Why? Consumers perceive it as intensely creepy when you address them in a manner that is too personal.

An example is that of a well-known American retailer that sent coupons that were timed to the very specific stages of their customer's pregnancy. This was calculated on the basis of behavior analysis of women that had signed up for their registries. It revealed that they were buying larger quantities of unscented lotion at the beginning of their second semester, loading up on calcium and magnesium supplements in the first 20 weeks, buying hand sanitizers just before the delivery date,...

Because their customers felt uncomfortable by being approached so directly and correctly, the leading retailer learned to be more discreet and less ultra-targeted. They sent more general information along with the focused ads and coupons and everyone was happy again.

Although this is a perfect example of the endless possibilities of Big Data when it comes to targeting, I also want to use it to stimulate some reflection about the ethical boundaries of leveraging Big Data.

So when you decide to launch your organization in big analytics, first establish some governance policies that cover privacy, IT security and other regulatory issues.



CONSUMERS ALLOW
THE USE OF THEIR PERSONAL
DATA IF IT ENHANCES THEIR
CUSTOMER EXPERIENCE.

CMOs and CIOs as BFFs

In a recent past, most CMOs used to be veterans with impressive track records, longer than 'Lord of the Rings' (back in the days when it still used to be a book). They based their strategy on experience and gut feeling. Today those in charge of marketing are often a lot younger and more technologically savvy. They realize that corporate decisions are too important to be based purely on instinct. Marketing is not just an art, it is a science, too.

Don't play dice with your company. A 2010 study from MIT revealed that the adoption of 'data-driven decision making' can result in a 5 to 6 % rise in productivity.

Today 'data-driven' actually means Big Data-driven. CMOs cannot afford to miss the boat just because they cannot comprehend or fear the immense mass of information that is at hand or the technology that is needed to drive it. There is too much at stake for their organization. They need to team up with the CIO to make Big Data work for their company.

Gartner predicts that, by 2017, CMOs will have greater control over the IT budget than the CIO.

So CMOs and CIOs have to work together to create a better customer experience and put the business in a position to succeed. Pretty straightforward as this might seem, a recent survey by 'Forrester and Forbes Insights' revealed that the majority of organizations are not ready to merge their marketing and IT skills. There is still a long way to go when it comes to IT marketing alignment.

The solution for the Big Data conundrum comes in the form of the currently very 'hot' data scientist, who is the best possible negotiator between the CMO and the CIO as he has the ability to speak both technology and business language. Data scientists offer the rare combination of in-depth expertise in statistics and machine learning and the business skills to know which data are relevant and which insights can drive revenue.

Currently, however, data scientists are as hard to find as Cerulean Warblers (yes, those are hard to find, just ask Jonathan Franzen). McKinsey & Company estimates that the "United States faces a shortage of 140,000 to 190,000 people with analytical expertise and 1.5 million managers and analysts with the skills to understand and make decisions based on the analysis of Big Data." So start looking already.



How can IT help Marketing master Big Data?

Clearly, there are five domains for which technology can provide the right answers for the Big Data challenge and create order out of seeming chaos:

1. Storage & processing power: making room for the Big Data
2. Data Management: using the right Big Data
3. Linking the data: making sure that all your centers of Big Data are able to communicate with one another
4. Analytics: Filtering intelligence from the Big Data
5. Visualization: making sure that non-technical business users have easy access to the insights

Making Room for Big Data

CMOs are all about improving customer satisfaction, boosting revenue and adding strategic value to the business. Their priority list is not likely to acknowledge storing, managing and analyzing massive amounts of data. But it should.

Organizations today need Big Data to understand and please the consumer. If you cannot store the massive amount of Big Data, you obviously cannot use it. Or even more correct: if you cannot store Big Data without slowing down all of your IT and business processes, you cannot use it.

So, first things first: you need a robust and agile Big Data platform with massive processing power. And it is vital that it is purpose-built to handle all the applications that will turn the raw data into understandable and actionable consumer and business information.

Using the right Big Data

Those in charge of the technological side of Big Data – be it the CIO or the data scientists – should ask some important questions before they start using the data for business value:

- Which departments and employees are creating data?
- How trustworthy are these internal sources of data?

- How can they be filtered by relevance?
- Are we talking living content or historical data?
- What kinds of external data are at hand and which ones are relevant?
- Can they be acquired freely or should we earmark a budget for that?

Data Quality Best Practices boosts revenue by 66%.

Customer analytic processes are only as valuable as the quality of the underlying data. So a well-funded data management strategy is key. This means getting rid of fragmentation, duplication or inconsistency. Be sure that the data you have is complete and correct. Be certain that the external data sources you use are not out of date and relevant to the analytics that you want to perform.

There is still a lot of work to perform when we consider that:

- Fewer than 1 in 5 managers believe they have all the information they need to perform their jobs effectively and fewer than 1 in 10 believe they have realized the full return from their technology investment.
- The average management report is 30 to 40 pages long, contains 12-15,000 data points, yet managers use less than 5% of that information.

Linking the Big Data

There are two challenges when it comes to Big Data and linking: one internal and the other external.

Most organizations have a multitude of databases that are disparate and unconnected in silos. Making those modules communicate will allow them to answer many of the growing challenges that companies face today, such as what products are selling, what do my consumers look like, what is the marketplace doing or how do I compare to the competition?

The biggest challenge, however, will be to merge the internal data with the colossal amount of unstructured external information from open source clusters. And it is exactly this integration of Big Data with traditional data that will allow you to gain a 360-degree view of your customers.

Unlocking the value of Big Data

Storing and managing the massive amounts of Big Data is, of course, just a small part of the solution. Obviously, if you want to make the Big Data work for you in terms of real-time marketing, actionable information and a real customer insight, you need powerful, next-generation analytics to unlock its value.



Look forward, not back

Analyzing things that are in the past will just no longer do. What you need are predictive analytics tools, helping you to foresee future actions from customers. Is he on the verge of leaving you? If so, how can you lure him back in? Or what can you recommend to a new customer browsing on your e-shop that will really appeal to him? These are the questions you need an answer to.

Next-generation intelligence tools are scalable and can handle and make sense of the enormous amount of data at hand. They can accommodate analysis of both structured and unstructured data from open source environments like Hadoop. Traditional enterprise data warehouse and business intelligence tools cannot offer you that. They cannot offer an integrated view of complex customer behavioral data.

In-memory computing: making Big Data faster

Moving these large volumes of data around to large data warehouses so that they can communicate and be compared is a time-consuming and expensive process. This is where a key feature of high-performance analytics, in-memory computing, comes in really handy.

In-memory computing enables rapid analysis of large volumes of customer behavior data and real-time decision making by allowing you to collect, manage, analyze, provide and finally act on data in the moment.

Current analytic technologies do not put the source data – such as the types collected on Facebook and LinkedIn – in a straitjacket, prior to storage, like traditional BI and data warehousing systems do. This lets the discovery analytics processes run against raw data and allows the user to tap into even larger volumes of data and run algorithms and other analytic processes without going through the I/O bottleneck to access data stored on disk.

In-memory computing is a great combination of real-time and low cost, transactions and analytics as well as open and native.

Gone are the days of slow-process analytics that were relying on weeks or even months-old transactional data, that were relatively poor in volume and therefore in content. Say hello to speed and agility.

Insights that once took days or weeks to develop can now be produced in hours, minutes or even seconds.

The 'rear view mirror' approach has made way for predictive information that can drive real-time decisions and actions.

Delivering Big Data insights to the business users

Big Data insights need to be delivered to those who can turn them into revenue-driven actions. Easy-to-understand dashboards and data visualizations are a big part of that. Keep that in mind when looking for your Big Data tool kits.

Insights that can only be interpreted by the IT department and are too complex for business users are a total waste of time and money.

Business users also need self-service capabilities for working with data so they can use it for decisions and predictions. They want accurate information, but velocity is as important so they cannot afford to wait until the IT department finds the time to perform and interpret the analytics. They need access themselves, at all times and as fast as possible.

The question "How can we make sure that the information reaches the right people, ... and fast?" should be on the minds of IT at all times.

“THERE IS ONLY ONE BOSS.
THE CUSTOMER. AND HE CAN FIRE
EVERYBODY IN THE COMPANY
FROM THE CHAIRMAN ON DOWN,
SIMPLY BY SPENDING HIS MONEY
SOMEWHERE ELSE.”

SAM WALTON



So, concretely, what can Big Data analysis do for you?

Big Data tools are key for customer centricity and a competitive edge. Big Data will enable you to know your customers so well that you can give them exactly what they want: personalization, dialogue and tempting rewards.

The possibilities of using Big Data for analyzing customer behavior are countless:

- Customer micro-segmentation
- Finding the influencers
- Campaign performance optimization
- Call center monitoring and reporting
- Churn prediction
- Detecting and measuring lost sales
- Loyalty program analytics & targeting
- Determining customer lifetime value
- Increasing portfolio penetration per customer
- Targeting cross- and up-selling opportunities
- Location-based marketing
- In-store behavior analysis
- Sentiment analysis
- Recommendation engines

But here are some of the most exciting ones:

Campaign performance optimization

Big Data analytics can allow you to monitor and determine the effectiveness of marketing campaigns, determine their ROI and adjust them for better performance. This can significantly reduce wasteful spending and increase gains relative to costs. Something which is on every marketer's mind.

The digital media company Havas Digital uses Big Data to provide attribution for its clients' marketing efforts and to understand what was really driving the results that its clients expected from marketing. For instance, someone was exposed to a video and then searched for it on Google. Classically, in digital marketing, the last exposure will be considered the most important while, in this case, it obviously is not the case. So Havas Digital offers sophisticated methodologies to be able to spread credit for the sales across those exposures. For one client in the travel sector in the UK, they were able to improve the ROI by 300% with 27% more sales.

Call center monitoring & reporting

“Courteous treatment will make a customer a walking advertisement.”

James Cash Penney

Companies that work with call centers can activate Big Data analytics to monitor and report the calls with fully automated solutions. These convert voice to text and allow calls to be ranked in different areas such as operator friendliness or cross-selling and up-selling opportunities. Some even offer the additional benefit of being able to look at e-mail correspondence and online chat.

Solutions like these offer obvious implications for performance management, quality monitoring, risk and compliance optimization, sales effectiveness and service satisfaction.

Churn prediction

Big Data technologies enable you to analyze behavior patterns that indicate which customers are most likely to leave for a competing vendor or service and to find out if they are worth the money you would invest in keeping them. Action can then be taken to save the most profitable of these customers.

For instance, you could use speech analytics to monitor the conversations of customers who were terminating their accounts and identify other at-risk customers by comparing their discourse with those tell-tale keywords and phrases. An online case reported that a company thus saved some 600 accounts and more than \$12 million in revenue in the first year of the program.

Mobile companies might learn through Big Data if a subscriber changes their SIM, swaps between multiple devices or even receive a warning if a customer ventures on the website of their competition through mobile clickstream analysis.

A European mobile operator was able to identify 'promotional churners' by tracking a sudden surge of activity on a competitor's website. The operator was able to immediately launch a counter promotion to successfully prevent churn.

Detecting and measuring lost sales

As important as keeping the most profitable customers and finding new ones, is detecting and evaluating the lost sales: if you are able to understand why an action did not result in an actual sale, you can adapt your strategy and up your sales.

Big Data can reveal that and let you know if you need to adjust your product selection, pricing or the way it is displayed in your shops.

In-store behavior analysis

Big Data insights bridge the online-offline dichotomy. They provide retailers with the possibility to mine their databases in real time when a customer is browsing their store and extract (from past purchases, clickstream behavior or activities on the company's Facebook page) how he should best be approached or what he is willing to pay.

Some of the leading-edge retailers apply Big Data technologies to analyze video streams from their in-store camera systems and create mappings of customer foot traffic throughout the stores. This Big Data stream is then merged with sales data which allows retailers to develop new applications that help optimize product placement in the store.

Sentiment analysis

Using real-time mapping, web data extraction 'brand listening' techniques and sophisticated text mining tools can allow you to follow conversations on social media sites, filter them for relevance and process the content using natural language algorithms. This sentiment analysis enables you to determine how consumers really feel about your company, brand or services, from a macro-level down to individual user sentiment.

These insights can even be integrated with retail point of sales (POS) data from tills to better understand how emotions about the brand translate into actual sales or, when matched to news stories and weather conditions, to enhance the communication with your clients. They enable you to target people who already like your brand individually in-store or with relevant digital marketing content.

As we speak, Big Data technology companies are developing increasingly sophisticated approaches to tap into the power of the social media. Not only can you eavesdrop on what people really think about your company, but there are tools that allow you to re-feed this intelligence to these networks.

Recommendations

This is perhaps one of the coolest goodies to result from the marriage between Big Data analytics and customer behavior.

Recommendations are all about customer micro-segmentation and improving their experience. The best-known examples are, of course, Amazon's use of real-time, item-based, collaborative

filtering (IBCF) to fuel its “Frequently bought together” and “Customers who bought this item also bought” features and LinkedIn suggesting “People you may know” or “Companies you may want to follow”.

Amazon generates about 20% more revenue via its recommendations.

Making effective recommendations is a real art, and is not so much improved by using smarter algorithms as it is by feeding the engine many, many, ... many data sources: purchase history, product ratings, products a visitor looked at but didn't buy, products their friends bought, responses to previous recommendations, products bought by people in a similar geographic region, products purchased by people with similar tastes, etc.

You could even refine the suggestions up to the type of place and time of day the searches and purchases are done. Or your Web shop might, for instance, suggest ‘Interesting products for today’, like a warm winter coat because it's snowing outside or binoculars for a Facebook friend whose birthday it is and who very recently joined several bird-watching organizations.

You need Big Data to feed the recommendation engine, because when suggestions are not correctly tailored, they will be considered as spam. Things like “Time to have your car checked?” or “Looks like you will need a new printer cartridge soon!” walk this fine line between blessing and bother. When they are spot on, however, they can prove to be a gold mine for the recommender.

Walmart is another company that understood the revenue-driving potential of suggestions and even took it up a notch with their gift recommendation Facebook application ‘ShopyCat’. Not only does it use the Facebook profile of its subscribers to recommend suitable products based on the interests and hobbies of friends, but it will also offer links to the competition if they do not stock a suggested item in their own stores. Knowing how critical consumers have become, their partially neutral approach might very well prove to be the future of marketing.

Finding the influencers

You can mine Big Data from social networks to uncover the ‘halo effect’ of influencing consumers on social media. These are not necessarily your most important customers – which can easily be discovered by analyzing internal data and checking how much they buy or spend – but they are equally essential to a company as they are the ones that tend to influence the buying behavior of others the most.

Product and service innovation & optimization

A 2011 survey by the ‘Economist Intelligence Unit’ predicted that customers will be the main source



of new product or service ideas by 2020. If they are right, organizations that swear by their R&D departments for innovation will need a serious change of mindset.

This is especially important in emerging markets, where customers are known to be particularly engaged in product & service innovation – at double the rate of consumers in mature markets even.

Big Data solutions can help comb through enormous volumes of text-based research and other historical data to assist in the development of new products. They also scan the Web and social media to understand how the market develops or customer needs evolve. This will allow you to adapt the design of existing products or create new ones accordingly.

IS BIG DATA THE DEATH OF PROFIT?

As with any other business opportunity, not everyone is pleased with the Big Data phenomenon. Opponents reject it because some market leaders actively scan their competition online to ensure the lowest advertised price. Such tactics can induce a downward push on all prices in the market and there is a risk, then, that companies will see their margins squeezed as they try to compete.

New technologies that were introduced together with Big Data have the same effect by giving shoppers powerful pricing, promotional and product information, frequently in real time. Applications like RedLaser, for instance, let shoppers scan the bar code of an item in-store with their smartphones and obtain immediate price and product comparisons.

Let's face it, there is no sense in fighting how the market evolves. It is very much an 'adapt or die' situation. Just keep in mind that Big Data offers far more advantages than it does drawbacks.





Clearing the way for Big Data?

Realizing the immense potential of Big Data technology for understanding customers and driving your sales is already a big step.

The next one is preparing your company – and yourself – for a matching strategy.

Embracing change is always hard. Especially when the insights that it will bring might uncover that your marketing tactics are not as efficient as you expected or that your company suffers from a bad image. Just realize that the visions that will arise from Big Data are actionable. You will be able to turn your activities around immediately.

Besides knowledge, Big Data also comes with results.

Next up – like with any IT-driven project – is to convince your organization about the value that investing in Big Data technology will create. We are still in an age where many people view IT as a matter for the back office and a cost center rather than a dynamo for business growth, so this might prove to be challenging.

Just don't forget that Big Data tools are the future of business insights. If your company does not change its mindset and is not ready for the speed multiplication that the competition will take, then dark times await.

Leading companies already understand that Big Data initiatives will be a crucial source of competitive edge and already have business departments working in close collaboration with their IT colleagues.

According to Deloitte, by the end of 2012 more than 90 % of the Fortune 500 will likely have at least some Big Data initiatives under way. Make sure you don't lag behind!

**“There is nothing so terrible
as activity without insight.”**

Johann Wolfgang von Goethe



'Analyzing Customer Behavior'

is the third in a series of thought-provoking booklets that Across Technology will be publishing this year, sponsored by EMC Greenplum. These booklets are elements in the Data Science Series, which is also a series of events, and a website:

www.datascienceseries.com



Don't miss these booklets and events.

Go to www.datascienceseries.com,

register for the newsletter and stay informed.

SPONSORED BY



GREENPLUM

EMC²