

Project Report on
“BIG DATA AND IT’S FUTURE IN
MARKETING AND SALES”

Submitted by:
Snigdha Singh
DTU/2K12/62

Under the guidance of
Dr. Rajan Yadav
Associate Professor DSM



Delhi School of Management
Delhi Technological University
Bawana road Delhi 110042
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CERTIFICATE

I Snigdha Singh, student of MBA 2012-14 of Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-42 declare that project report on “Big Data And Its Future In Marketing And Sales” submitted in partial fulfillment of the requirement for the award of the Degree of Masters of Business Administration is the original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge.

The report is not being submitted to any other University for award of any other Degree, Diploma and Fellowship.

Name of the Student

Place:

Date:

CERTIFICATE FROM THE INSTITUTE

This is to certify that the project titled “Big Data and Its Future In Marketing And Sales” is a bonafide work carried out by Snigdha Singh of MBA 2012-14 and submitted to Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-42 in partial fulfilment of the requirement for the award of the Degree of Masters of Business Administration.

Signature of Guide

Signature of Head (DSM)

Place:

Date:

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Regards,
Snigdha Singh
Delhi School of Management, Delhi Technological University

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CHAPTER 1: OBJECTIVE OF STUDY

- Analyzing big data as providing the ability to better understand and predict customer behaviors, and by doing so, improve marketing, market research, sales and customer service.

CHAPTER 2: ABOUT BIG DATA

- Big data is a popular term used to describe the exponential growth and availability of data, both structured and unstructured. And big data may be as important to business – and society – as the Internet has become.
- Why? More data may lead to more accurate analyses. More accurate analyses may lead to more confident decision making. And better decisions can mean greater operational efficiencies, cost reductions and reduced risk.
- The amount of data in our world has been exploding, and analyzing large data sets—so-called big data—will become a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus, according to research by MGI and McKinsey's Business Technology Office. Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things will fuel exponential growth in data for the foreseeable future.
- MGI studied big data in five domains—healthcare in the United States, the public sector in Europe, retail in the United States, and manufacturing and personal-location data globally. Big data can generate value in each. For example, a retailer using big data to the full could increase its operating margin by more than 60 percent. Harnessing big data in the public sector has enormous potential, too. If US healthcare were to use big data creatively and effectively to drive efficiency and quality, the sector could create more than \$300 billion in value every year. Two-thirds of that would be in the form of reducing US healthcare expenditure by about 8 percent. In the developed economies of Europe, government administrators could save more than €100 billion (\$149 billion) in operational efficiency improvements alone by using big data, not including using big data to reduce fraud and errors and boost the collection of tax revenues. And users of services enabled by personal-location data could capture \$600 billion in consumer surplus. The research offers seven key insights.

1. Data have swept into every industry and business function and are now an important factor of production, alongside labor and capital. We estimate that, by 2009, nearly all sectors in the US economy had at least an average of 200 terabytes of stored data (twice the size of US retailer Wal-Mart's data warehouse in 1999) per company with more than 1,000 employees.

2. There are five broad ways in which using big data can create value. First, big data can unlock significant value by making information transparent and usable at much higher frequency. Second, as organizations create and store more transactional data in digital form, they can collect more accurate and detailed performance information on everything from product inventories to sick days, and therefore expose variability and boost performance. Leading companies are using data collection and analysis to conduct controlled experiments to make better management decisions; others are using data for basic low-frequency forecasting to high-frequency nowcasting to adjust their business levers just in time. Third, big data allows ever-narrower segmentation of customers and therefore much more precisely tailored products or services. Fourth, sophisticated analytics can substantially improve decision-making. Finally, big data can be used to improve the development of the next generation of products and services. For instance, manufacturers are using data obtained from sensors embedded in products to create innovative after-sales service offerings such as proactive maintenance (preventive measures that take place before a failure occurs or is even noticed).

3. The use of big data will become a key basis of competition and growth for individual firms. From the standpoint of competitiveness and the potential capture of value, all companies need to take big data seriously. In most industries, established competitors and new entrants alike will leverage data-driven strategies to innovate, compete, and capture value from deep and up-to-real-time information. Indeed, we found early examples of such use of data in every sector we examined.

4. The use of big data will underpin new waves of productivity growth and consumer surplus. For example, we estimate that a retailer using big data to the

full has the potential to increase its operating margin by more than 60 percent. Big data offers considerable benefits to consumers as well as to companies and organizations. For instance, services enabled by personal-location data can allow consumers to capture \$600 billion in economic surplus.

5. While the use of big data will matter across sectors, some sectors are set for greater gains. We compared the historical productivity of sectors in the United States with the potential of these sectors to capture value from big data (using an index that combines several quantitative metrics), and found that the opportunities and challenges vary from sector to sector. The computer and electronic products and information sectors, as well as finance and insurance, and government are poised to gain substantially from the use of big data.

6. There will be a shortage of talent necessary for organizations to take advantage of big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.

7. Several issues will have to be addressed to capture the full potential of big data. Policies related to privacy, security, intellectual property, and even liability will need to be addressed in a big data world. Organizations need not only to put the right talent and technology in place but also structure workflows and incentives to optimize the use of big data. Access to data is critical—companies will increasingly need to integrate information from multiple data sources, often from third parties, and the incentives have to be in place to enable this.

CHAPTER 3: LITERATURE REVIEW

- 1944 Fremont Rider, Wesleyan University Librarian, publishes *The Scholar and the Future of the Research Library*. He estimates that American university libraries were doubling in size every sixteen years
- 1961 Derek Price publishes *Science Since Babylon*, in which he concludes that the number of new journals has grown exponentially rather than linearly, doubling every fifteen years and increasing by a factor of ten during every half-century. Price calls this the “law of exponential increase”.
- 1975 The Ministry of Posts and Telecommunications in Japan starts conducting the Information Flow Census, tracking the volume of information circulating in Japan. The census introduces “amount of words” as the unifying unit of measurement across all media.
- July 1986 Hal B. Becker publishes “Can users really absorb data at today’s rates? Tomorrow’s?” in *Data Communications*. Becker estimates that “the recoding density achieved by Gutenberg was approximately 500 symbols (characters) per cubic inch—500 times the density of [4,000 B.C. Sumerian] clay tablets.
- October 1997 Michael Cox and David Ellsworth publish “Application-controlled demand paging for out-of-core visualization”. They start the article with “Visualization provides an interesting challenge for computer systems: data sets are generally quite large, taxing the capacities of main memory, local disk, and even remote disk. We call this the problem of *big data*. When data sets do not fit in main memory (*in core*). It is the first article in the ACM digital library to use the term “big data.”
- October 2000 Peter Lyman and Hal R. Varian at UC Berkeley publish “How Much Information?” It is the first comprehensive study to quantify, in computer storage terms, the total amount of new and original information (not counting copies) created in the world annually and stored in four physical media: paper, film, optical (CDs and DVDs), and magnetic.

- May 2012 Danah Boyd and Kate Crawford publish “Critical Questions for Big Data” in *Information, Communications, and Society*. They define big data as “a cultural, technological, and scholarly phenomenon that rests on the interplay of:
 - (1) Technology: maximizing computation power and algorithmic accuracy to gather, analyze, link, and compare large data sets.
 - (2) Analysis: drawing on large data sets to identify patterns in order to make economic, social, technical, and legal claims.
 - (3) Mythology: the widespread belief that large data sets offer a higher form of intelligence.

CHAPTER 4: IMPLEMENTATIONS OF BIG DATA

4.1 Big Data, Bigger Marketing

Big data refers to the ever-increasing volume, velocity, variety, variability and complexity of information. For marketing organizations, big data is the fundamental consequence of the new marketing landscape, born from the digital world we now live in.

The term "big data" doesn't just refer to the data itself; it also refers to the challenges, capabilities and competencies associated with storing and analyzing such huge data sets to support a level of decision making that is more accurate and timely than anything previously attempted – big-data-driven decision making.

Many marketers may feel like data has always been big – and in some ways, it has. But think about the customer data businesses collected 20 years ago – point of sale transaction data, responses to direct mail campaigns, coupon redemption, etc. Then think about the customer data collected today – online purchase data, click-through rates, browsing behavior, social media interactions, mobile device usage, geo location data, etc. Comparatively speaking, there's no comparison.

4.2 Why big data matters to marketing

Having big data doesn't automatically lead to better marketing – but the potential is there. Think of big data as your secret ingredient, your raw material, your essential element. It's not the data itself that's so important. Rather, it's the insights derived from big data, the decisions you make and the actions you take that make all the difference.

By combining big data with an integrated marketing management strategy, marketing organizations can make a substantial impact in these key areas:

- **Customer engagement.** Big data can deliver insight into not just who your customers are, **but where they are, what they want, how they want** to be contacted and when.
- **Customer retention and loyalty.** Big data can help you discover what influences customer loyalty and what keeps them coming back again and again.
- **Marketing optimization/performance.** With big data, you can determine the optimal marketing spend across multiple channels, as well as continuously optimize marketing programs through testing, measurement and analysis.

CHAPTER 5: RESEARCH METHODOLOGY

Primary: - Qualitative

Secondary

RESEARCH TOOLS

Interviews

Secondary Research

SAMPLE SIZE AND SAMPLING METHOD

Non Probability Sampling: - Convenience

Sample Size: - 25 respondents

Mid- and executive-level marketers

Range of industries: Healthcare, Retail, I.T, Bank & Financial institutions.

CHAPTER 6: DATA ANALYSIS

6.1 Three types of big data that are a big deal for marketing

Customer: The big data category most familiar to marketing may include behavioral, attitudinal and transactional metrics from such sources as marketing campaigns, points of sale, websites, customer surveys, social media, online communities and loyalty programs.

Operational: This big data category typically includes objective metrics that measure the quality of marketing processes relating to marketing operations, resource allocation, asset management, budgetary controls, etc.

Financial: Typically housed in an organization's financial systems, this big data category may include sales, revenue, profits and other objective data types that measure the financial health of the organization.

6.2 Challenges

The challenges related to the effective use of big data can be especially daunting for marketing. That's because most analytic systems are not aligned to the marketing organization's data, processes and decisions. For marketing, three of the biggest challenges are:

- **Knowing what data to gather.** Data, data everywhere. You have enormous volumes of customer, operational and financial data to contend with. But more is not necessarily better – it has to be the right data.
- **Knowing which analytical tools to use.** As the volume of big data grows, the time available for making decisions and acting on them is shrinking. Analytical tools can help you aggregate and analyze data, as well as allocate relevant insights and decisions appropriately throughout the organization – but which ones?

- **Knowing how to go from data to insight to impact.** Once you have the data, how do you turn it into insight? And how do you use that insight to make a positive impact on your marketing programs?

6.3 Three steps for going from big data to better marketing

Big data is a big deal in marketing. But there are a few things every marketer should keep in mind to help ensure that big data will lead to big success:

1. **Use big data to dig for deeper insight.** Big data affords you the opportunity to dig deeper and deeper into the data, peeling back layers to reveal richer insights. The insights you gain from your initial analysis can be explored further, with richer, deeper insights emerging each time. This level of insight can help you develop specific strategies and actions to drive growth.
2. **Get insights from big data to those who can use it.** There's no debating it – CMOs need the meaningful insights that big data can provide; but so do front-line store managers, and call center phone staff, and sales associates, and so on and so on. What good is insight if it stays within the confines of the board room? Get it into the hands of those who can act on it.
3. **Don't try to save the world – at least not at first.** Taking on big data can at times seem overwhelming, so start out by focusing on a few key objectives. What outcomes would you like to improve? Once you decide that, you can identify what data you would need to support the related analysis. When you've completed that exercise, move on to your next objective.

6.4 How Marketing Can Impact Revenue from Big Data and Social Selling

Marketing has been under-appreciated for years, but times are changing. In today's business climate, marketing holds the keys to success or failure for sales.

The fact is, buyers no longer rely on sales reps as the keepers of information. Instead, buyers do their own research and draw their own conclusions.

Over the past few years, buyers have become increasingly well informed. They rely much more on the wealth of information available to them on the Internet and through their colleagues and other users. As a result, they don't rely on sales reps as heavily.

According to the Sales 2.0 Conference, "70 percent of a customer's buying decision is now made based on information he or she finds online, well before a salesperson has a chance to get involved."

Because of this, many companies are discovering their sales forces are less effective than in the past. Sales reps find their influence with buyers diminishing. They find it more difficult to guide buyers and help them make decisions. Buyers don't feel like they need a sales rep's advice. They often don't trust sales reps to have their best interests at heart, and they don't like feeling like they're being sold to.

These factors make it harder than ever for sales reps to win business for the company, and the trend is unlikely to reverse itself. If anything, people are likely to rely more and more on the Internet and social media to help them make decisions. It's easy to see why: buyers view those sources as helpful and unbiased.

But better-informed buyers don't have to weaken sales reps' impact or influence. According to the CSO Insights Sales Performance Optimization Study, effective use of sales intelligence increases revenue productivity per sales rep by 17 percent.

That's where marketing can bridge the gap for sales.

BIG DATA BIG PROFITS



BIG MONEY IS AT STAKE

Successful marketers have figured out how to use data to squeeze billions more from marketing and help their companies grow.



Better marketing analytics can improve the returns 10–20%

**\$100–\$200
BILLION**

6.5 How marketing can make a difference

- Sales reps need to gain a deep understanding of buyers—what they know, what they care about, how they perceive your company and your products, and what they need.

- Sales people once had more information than buyers had, but today, that equation is often reversed. Sales reps need to have all of the information that buyers have, and then some.
- Buyers do their own research and come to the table knowing a lot about your company, its offerings, and all the alternatives to your solution.
- To be effective, sales reps need to know the same information. They also need to know how buyers react to the information they find.
- This places the sales rep in the role of the buyer's valued advisor. Not only is that a powerful position, it's a role that earns the buyer's trust. It's also the role that's most helpful to the buyer.

6.6 Why sales needs marketing to help

- Sales can't do this on their own because marketing has the Big Data. Marketing collects tons of information about buyers—who they are, what they know, how they behave, and how they perceive your brand and offerings.
- Marketing understands buyers and what makes them tick. They've been studying it for years. But unless they share it with sales, the sales reps are stuck doing things the old way and watching their influence diminish

6.7 Marketing's two power tools to supercharge sales

- Marketing holds two keys to success: Big Data and Social Media.
- By collecting the information most valuable to sales, and by getting that information to them regularly, marketing can make the difference that creates more sales and builds more valuable relationships with buyers.

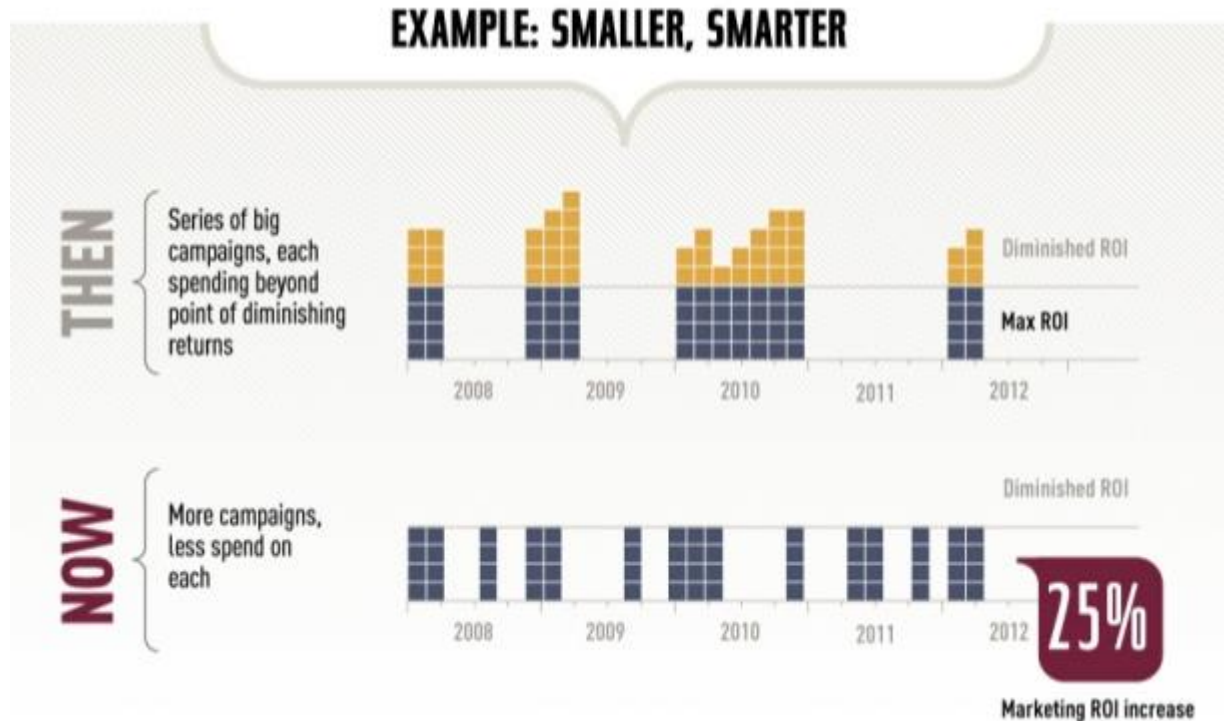
- The other piece of the puzzle is social selling. There are many wrong ways to do social media, and it's easy to waste time there. Nobody is talking to the V.P. of Sales about how to do it right. That's where marketing can use their expertise and experience to make a big impact.
- By helping sales representatives present them in the right light, guiding them in establishing relationships and authority, and feeding them the information they need to contribute to the conversation, marketing can set sales representatives up for success.

6.8 Big Data, Analytics And The Future Of Marketing And Sales

Big Data is the biggest game-changing opportunity for marketing and sales since the Internet went mainstream almost 20 years ago. That statement often prompts vigorous head nodding from executives, but is quickly followed by head scratching. "How can we make this happen?"

Organizations today face overwhelming amounts of data, organizational complexity, rapidly changing customer behaviors, and increased competitive pressures. New technologies as well as rapidly proliferating channels and platforms have created a massively complex environment. At the same time, the explosion in data and digital technologies has opened up an unprecedented array of insights into customer needs and behaviors.

Some companies are already turning that Big Data promise into reality. Those that use Big Data and analytics effectively show productivity rates and profitability that are 5 – 6 percent higher than those of their peers. McKinsey analysis of more than 250 engagements over five years has revealed that companies that put data at the center of the marketing and sales decisions improve their marketing return on investment (MROI) by 15 – 20 percent. That adds up to \$150 – \$200 billion of additional value based on global annual marketing spend of an estimated \$1 trillion.



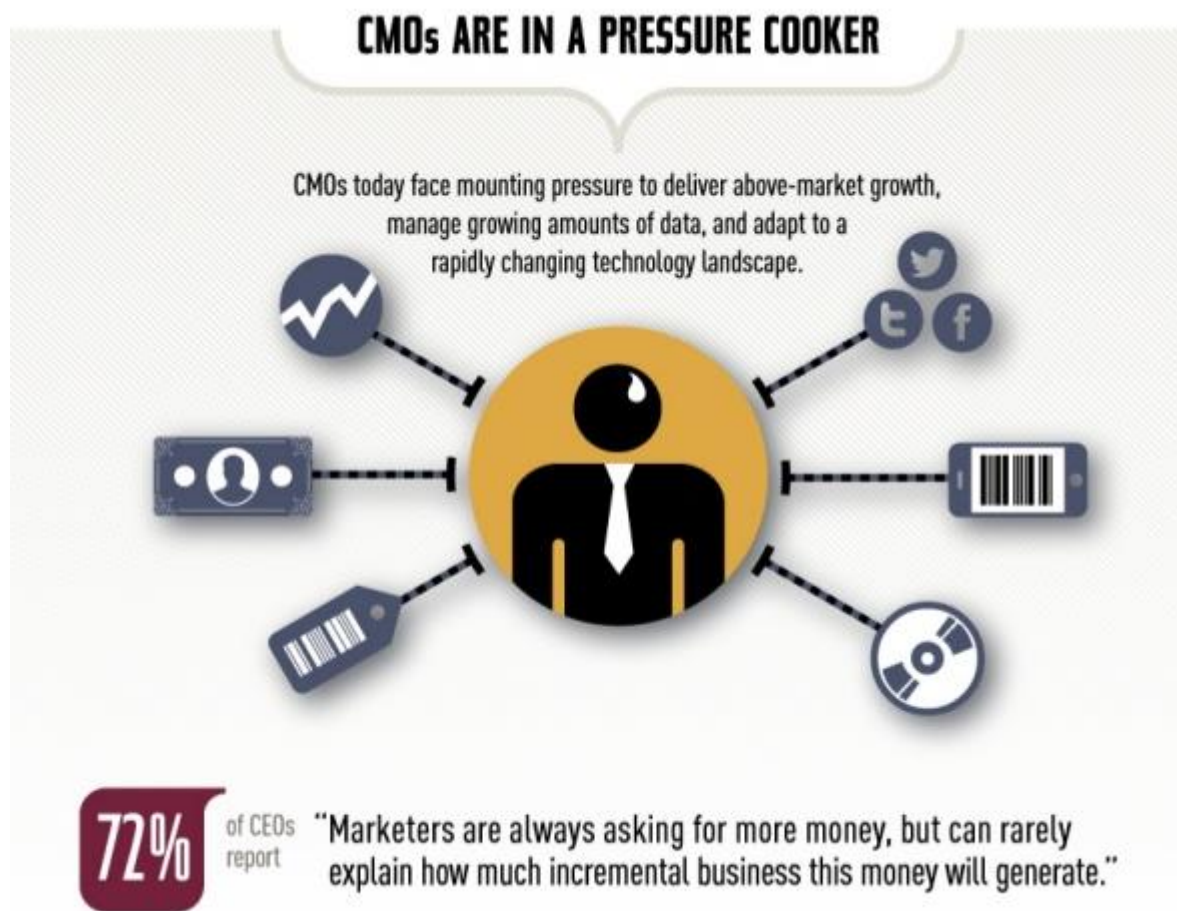
6.8.1 Using Big Data To Target The Right Consumers With The Right Offers

Data on its own, however, is nothing more than 1s and 0s. The companies that succeed today do three things well:

- 1. Use analytics to identify valuable opportunities.** Successful discovery requires building a data advantage by pulling in relevant data sets from both within and outside the company. Relying on mass analysis of those data, however, is often a recipe for failure. Analytics leaders take the time to develop “destination thinking,” which is writing down in simple sentences the business problems they want to solve or questions they want answered. These need to go beyond broad goals such as “increase wallet share” and get down to a level of specificity that is meaningful.

This approach also means moving away from the “usual way of doing things.” Most sales leaders deploy resources, for example, on the basis of the current or historical performance of a given sales region. Using data to specifically unlock new opportunities requires looking at data in a new way. One chemicals company, for example, decided to

look at market share within customer industry sections in specific US counties instead of looking at current sales by region, as they'd always done. The micro market analysis revealed that although the company had 20 percent of the overall market, it had up to 60 percent in some markets but as little as 10 percent in others, including those with the fastest growing segments.



2. Start with the consumer decision journey. Today's channel-surfing consumer is comfortable using an array of devices, tools, and technologies to fulfill a task.

Understanding that decision journey is critical to identifying battlegrounds to either win new customers or keep existing ones from defecting to competitors. Some 35 percent of B2B pre-purchase activities, for example, are digital, which means B2B companies need to invest in web sites that more effectively communicate the value of their products, SEO technology to make sure potential customers are finding them, and social media monitoring to spot new sales opportunities. One online retailer, for example, tailors its offers and discounts based on predictions of how likely a valued customer are to defect.

Marketing and sales leaders need to develop complete pictures of their customers so they can create messages and products that are relevant to them. Our research shows that personalization can deliver five to eight times the ROI on marketing spend and lift sales 10 percent or more. Becoming ever more effective with this kind of targeting, we believe (and hope), will mean the death of spam.

3. Keep it fast and simple. Data worldwide is growing 40 percent per year, a rate of growth that is daunting for any marketing and sales leader. Companies need to invest in an automated “algorithmic marketing,” an approach that allows for the processing of vast amounts of data through a “self-learning” process to create better and more relevant interactions with consumers. That can include predictive statistics, machine learning, and natural language mining. These systems can track key words automatically, for example, and make updates every 15 seconds based on changing search terms used, ad costs, or customer behavior. It can make price changes on the fly across thousands of products based on customer preference, price comparisons, inventory, and predictive analysis. One bank in Latin America transformed itself from a little-known player into an institution that was ranked 11th in market capitalization worldwide in part through algorithmic marketing. It captured ATM interactions and fed next-product-to-buy algorithms to call centers, which service operators could use to make suitable offers during the customer’s next interaction.

That level of personal interaction highlights another critical point, which is that automation doesn’t mean people go away.

Advanced analytics need to serve front-line staff – whether that’s a customer service operator or a sales rep in the field. To succeed companies need to shield the front line from the vast analytical complexity and deliver simple guidelines and recommended actions.

One cargo airline, for example, developed a complex model that analyzed the frequently changing dynamics of the cargo industry and negotiating strategies based on supply and demand. What it delivered to its sales staff, however, was a simple “dashboard” with simple guidelines on flight capacity, corresponding pricing as well as competitor options. The result was a 20 percent boost in share of wallet.

This goldmine of data is a pivot-point moment for marketing and sales leaders. Those who are able to drive above-market growth, though, are the ones who can effectively mine that gold.

BIG DATA LEADERS BEAT THE COMPETITION



MARKETERS AREN'T USING DATA ENOUGH

50% of companies surveyed reported struggling to measure the impact of digital marketing on sales and profits.

According to a survey of chief marketing officers:

63% of projects do not use marketing analytics to inform decisions.

80% of companies do not measure the ROI of their social media.



6.8.2 Big Data's Impact on 2013 Holiday Sales

The holiday season has ended and the analysis has begun to understand what worked and what did not for ecommerce merchants. Cyber Monday became the biggest online shopping day in history with a 20.6 percent increase in sales over 2012, according to the IBM 2013 Holiday Benchmark Report.

Retailers are increasingly tapping into the avalanche of data from their own sites and from third-party sites to drive sales and better serve their customers. This article will address five key ways Big Data impacted the 2013 holiday shopping season.

1. Contextual Promotions

The use of Big Data has enabled contextual promotions — mostly real-time push notifications based on consumers’ social media activity, tracking their locations, or capturing their interactions on the web and mobile devices. This holiday season contextual promotions were heavily used. IBM’s Cyber Monday Report states, “On average, retailers sent 77 percent more push notifications during the five day holiday shopping period when compared to daily averages over the past two months.” Retailers invested in social media sites like Facebook, Pinterest, and Instagram (among others) during the November and December holiday season. This led to higher referral sales from these sources.

Several physical retailers, including Best Buy and Kohl’s, also deployed location-based promotions to push notifications while the consumer is in or near the store. Some retailers tracked consumers’ locations without their knowledge, raising privacy concerns. Other retailers required an opt in by consumers to receive these promotions.

Additionally, some retailers used mobile apps to send contextual promotions based on tracking shoppers’ activities on the app and their physical locations with using it. Macy’s and J.C. Penney, for example, partnered with Shopkick (a shopping app provider) during this holiday season to reward brick-and-mortar shoppers with discounts or song downloads for trying on clothes, scanning barcodes, or making purchases.

2. Gift Selection

Holidays are all about gift giving. Some retailers used their Big Data recommendation algorithms to make it simpler to select gifts. These retailers built predictive models that process data from multiple sources like social media, wish lists, gift registries, and past purchases to predict the right gift for an individual.

3. Personalized Customer Experience

Retailers have used Big Data to personalize their site content for several years. This was a competitive differentiator during this holiday season, however, as indicated by pre-holiday survey by Baynote, a personalized customer experience solution provider. The survey noted that eighty-one percent of retailers planned to upgrade ecommerce platforms to focus on customer experience, and to increase engagement, revenue, and ultimately lifetime value from improved relationships with shoppers. Retailers can categorize each shopper into a segment of one with its own customized landing pages, product catalog, campaigns, and even content. The result is an enhanced customer experience and an improved conversion rate.

Amazon.com continued to maintain its dominance in this space by using its extremely rich data set to personalize the shopping experience for its millions of shoppers. Another benefit from personalizing the customer experience is increased impulse buys, which become more important during the holidays as shoppers are in the right frame of mind to spend money.

4. Improved Customer Service

The holiday season results in more traffic for ecommerce merchants, which naturally leads to an increase in the volume of customer service issues. To keep customers happy during this time and manage customer service costs, some retailers implemented Big Data solutions to monitor customer activity and proactively respond to negative social media posts or issues. After all, one negative tweet can significantly impact business during this time of the year.

Real-time data feeds inform retailers in advance if customers will experience issues like a slow site, out of stock products, or delayed delivery. Retailers can either proactively correct the issue or notify the customers afterwards. Fab.com, for example, automatically credits a customer the difference if a price of an item drops immediately after purchase. T-Mobile USA has integrated Big Data across multiple IT systems to combine customer transaction and interactions data to better predict customer defections. By monitoring

social media interactions with transaction data and billing systems, T-Mobile USA has reportedly reduced customer defections in half in a single quarter. Dell uses Big Data solutions to analyze real-time feeds from weather reports, delivery trucks, and orders to proactively resolve delivery problems before customers are aware of them.

5. Integrated Analytics

Most large retailers serve customers across multiple channels and devices. This makes it critical for those retailers to have a single view of all customer and product activity using data from all sources. Some retailers are already using such solutions and several more deployed such solutions before the holiday season. This one capability is crucial to track other Big Data uses, such as contextual promotions, gift selection, personalized customer experience, and improved customer service.

6.8.3 Big Data's Impact on Sales

Sales and Marketing teams all over the globe are very challenged in today's world.

A 2012 CSO Insights survey found that nearly 82% of participating executives feel that their sales team is challenged by the amount of data available and the amount of time needed for researching before making contact with prospects.

And even more worrying are the 88% that are stating that they have missed opportunities due to not being able to leverage external, internal and social information available.

6.9 Defining Big Data

These vast amounts of data available from all sorts of different sources have been given the term 'Big Data'. Adrian Simpson of SAP describes Big Data using the terminology 'extreme data' and explains it with four 'v's':

- **Volume of data**, the large amount of data being stored in data warehouses
- **Velocity of data**, where the data is coming from
- **Variety of data**, structured and unstructured data.

- **Validity**, which stands for data quality and integration connected to collaborate data governance which is equally important.

The survey discovered that 71% of businesses expect big data to have a significant impact on sales, while only 16% have big data strategies in place to improve their sales revenue stream. While around 80% stated to have implemented a CRM system, only 35% of the participants have implemented technology to support their sales teams with internal and external social information.

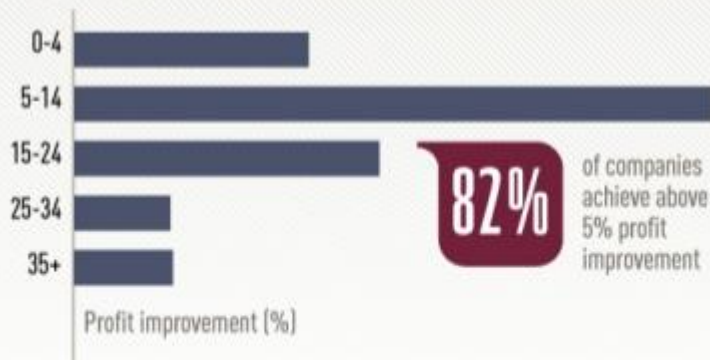
6.10 How to cope with Big Data

Traditional technology was not ready to cope with the social and data-intensive world that companies find themselves confronted with today. The common social integration with CRM systems provides a great opportunity to leverage social big data in sales to increase productivity and close more deals quicker. It is also essential for success to implement the right strategy for big data to create an effective ecosystem of people, processes and technology.

The increasing use of mobile devices will certainly cause an exponential growth of data being available through shared multimedia content, the evolution of the Internet of Things. It is hard to say where big data is going and how it will impact us in the future but it will certainly present a steady growing challenge for businesses to keep up as technology is improving.

"MARKETING SCIENCE" ANALYTICS DELIVER BIG MARKETING ROI

Marketing Mix Modeling drives on average ~14% profit improvements



6.11 Big data vs. MR

As to the impact on MR: Given the level of visibility big data enjoys, board-level attention will probably be directed to figuring out what value new analytics tools can deliver and what the ROI looks like. The insights department may not be so much in the spotlight and we may have to fight harder for our share of the budget. It may also impact the job market, with roles for analysts crowding out more general insight functions.

Certain aspects of current MR practice may have to change, at least in digital spaces, to behavioral measures - probably more rapidly than we think. And yes, we do need to broaden our skill set, become better at data synthesis techniques, get acquainted with at least some of the new software tools and, most importantly, become better at business problem-solving.

On a positive note, the future machine intelligence and algorithms will replace human analytics experts. In fact, it's quite the opposite.

We repeatedly read about the need to start with the business problem that needs addressing, not simply with data that is often just noise. Similarly, we are often reminded about how the best business approaches are those that merge a logical, analytics approach with an intuitive, empathetic, lateral one.

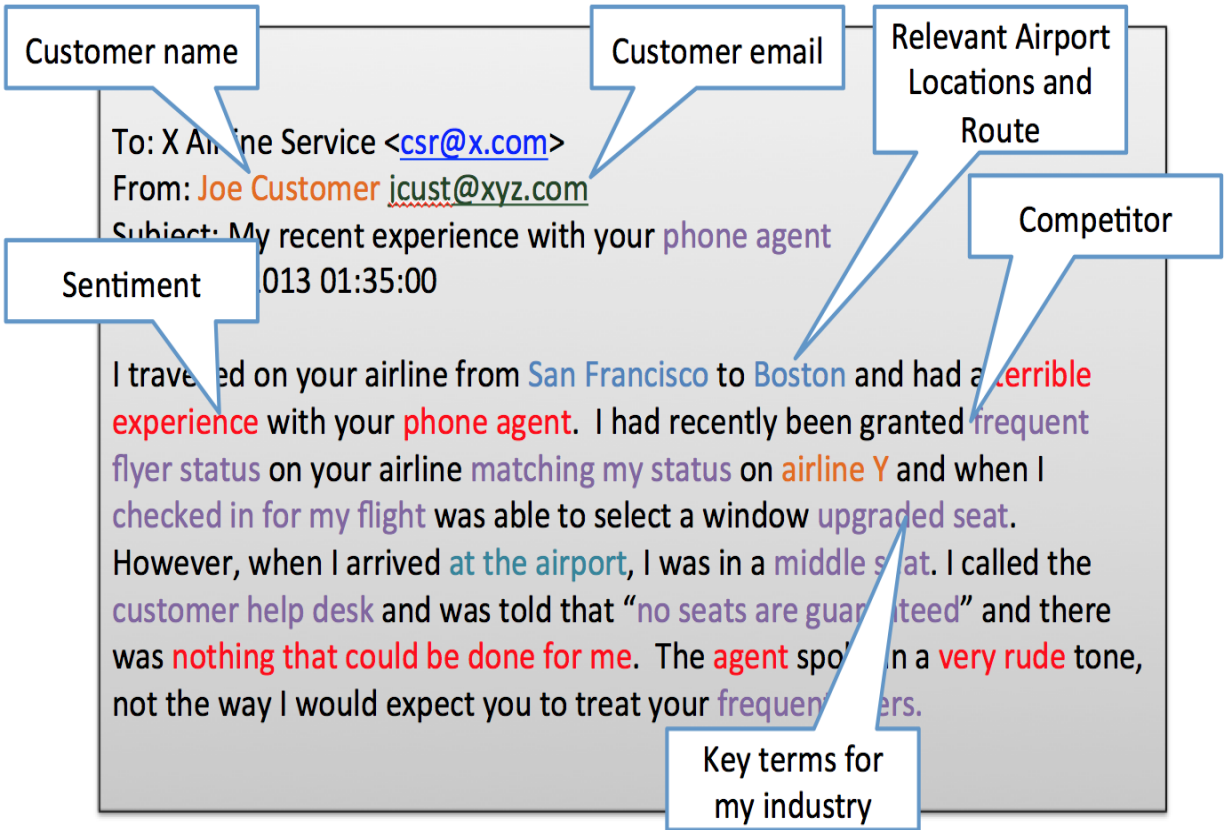
For us market researchers, it suggests we will very likely have a changed future (no surprises) - one where our role could be broader (as data synthesizers), where we are still tasked to understand the complexities and contradictions of human behavior in all its fascinating irrationality. The onus is on us to rise to the challenge of a rapidly changing environment, to get acquainted with some of the tools mentioned and get used to the fact that this process of adaption is likely ongoing.

6.12 Big Data versus Big Content

One of the most important distinctions within the Big Data space is the difference between unstructured data (think unparsed data such as logs or sensor data) and unstructured content (any source where the insight you want is locked away in human-created text). The reason I separate these is that the profiles of these data sources are very different, as are the tools required to gain analytic insight from them.

This new term is well justified given the very significant differences in the data itself, and allows us to have a more focused conversation, driven by business-value creation. When companies start to compare the business value of also investing in Big Content versus just Big Data, they start to realize that Big Content is, in many cases, the most important aspect from a value standpoint – an “Unsung Hero” if you will.

Consider what we can learn from applying text analytics to this example of a single airline complaint email:



With these new pieces of data, imagine what the customer experience could be like the next time the customer calls in. The customer service rep would not only see the transaction history, but also the interaction history that represents the current state of the relationship. Using Tableau, this data can be visually summarized to help the CSR understand the state of the relationship at a glance in order to proactively offer an entirely new and transformative level of service.

Now consider the value of a lot of emails. In the case of this example airline, they could instantly answer questions such as “Which of our high-value customers are having a high-ratio of negative interactions?” “What routes are they flying?” and “Why are they unhappy?” - all through a single Tableau dashboard.

Taking things a step further, in customer experience analysis alone, there are a large number of Big Content sources of customer interactions (email, CRM case notes, call

center notes, social media, SMS, company forums, survey comments, etc...) that are all highly relevant and highly valuable from an analytic perspective.

So, as you jump into the Big Data waters, take some time to think about which sources of information contain the insight you need to "move the needle" for your business. You'll likely conclude that Big Content is the place to start realizing Big Value from Big Data.

6.13 How Big Data Liberates Research

Will big data make primary research obsolete?

This was the usual thought process in what could be called the "before big data" world.

Whether the research objective was to segment consumer needs to improve targeting or to evaluate the impact of advertising on brand health, it was reasonable to assume that we would need to generate and analyze a new set of data on each occasion. But that assumption is no longer valid. In today's big data world, nearly everything is passively observed and managed in a digitized fashion; thus we have the ability to use data assets that were previously untapped or nonexistent to quickly and deeply address these same topics.

Big Data isn't really a brand-new phenomenon; for years now, large data sources have included information on customer purchases, credit scores, and lifestyle information. And for years, data scientists have used this data to help businesses evaluate risk and anticipate customer needs. The difference today is twofold: more sophisticated tools and methods are available to analyze and combine various datasets, and these analytic tools are now augmented by an avalanche of new data sources ignited by the digitization of nearly all data collection and measurement.

The range of content now available is both inspiring and intimidating to researchers raised in the structured survey environment. Consumer sentiment is captured on websites and the variety of social media outlets. Exposure to advertising is recorded not only by set-top boxes but also by digital tags and mobile devices communicating with TVs.

How Big Data Liberates Research

There is a tidal wave of conversation about big data. The conversations range from simply defining what big data means, to the business applications of big data, to the societal implications of living in a big data environment. A quick Google search on “big data” provided 1.66 billion results, and I’m sure that number has increased since I wrote this Point of View.

Will big data make primary research obsolete?

In today’s big data world, nearly everything is passively observed and managed in a digitized fashion. Behavioral outcomes such as call volume, shopping patterns, and purchases are now available in real time. Thus many of the insights that were previously provided by survey research can now be discerned through big data sources. And all of these data assets are generated on an ongoing basis, independent of any research process. These are the changes that motivate the question of whether big data will replace market research.

Before we sound the death knell for survey research, we should remind ourselves that it’s not the existence of any particular data asset that ultimately matters. What matters is our ability to answer questions. And the amazing thing about the big data world is that the findings from our new data assets generate more questions, and those questions tend to be best addressed by traditional survey research. In this way, as big data increases, we see parallel growth in the presence and need for “small data” to explore and answer the questions it raises.

Consider a setting in which a large advertiser has constant, real-time monitoring of store traffic and sales volume. Existing research designs, in which we probe survey panelists on their purchase motivations and point-of-sale behaviors, help us better target certain shopper segments. Those designs can be expanded to pull in a wider range of big data assets, to the point that big data is the passive monitor and surveys become the focused, ongoing probes into changes or events that require exploration. This is how big data will

liberate research. Primary research will not have to focus on what is happening—big data will do that.

Primary research can focus instead on explaining why we are observing certain trends or deviations from trends. The researcher can think less about generating data and more about analyzing and leveraging it.

At the same time, we see big data allowing us to address one of our biggest problems, that of excessively long surveys. A wealth of research on research demonstrates that bloated survey instruments have negative effects on data quality.

Industry analysts and media observers say Big Data is the next big thing, and some companies are rushing to climb on board. Spending on Big Data hardware, software and services is expected to grow to around \$34 billion in 2020 from \$4 billion in 2011.

6.14 Big Data and it's implementation in Indian MNCs

Indian IT and BPO services players are bolstering their capabilities in Big Data: take, for example, Wipro's \$30-million minority stake in Opera Solutions this year. But is building an advanced analytics capability really worth the investment?

Early adopters of Big Data analytics have gained a significant lead over the rest of the corporate world. Examining over 400 large companies globally, we found that those with the most advanced analytics capabilities are outperforming competitors by wide margins. The leaders are twice as likely to be in the top quartile of financial performance within their industries; five times as likely to make decisions faster than market peers; three times as likely to execute decisions as intended and twice as likely to use data very frequently when making decisions.

To get in the Big Data game, a company needs three kinds of table stakes:

- Large quantities of information in a format allowing for easy access and analysis.
- Advanced analytical tools, such as Hadoop and NoSQL.

- People capable of putting those tools to work.
- Hadoop is the core platform for structuring Big Data, and solves the problem of making it useful for analytics purposes. Hadoop changes the economics and the dynamics of large scale computing. Its impact can be boiled down to four salient characteristics.

Hadoop enables a computing solution that is:

- **Scalable**– New nodes can be added as needed, and added without needing to change data formats, how data is loaded, how jobs are written, or the applications on top.
- **Cost effective**– Hadoop brings massively parallel computing to commodity servers. The result is a sizeable decrease in the cost per terabyte of storage, which in turn makes it affordable to model all your data.
- **Flexible**– Hadoop is schema-less, and can absorb any type of data, structured or not, from any number of sources. Data from multiple sources can be joined and aggregated in arbitrary ways enabling deeper analyses than any one system can provide.
- **Fault tolerant**– When you lose a node, the system redirects work to another location of the data and continues processing without missing a beat.

A **NoSQL** database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases. Motivations for this approach include simplicity of design, horizontal scaling and finer control over availability. NoSQL databases are often highly optimized key–value stores intended primarily for simple retrieval and appending operations, whereas an RDBMS is intended as a general purpose data store. There will thus be some operations where NoSQL is faster and some where an RDBMS is faster. NoSQL databases are finding significant and growing industry use in big data and real-time web applications. NoSQL systems are also referred to as "Not only SQL" to emphasize that they may in fact allow SQL-like query languages to be used. In the context of the CAP theorem, NoSQL stores often compromise consistency in favor of availability

and partition tolerance. Barriers to the greater adoption of NoSQL data stores in practice include: the lack of full ACID transaction support, the use of low-level query languages, the lack of standardized interfaces, and the huge investments already made in SQL by enterprises.

But many companies have not yet laid the groundwork. But having these table stakes alone won't help you win, because Big Data isn't just another technology initiative. Let's look at what's involved. Leading companies begin the embedding process by spelling out their ambition — for instance, incorporating advanced analytics and insights as key elements of all critical decisions. They also answer the question: how is Big Data going to help us?

There are four areas where analytics can be relevant:

- Improving existing products and services
- Improving internal processes
- Building new product or service offerings
- Transforming business models.

For example, Humana, the US health insurance provider, uses claims data to determine who is likely to end up in a hospital for preventable reasons and then intervene early.

With ambition defined, Big Data leaders work on developing a horizontal analytics capability. They learn how to overcome internal resistance, and to create the will and skill to use data throughout the organization. It's a big job. Leading companies typically define clear owners and sponsors for analytics initiatives. They provide incentives for analytics-driven behavior, ensuring data is incorporated into processes for making key decisions. They create targets for operational or financial improvements, and work to trace the causal impact of Big Data on the achievement of these targets.

Big Data leaders then create an organizational home for their advanced analytics capability. Companies with deep analytics skills and an emphasis on experimentation and innovation, such as Google and Progressive, can rely on a generally decentralized approach.

CHAPTER 7: QUESTIONNAIRE

A semi structured questionnaire was designed which consisted of relevant questions to more effectively understand the importance and impact of Big Data over different industries and help understand the depth of its presence/absence in the demanded areas.

QUESTIONNAIRE. 1

1. There's lots of talk about big data being massively overhyped, where overpromising and disappointment go hand-in-hand. What is your feeling?

- The problem is that big data is being offered as a cure-all to every ill. You need to start by looking at the business problem you are trying to solve rather than getting lost in data. These days I prefer to talk more about new sources of information and technological advances than big data. New information sources that are becoming useful include various machine and sensor data, location data and different forms of social and textual data. New technologies are helping us to instrument, store, access and analyze these new data sources and turn them into something useful.

2. Can you give us some examples of where big data has truly made an impact and how?

- It's really all over the map, depending on what you define as big data. Fraud, security, network and system administration, predictive maintenance, patient monitoring, any sort of grid-monitoring system - the list goes on and on.

From a market research perspective, the biggest ones are in areas such as a 360-degree view of the customer and bring different sources of information into the analysis of the customer. This is happening on a number of fronts.

In telecommunications for instance, call-detail records, which represent enormous amounts of data, are being sorted and combined with customer records to determine things such as individual quality of service. This can be married with many other sources of data to help determine customer value and propensity to

churn. Machine-learning algorithms can then be used to determine the best action for a company to take to prevent churn at a cost commensurate with the value of the customer.

3. Which industries do you see big data impacting heavily in future, which less so?

- New information and new technology is impacting every industry and every function but in different ways and at different speeds. For instance, health care and banking are driven much more by risk and regulatory compliance; whereas retail is driven more by performance and manufacturing more by cost reduction. All of these make sense given the nature of these businesses and the macro forces in today's economy.

4. Do you know of examples where big data and market research are working well together?

- We are seeing it more and more. I work with companies who are using feedback from stakeholders to drive better analytics and decisions but different from the traditional way. The feedback and collection of the data is getting baked directly into the process through collaboration software and other embedded data-gathering techniques.

For instance, we're beginning to see quantitative and qualitative feedback coming in from the sales force to drive better forecasting and product development. I've always felt that the sales force was an underappreciated source of information and we are finally leveraging this in a crowd sourced manner and incorporating it directly into our processes.

5. Where does big data sit in the organizations you advise? What do the organizational structures look like? How do they interact with MR departments?

- I'd start by saying that much depends on the organization and the culture of the organization. For instance, a government organization will likely act much differently than a business that feels an existential threat. What we are seeing in

our research, however, is an empowerment of business users and business analysts almost across the board. This is being driven by a number of factors, such as industry competition, but also the ability for business users to rent from the cloud and not incur significant capital expenses. Traditionally, IT has made choices for new tools and provisioned a company standard but that is not always true today. The office of finance and corporate planning are very powerful parts of the business and we are seeing them start to move into less analytically-savvy parts of the organization, such as human resources, which is going through a renaissance of its own.

Since the 360-degree view of the customer is at the heart of many big data initiatives, the marketing organization is in a good position but only if the team is analytically savvy. Otherwise, operations, finance or IT will drive the new analytic paradigm for the organization.

Note that there is an interesting dynamic occurring here. The office of finance and the IT department are natural allies since they are often numbers- and tools-oriented. The marketing department has traditionally had a different orientation but the strength of marketing is in driving top line revenue by truly understanding and influencing the customer.

6. One often reads that big data can answer the what but not the why. What's your take? Is the why still important? Can qualitative researchers actually benefit from the wealth of why questions big data presents?

- I've heard that but I'm not sure I understand what it means. If I were to guess, we're talking about needing to understand motivation and emotions at an individual level and then at a societal level. These are still important today, especially in marketing, but looking forward they may lose some significance. For example, if I have enough data to continuously do stimulus and response testing and map that back to the profile of an individual, then I'm going to know what product offer or marketing message to serve up regardless of motivation. Big data and machine learning make this sort of thing more and more possible, though we are still a ways off, especially in offline environments.

The challenge with motivation and emotion is that they change - and change is a difficult thing to model. It's probably more important when we look at broader societal dynamics or when we don't have historical data (e.g., in an innovation-driven market). In both these instances, I would think that market research is imperative.

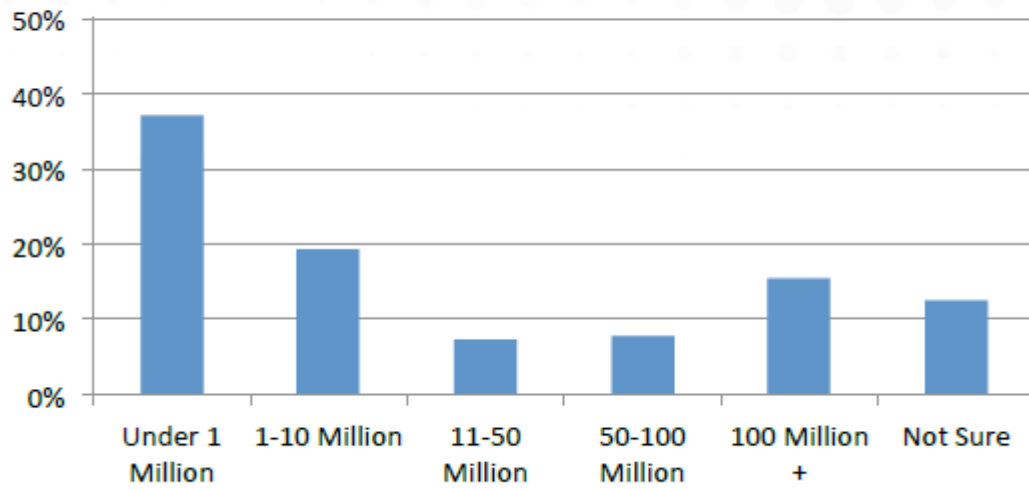
For the qualitative market researcher, the idea of a "wealth of why questions" is an interesting one and probably has merit since big data raises more questions than it answers.

I'd say that at a minimum, a qualitative researcher is in a great position to be not only a moderator but an action workshop facilitator, an innovation workshop facilitator, an ethnographer and an educator. Interestingly, this educator skill set starts to become a marketing skill set since education is becoming a much more prevalent form of marketing in a digitally-driven culture. All of these areas, especially in virtualized forums, should see increased organizational need going forward.

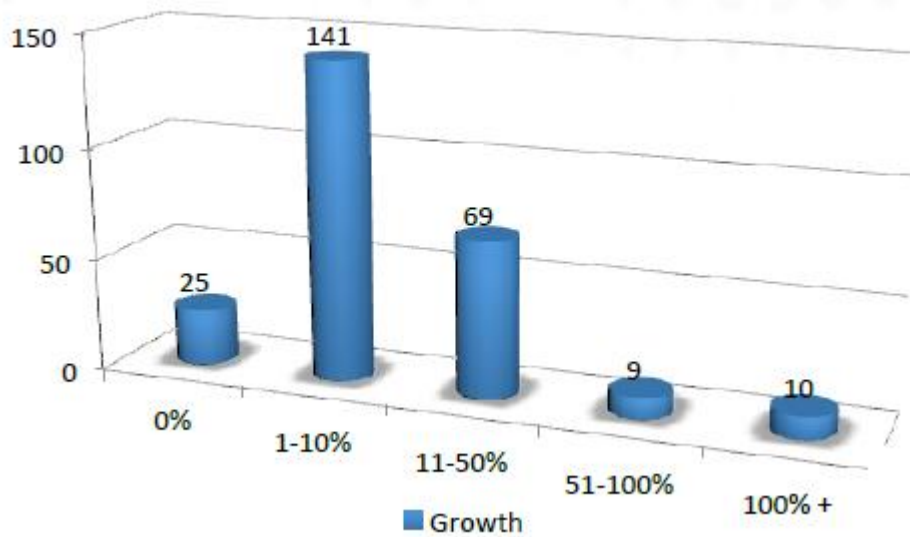
QUESTIONNAIRE. 2

- How many records does your organization currently hold in its' database?
- How much has your database grown in size over the last year?
- What data are you able to leverage in marketing programs/campaigns and how (online/offline/mobile)?
- Does your company have a specific strategy for handling the challenges of big data?
- Do IT and Marketing work together to outreach to customers?
- What challenges do you see in dealing with an increase in data?
- What are the biggest benefits of being able to access and interpret big data?
- Is your Marketing Department changing in terms of skill set (e.g., employing a Data Scientist) to handle the influx of customer data?
- How prepared is your marketing team when it comes to the new rules and regulations of marketing data governance?
- Why hasn't Big Data being implemented extensively?

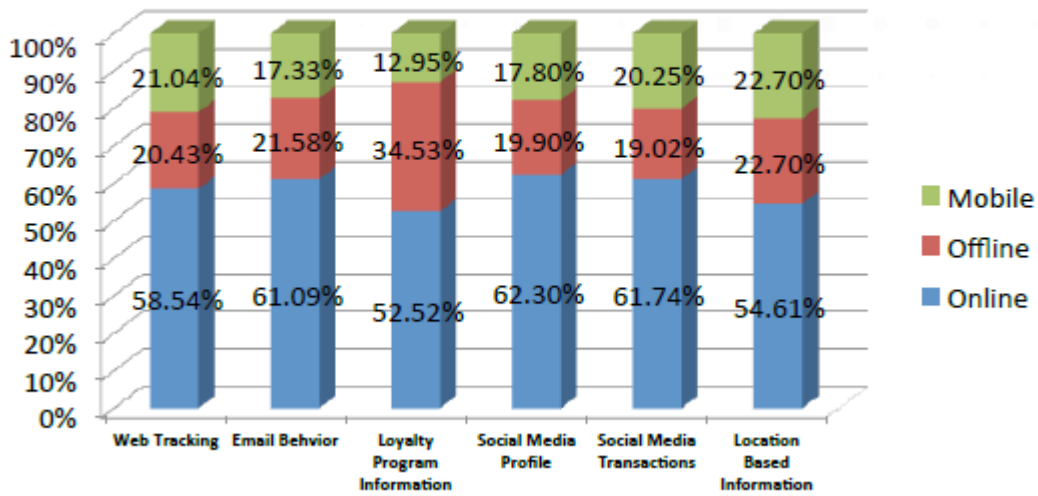
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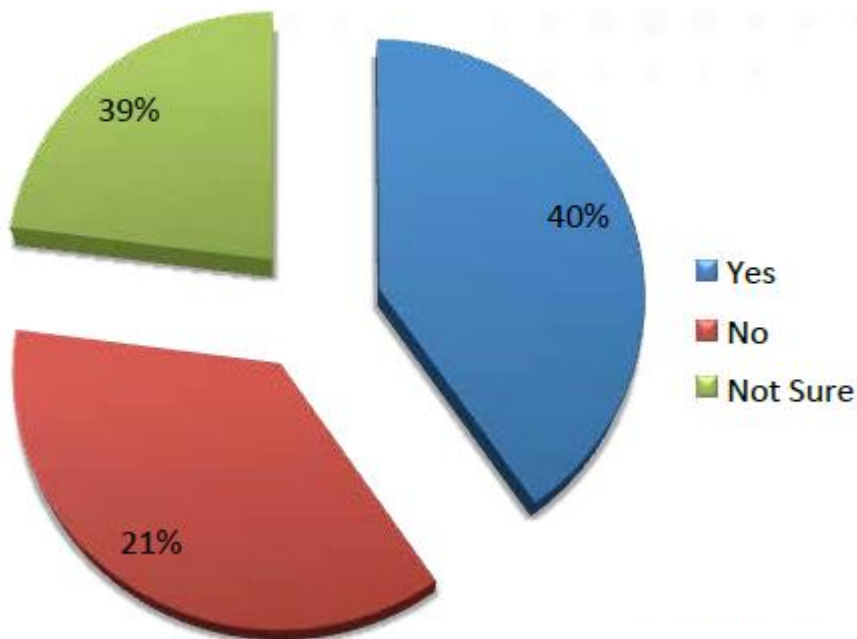
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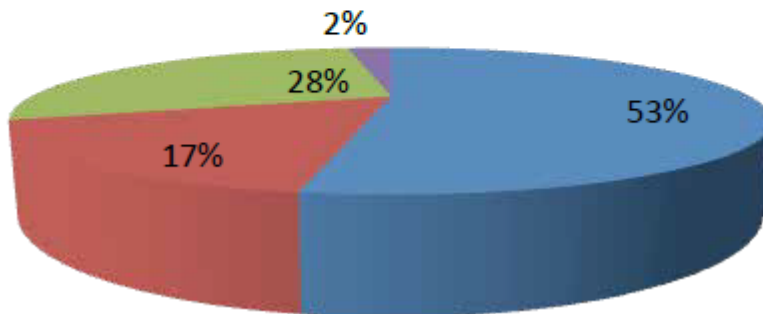


Do IT and Marketing work together to outreach to customers?

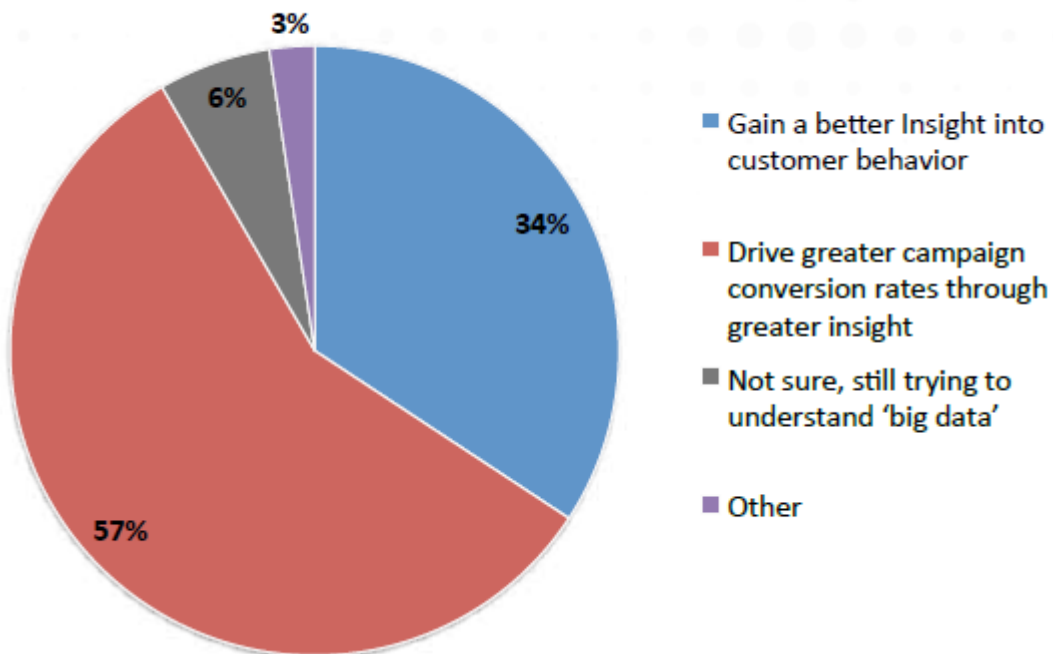


What challenges do you see in dealing with an increase in data?

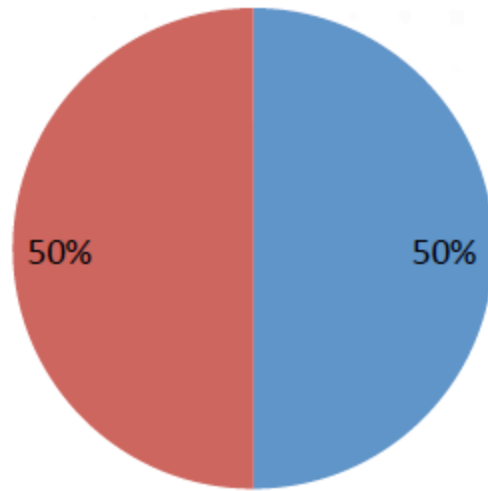
- Analysis & Mining of this Data
- Storage & Access to data
- How this increase in data will be used by Marketing
- Other



What are the biggest benefits of being able to access and interpret big data?

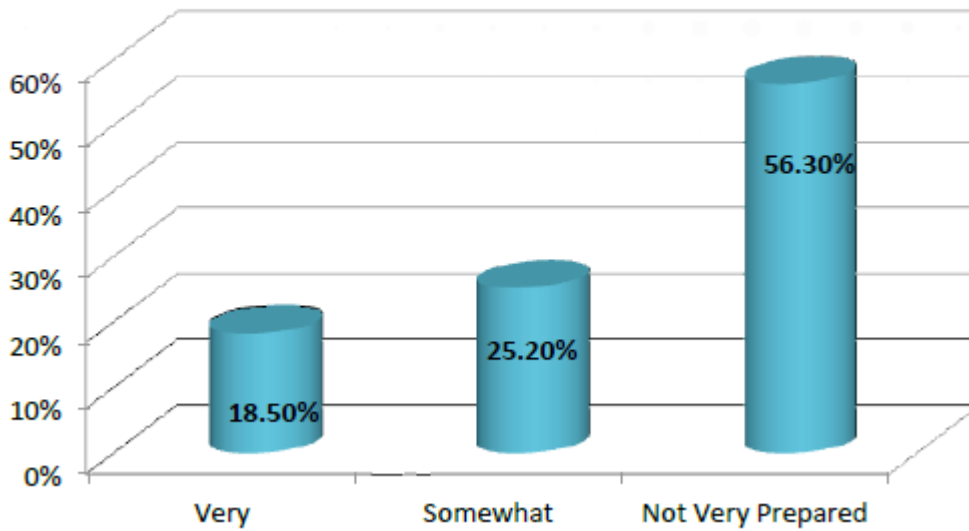


Is your Marketing Department changing in terms of skill set (e.g., employing a Data Scientist) to handle the influx of customer data?

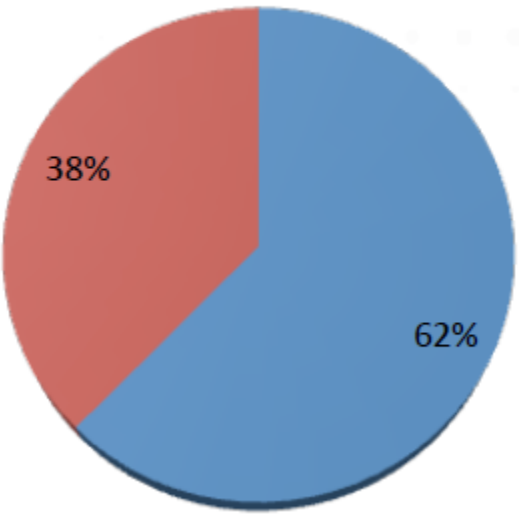


■ Yes ■ No

How prepared is your marketing team when it comes to the new rules and regulations of marketing data governance?



Would you consider attending, or having your marketing team participate in marketing data governance education?



■ Yes ■ No

CHAPTER 8: SURVEY CONCLUSIONS

- Big data isn't a particularly helpful term. We would do better to refer to specific new information sources and technologies.
- Everyone is struggling with the advances in data management, not just research.
- It's a quickly-developing space, with new names and providers that are currently probably only known to a smaller IT and analytics community.
- Equally, some or maybe just a handful of these companies may be game-changers - tomorrow's Google.
- Qualitative will thrive, as a discipline concerned with context, change, moderation.
- 60% of marketers are unsure or don't have a big data strategy.
- Marketers see greater campaign conversion rates as biggest benefit to big data.
- Analysis & mining of data is key challenge.
- There is a big opportunity for marketers to leverage data in their mobile campaigns.
- 50% of marketers are considering changes to their organization, including Data Scientists.
- Marketers are considering investing in marketing data governance education.

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