Cognitive Computing, Big Data and Analytics -
How the Era of Cognitive Computing and Big Data will Change Marketing
IBM in context

• In 2012, completed 100 years of service
• More U.S. patents received by any other company 20 years running
• More mathematicians employed, more research dollars invested than any other company
• Institute for Business Value (IBV) – market leading research
“One central message, according to industry experts, is this: Don’t walk away from your past. Build on it. The crucial building blocks, they say, are skills, technology and marketing assets that can be transferred or modified to pursue new opportunities. Those are a company’s core assets, they say, far more so than any particular product or service.”
More than 1100 business and IT professionals survey with a majority with customer centric outcomes as a priority

**Functional breadth**

- 54% Business professionals
- 46% Information technology professionals

**Big data objectives**

- 49% Customer-centric outcomes
- 18% Operational optimization
- 15% New business model
- 14% Employee collaboration
- 4% Research and product development
- 5% Information technology
- 10% Executive management
- 8% Marketing / sales
- 15% General management / Operations
- 16% Finance / risk management

Total respondents $n = 1144$

Top functional objectives identified by organizations with active big data pilots or implementations. Responses have been weighted and aggregated.

Total respondents $n = 1061$

Source: Analytics: The real-world use of big data, a collaborative research study by the IBM Institute for Business Value and the Saïd Business School at the University of Oxford. © IBM 2013
Big data embodies new data characteristics created by today’s digitized marketplace

**Characteristics of big data**

**Volume**
- Data at scale
  - Terabytes to petabytes of data

**Variety**
- Data in many forms
  - Structured, unstructured, text, multimedia

**Velocity**
- Data in motion
  - Analysis of streaming data to enable decisions within fractions of a second

**Veracity**
- Data uncertainty
  - Managing the reliability and predictability of inherently imprecise data types

Source: IBM methodology
Patterns of organizational behavior are consistent across four stages of big data adoption

The emerging pattern of big data adoption is focused upon delivering measurable business value

When segmented into four groups based on current levels of big data activity, respondents showed significant consistency in organizational behaviors.

Source: Analytics: The real-world use of big data, a collaborative research study by the IBM Institute for Business Value and the Said Business School at the University of Oxford. © IBM 2013
Internal sources of data enable organizations to quickly ramp up big data efforts

Initial big data efforts are focused on gaining insights from existing and new sources of internal data

Focus on customer insights

- Customers – influenced by digital experiences – often expect information provided to an organization will then be “known” during future interactions
- Combining disparate internal sources with advanced analytics creates insights into customer behavior and preferences
  - Transactions
  - Emails
  - Call center interaction records

Source: Analytics: The real-world use of big data, a collaborative research study by the IBM Institute for Business Value and the Said Business School at the University of Oxford. © IBM 2013
Big data is a business priority – inspiring new models and processes for organizations, and even entire industries

**Government achieves significant cost savings and ability to react to potential threats quickly**

*Government cuts acoustic analysis from hours to 70 Milliseconds*

**Utility provider improves prediction of power outages**

*Utility avoids power failures by analyzing 10 PB of data in minutes*

**Hospital detects and intervenes in potentially life-threatening conditions**

*Hospital analyzes streaming vitals to intervene 24 hours earlier*

**Retailer optimizes inventory levels and product mix**

*Retailer reduces time to run queries by 80%*

**Stock exchange reduces time to insights to achieve optimal buying/selling strategies**

*Stock Exchange cuts queries from 26 hours to 2 minutes on 2 PB*

**Telco provider improves ability to quickly address network issues/opportunities**

*Telco analyzes streaming network data to reduce hardware costs by 90%*
1. BIG DATA
2. Cognitive Computing
3. Impact on Marketing
Predictions: The future of cognitive systems and marketing

• “There is a new synthesis of **four fields**, including mathematics, neuroscience, computer science and psychology. The implication of this is amazing. What you are seeing is that cognitive computing is at a cusp where it’s knocking on the door of potentially mainstream applications.”

*Dharmendra S. Modha, an I.B.M. computer scientist*

Systems will use “brain-like” capabilities in understanding and analyzing complex images.
Watson Is Transforming How Industries Operate…

1 Natural language

2 Evidence-based hypothesis

3 Adapts and Learns
Helping Usher in the 3rd Era of Computing

Search
Deterministic
Enterprise data
Machine language
Simple outputs

Programmatic

Discovery
Probabilistic
Big Data
Natural language
Intelligent Options

Cognitive
Watson Enables Three Classes of Cognitive Solutions

ASK

DISCOVER

DECIDE

Next Generation Chat

Next Generation Search

Next Generation App

Discovery

Probabilistic Apps

©2013 IBM Corporation
Transforming How Medicine Is Taught, Practiced and Paid For

THEN
Paper based/
Subjective assessment/
Slow response

Transformational
Evidence based/Data driven/
Timely response

NOW
Manual driven/
Guideline based/
Data Overload
1
BIG DATA

2
Cognitive Computing

3
Impact on Marketing
Math and Marketing….. The new nirvana

The Geeks Shall Inherit the Earth

They love computing and creativity. And now the quants may be poised to take over the ad business

By Kristen V. Brown

And yet, individuals like Liang and Benisch are tapped to do just that, drilling down to unearth the perfect ad strategy. They are charged with figuring out what to input, monitoring the number crunching and analyzing what the computers ultimately spit out, as well as which algorithms to employ.

Liang likens his role to the robotic vacuum cleaner Roomba: When the process hits a wall, his job is to set it in the right direction. Often that means spotting irregularities in what
Customer-driven organizations are facing many disruptive forces...

**ECONOMY**
Weak economic conditions reducing wallet size of customers, making them more discerning

**TECHNOLOGY**
Rapid innovations in technology, new marketing tools and exponential growth in use of social media is changing the game

**COMPETITION**
Competition is intensifying with increased consolidation, and new entrants, blurring segments and channels

**CHANNELS**
Radically proliferating channels adding more complexity (Contact Centers, SMS, Chat, Social Media, Mobile, Email, Fax, Kiosks & Face-2-Face)

**CUSTOMERS**
Customers have rapidly evolving expectations, making them more demanding, better informed and less loyal to certain brands

**MARKETS / SEGMENTS**
Different income pyramids and customer priorities in each region/markets have led to a great heterogeneity of segments
Engaging the CMO

Technology changes are creating an entirely new kind of marketing discipline and a new kind of CMO

A new marketing mandate

- Understanding each customer as an individual
- Creating a ‘system of engagement’ that maximizes value creation at every touch
- Designing your culture and brand so they are authentically one

Chief Marketing Officers need...

- Leadership Qualities
- Organizational Changes
- Technology and Analytical Skills
- Partners and vendors
- Partners with Industry expertise and track record
- Peer networking with CMOs
- Personal connections with CMOs
Cognitive systems complement analytics and big data capabilities to enable organizations to take marketing transformation to a new level.

Understanding each customer as an individual

Creating a system of engagement that maximizes value creation at every touch

Designing your culture and brand so they are authentically one

IBM Watson can enable you to…

• conversations in context with all other forms of data
• Personalize offers
• learns from best practices.

IBM Watson can enable you to…

• Deliver individualized service from contact centers
• Confidently offer solutions with supporting evidence
• natural language interactions

IBM Watson can enable you to…

• Provide relevant feedback
• Communicate via natural language.
• Optimize your marketing mix with evidence-based decision support.
The use of digital, mobile and social media is transforming the way business and consumers interact

Causing a seismic shift in the way business is done

Employees: are using social media in all facets of their lives, including work

Customers: are leading the conversations that define brands

Partners: are interacting to accelerate business value

Organizations: are crowd-sourcing ideas to bring new solutions to market

...this shift is enabled by technology enabled social interactions
This transformation presents new challenges

Marketers have less control over their brands
Customer comments and feedback are becoming more influential to brand perception than advertising or PR

Product development is challenged to deliver new products and services quickly and at lower cost
Need to keep up with fast moving, new sources of competition

Organizations face difficulty increasing worker effectiveness
Work becomes more mobile and global… and as a new generation joins the workforce

Organizations are challenged by security and governance concerns
Employees increasingly use public facing social media tools in the workplace
IBM’s Journey to becoming a Social Business

**Phase 1: Access**
The Website Model

**Phase 2: Integration**
The Audience Model

**Phase 3: On Demand**
The Roles Model

**Phase 4.x: End-User**
The Social Model

---

**The org chart online**

- **Focus:** Providing information
- **Benefit:** Universal access
- **Problem:** Site proliferation

**Cross-enterprise platform**

- **Focus:** Web-enabling functions
- **Benefit:** Separating content from vehicle
- **Problem:** Competing centers of gravity

**Sense and respond enterprise**

- **Focus:** Real-time expertise location
- **Benefit:** Fluid, collaborative decision-making
- **Problems:** Governance and cultures

**Communities of practice**

- **Focus:** End user driven content
- **Benefits:** Combining social capital with intellectual capital
  - Collective intelligence across all organizations
Vulnerability and Shame

- Brene Brown studies vulnerability, courage, authenticity and shame
- She is a Quantitative Researcher (storyteller – stories are just data with a soul)

- Connection……

- **Shame** is the fear of losing connection
- Beneath this is excruciating vulnerability….. which is grounded in “worthiness”

Vulnerability is…..

- “the foundation of courage”
- “the birthplace of innovation, creativity and change”
Keith Hopkins
Business Analytics and Optimization
IBM Global Business Services