

Connecting Data and Analytics

Connecting enterprise information assets to drive corporate profitability, to sustain growth, and to improve operational efficiencies

A bit about bits, bytes and lots of bytes

A bit (b) is short for binary digit, after binary code (1 or 0) computers use to store and process data.

Binary means base of 2 just like decimal means the base of 10.

Byte (B) is the basic unit of computing used to create an English letter or number in computer code. One Byte is equal to 8 bits

Unit	Bit (b)	Byte (B)	Kilobyte (KB)	Megabyte (MB)	Gigabyte (GB)	Terabyte (TB)	Petabyte (PB)	Exabyte (EB)	Zettabyte (ZB)	Yottabyte (YB)
Size	1 or 0	8 bits	1,000 bytes 2^{10} bytes	1,000 KB 2^{20} bytes	1,000 MB 2^{30} bytes	1,000 GB 2^{40} bytes	1,000 TB 2^{50} bytes	1,000 PB 2^{60} bytes	1,000 EB 2^{70} bytes	1,000 ZB 2^{80} bytes

One page of typed text is roughly 2KB.

All books catalogued in the US Library of Congress total around 15 TBs.

Google processes about 1PB *every hour*.

Monthly internet data flows at around 21 EBs.

Total amount of information in existence is around 1.2 ZB.

YB is currently too big to imagine (as per *The Economist*).

International Bureau of Weights and Measures sets the name of the prefixes.

What is happening?

Data storage costs



Data processing costs



Data moving costs

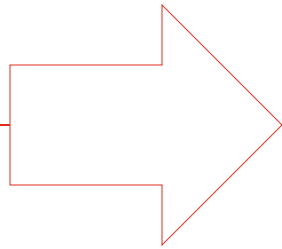


“Big Data”

“Industrial Internet”

“Internet of Things”

“Digital Economy”



of Devices

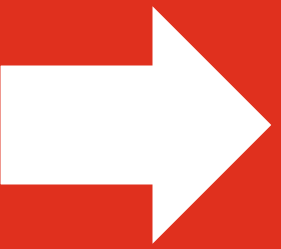


Degree of Connectivity



Performance Expectation

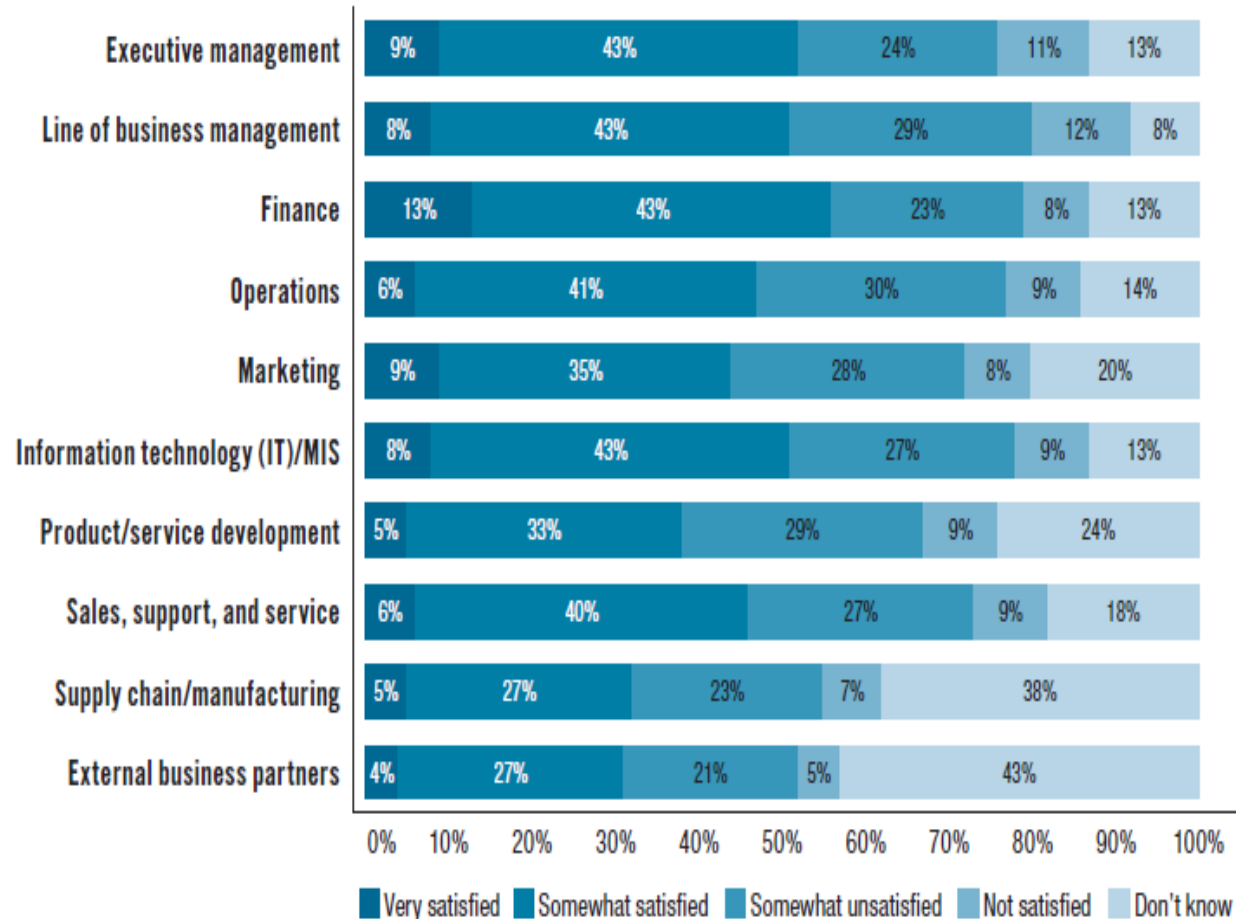




AMBIENT DATA

So much water but nothing to drink

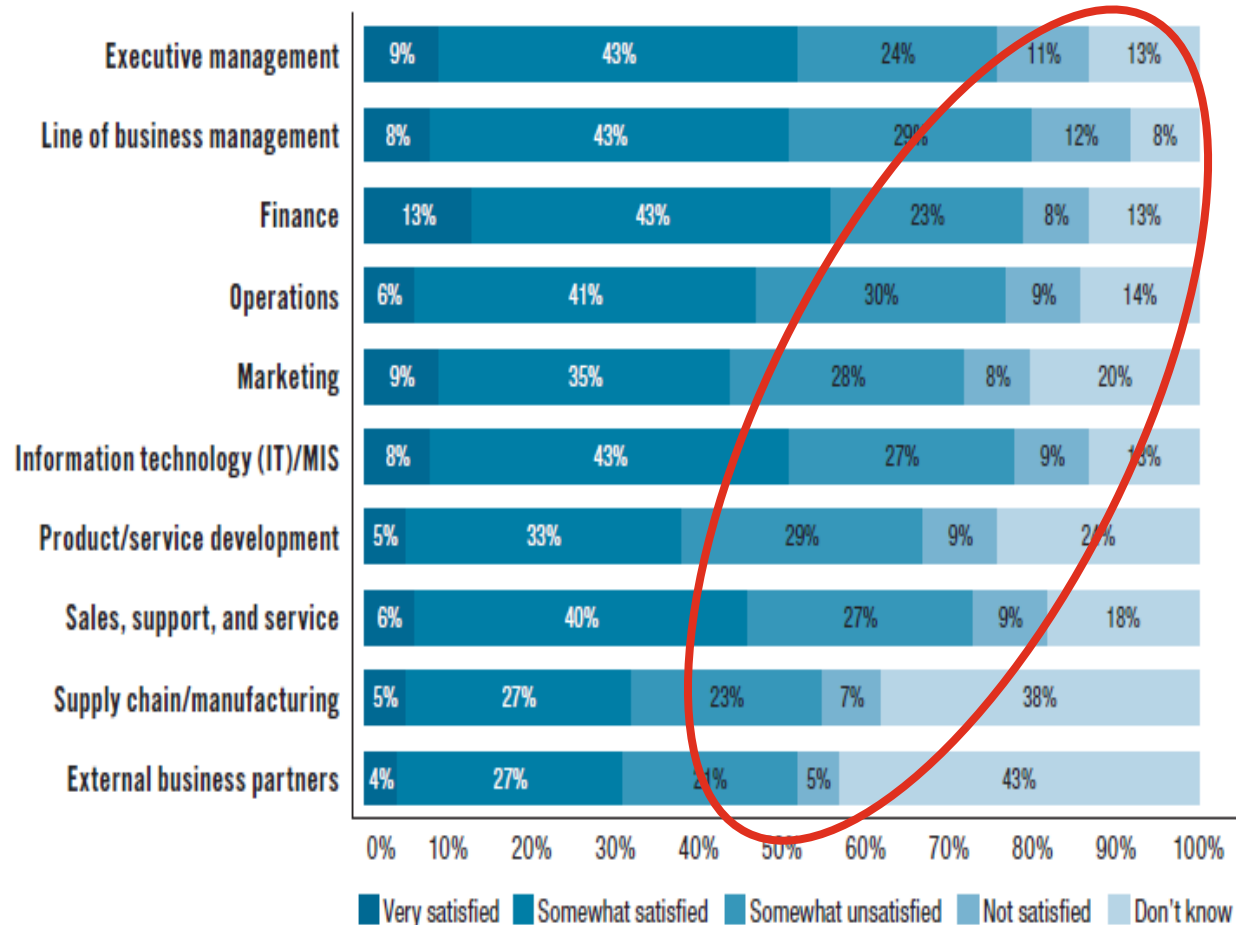
How satisfied are users in the following business functions with their ability to access and analyze the information they need to achieve objectives for which they are held accountable?



Source: TDWI Survey

High degree of dissatisfaction in using Ambient Data

How satisfied are users in the following business functions with their ability to access and analyze the information they need to achieve objectives for which they are held accountable?



Source: TDWI Survey

Therefore, companies are investing to gain information advantage...

PwC surveyed 500 business and IT executives from 489 US companies with revenues of \$500MM or more. Companies in the top third of their industry in the use of data-driven decision making were, on average, 5% more productive and 6% more profitable than their competitors.

“Top performing companies report investing more to manage their data than firms whose performance doesn't stand out.”

Leading companies recognize data collection and analytics capabilities are increasingly a strategic differentiator.

56% of respondents say they will be investing more in the coming year to collect customer data

45% say they'll invest more to measure operational performance¹

Executives are “thinking more broadly about how to use external data to provide critical insight into operations, product development, and customer strategies.”

The wealth of external data available creates tremendous opportunities and challenges as companies look to integrate it with internal sources.

Source PwC Digital IQ Survey series

...and one key area is Analytics

Driven by senior management needing to make fact-based decisions and engaging users with a broad portfolio of technologies.

Figure 1: Who is the Primary Driver of BI Initiatives?

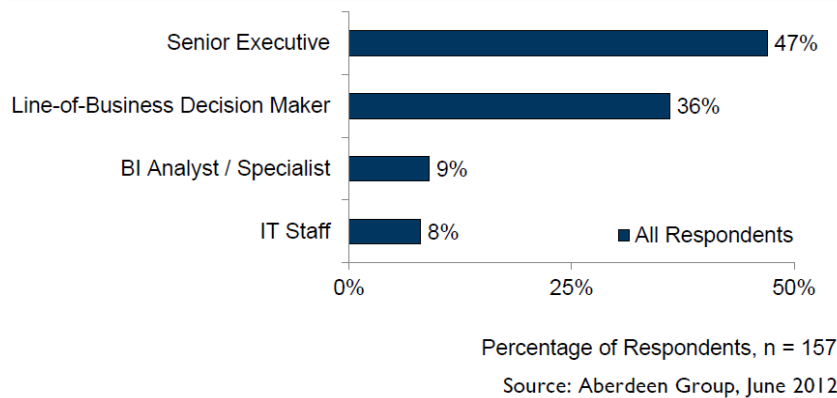


Figure 2: Top Pressures Driving Business Analytics

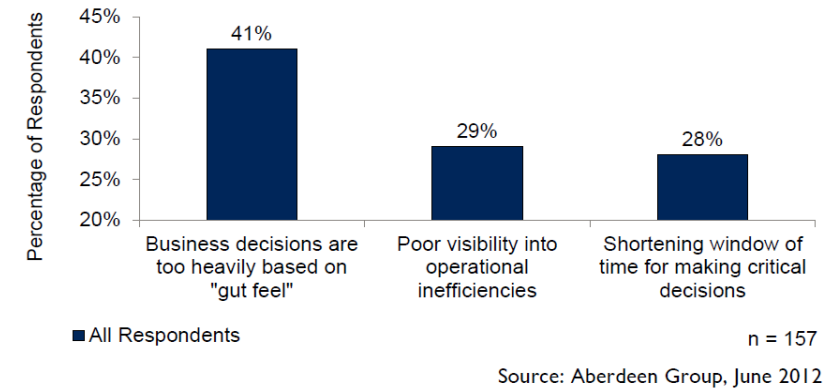


Figure 3: Best-in-Class are Organizationally Mature

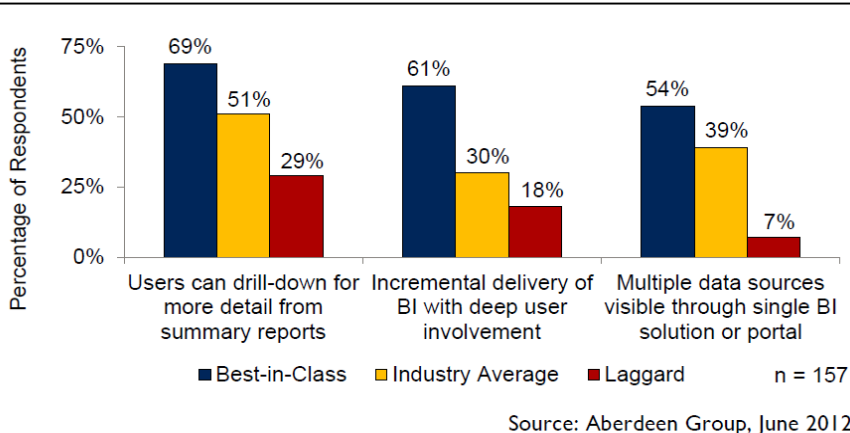
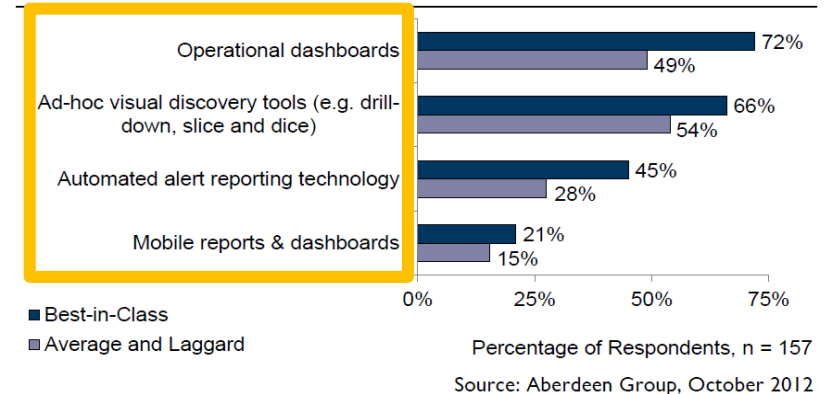
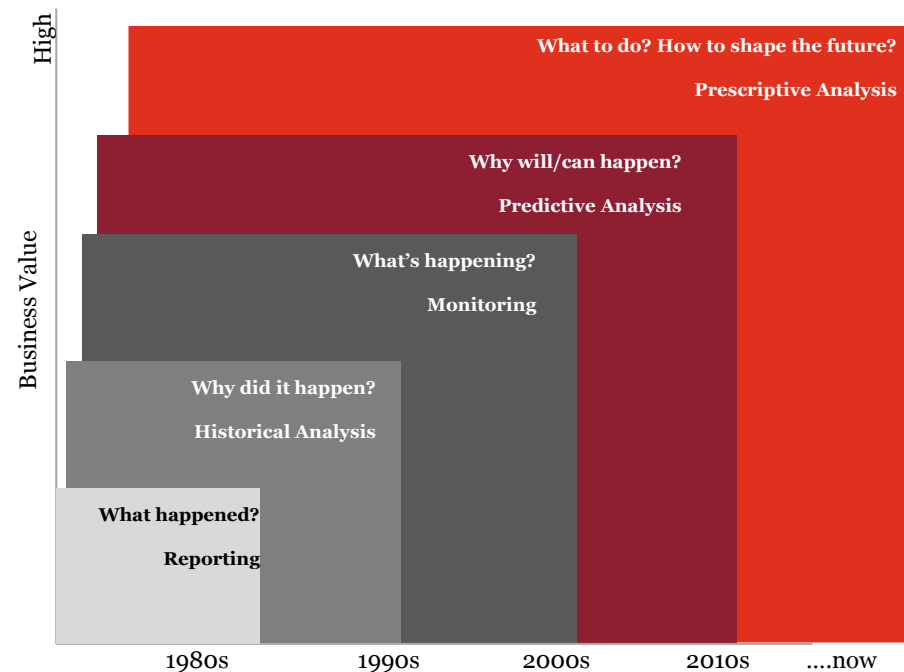
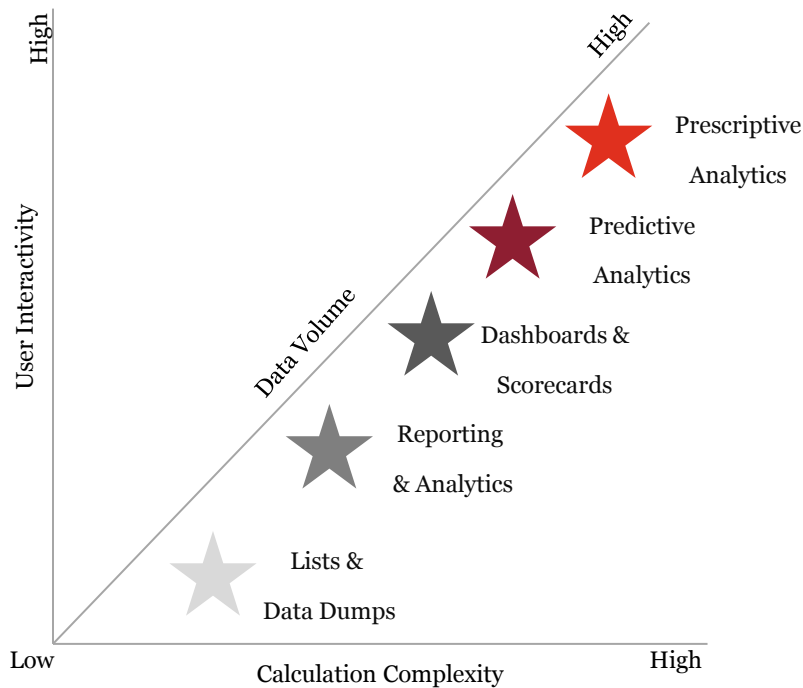


Figure 4: Visual BI Technologies in Use

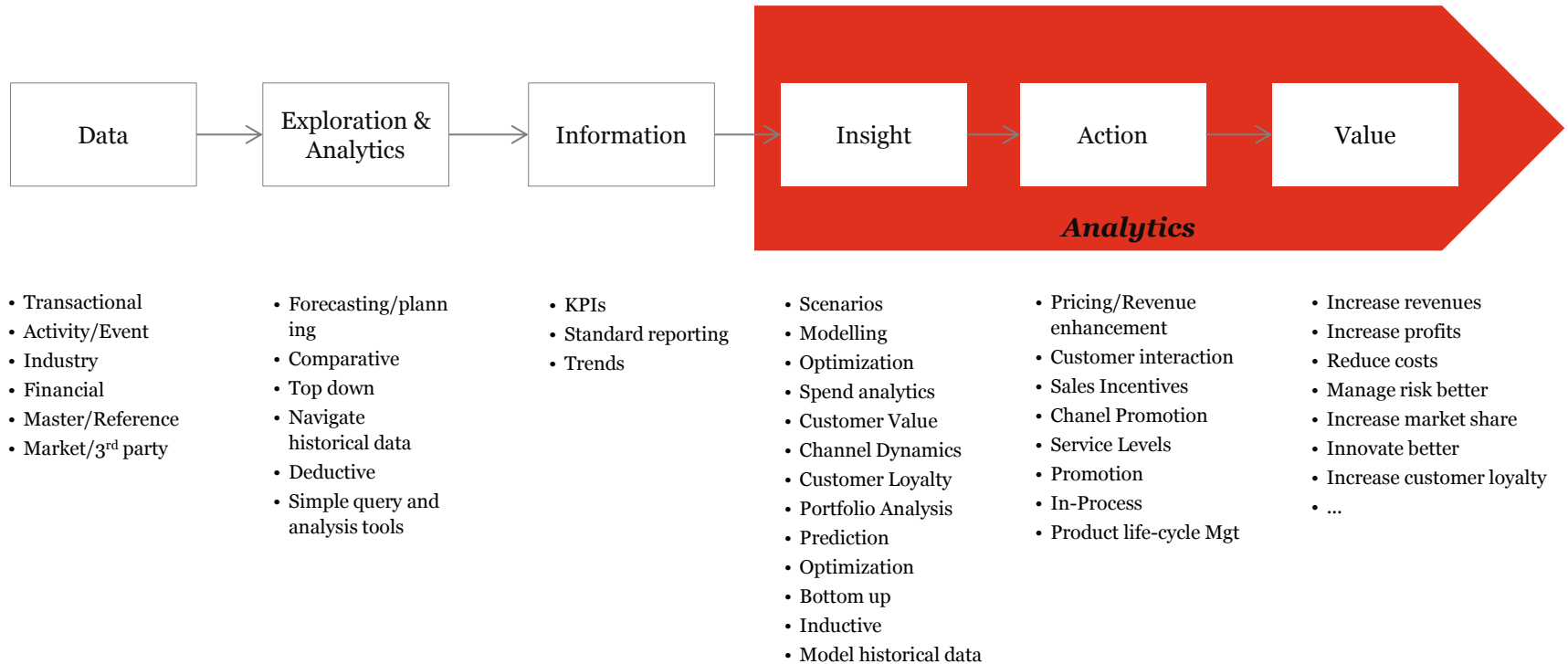


...and Predictive and Prescriptive Analytics are the leading areas in how Ambient Data will be consumed

The growth in the volume, velocity and variety of data requires enterprise scale data analysis and information consumption technologies. Data visualization tools are a new class of data presentation technology that enables the business user to look for patterns, relationships, exceptions etc. and make proactive decisions.

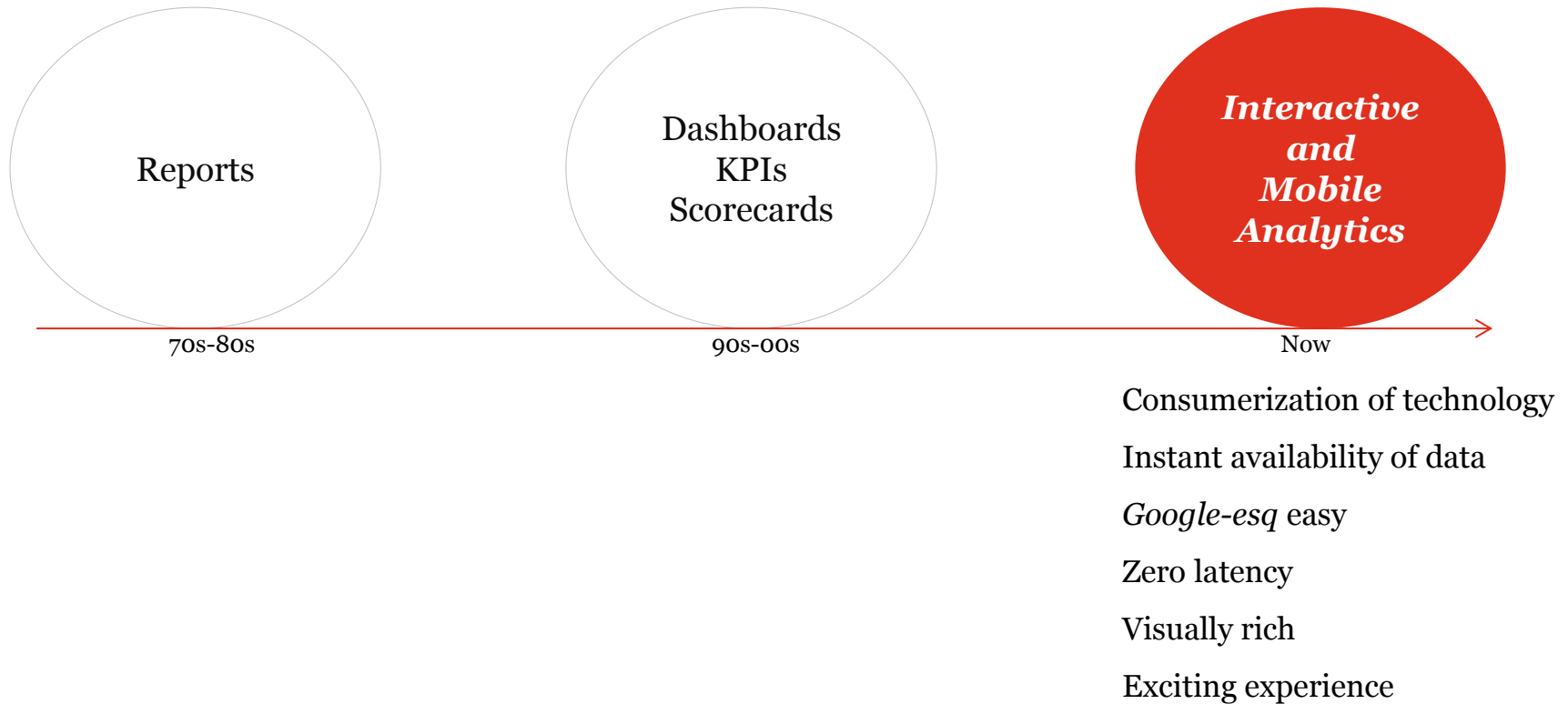


Analytics is truly the last mile of the Information Value Chain...

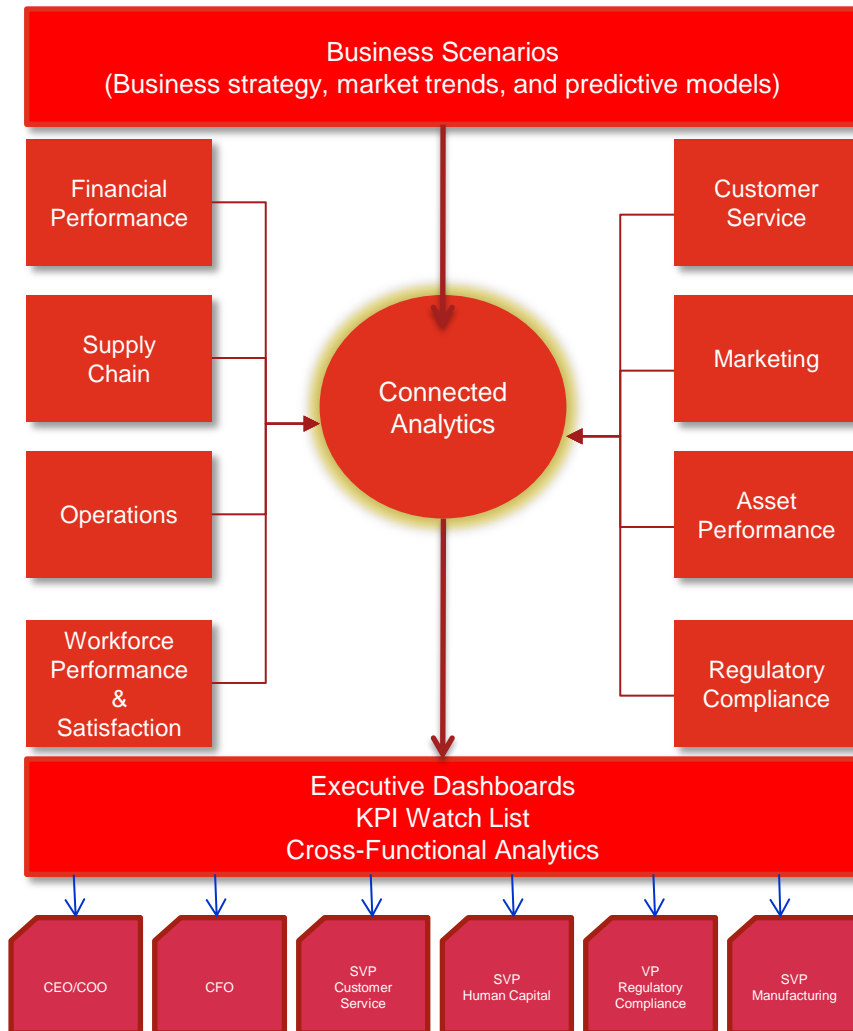


..and it is rapidly evolving

Making better use of mobile and visualization technologies

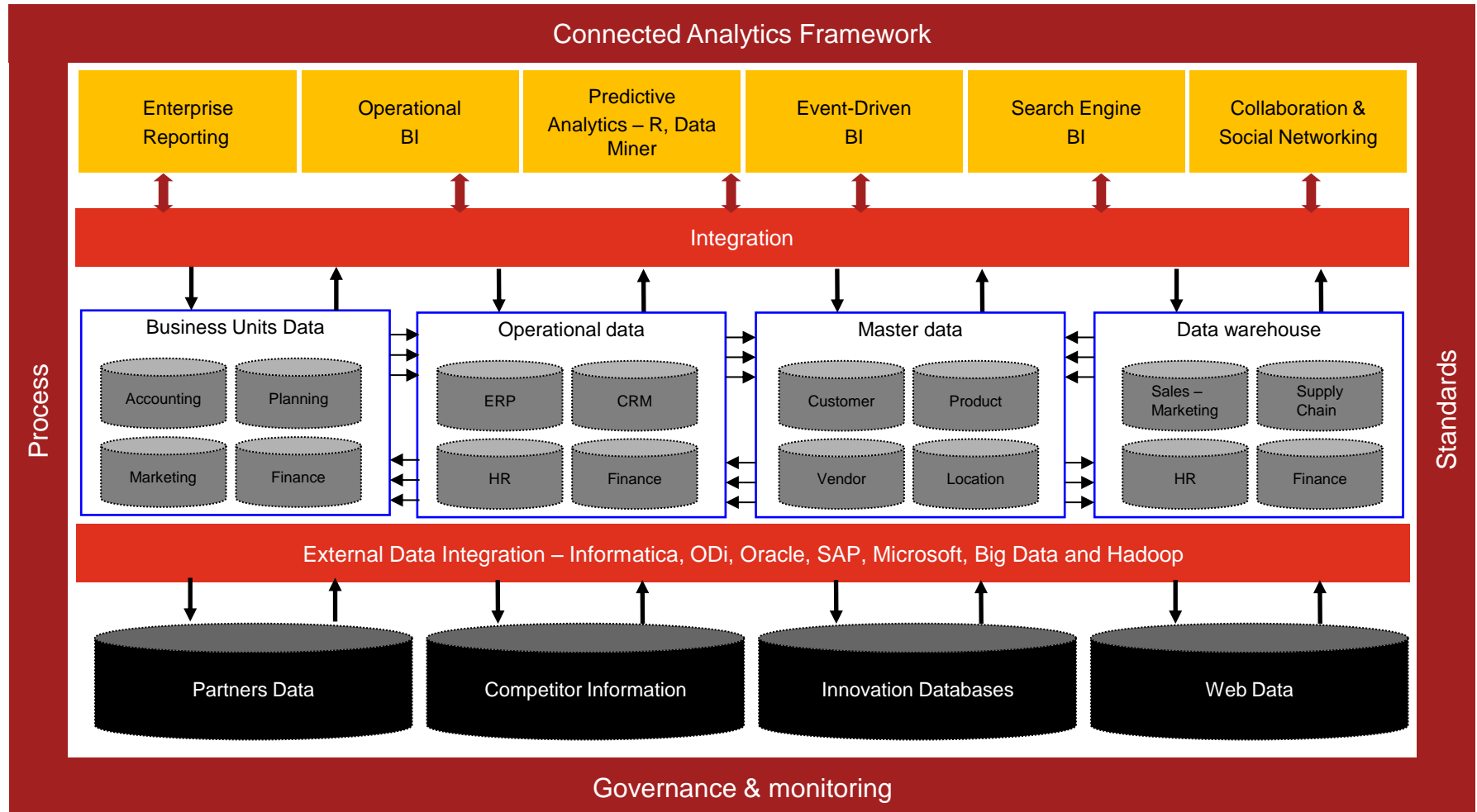


Business transformation through Connected Analytics



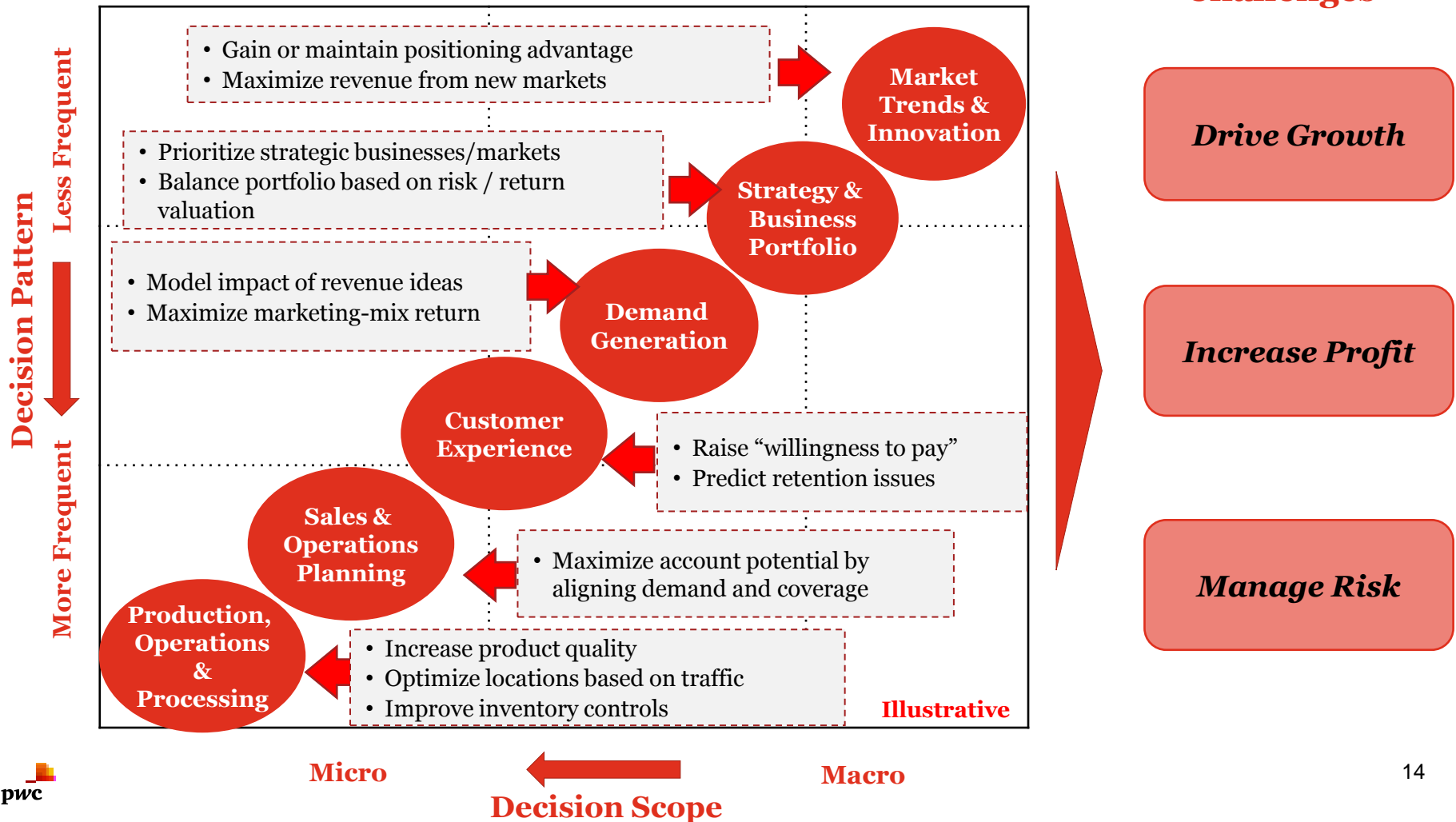
- Business strategy, market trends, and predictive models help push information and key metrics to executives
- Connected analytics link various business intelligence solutions through executive dashboards, business scenarios, and predictive models
- Executive dashboards enable key business stakeholders to make business decisions based on relevant and timely information
- KPI watch list tailored to each executive's responsibility with the capacity to cross over business functions
- Leverages existing enterprise business intelligence investments in the areas of ERP, CRM, CIS, Asset Management and others
- Enables drill-down to existing operational information and delivered analytics

Connected Analytics – A framework connecting data and information across the value chain and integrating with external information to enable rich analytics and predictive models.



Businesses are creating new opportunities and addressing challenges associated with analytics

Applied Analytics & Data In the Business



Trends impacting you...

Consumerization (of enterprise IT)

Cloud

Design

Mobile

Social

OpEx vs. CapEx (i.e., Microtransactions)

Performance

Big Data

Connectivity

Post-Berlin Wall generation

...Speed is of the essence
A few good practices to enable effective Analytics program

Business Driver Aligned	Context Aware	Executive Sponsorship
High Impact Focus	Mature Data Management	Broadcast Success
Technology Enabled <i>(not technology driven)</i>	Integrate Change Management	Business and IT Teaming
Risk Informed	Pilot Then Scale	Rapid Delivery

Our analytics experience provides tangible examples of companies making an impact with analytics & data

Selected Case Overviews

Insight & Impact

Market Trends & Innovation	Case 1: Assess mobile wallet market opportunity, adoption rate, causes of delays and barriers	<ul style="list-style-type: none"> • Strategy impacts year 5 revenue potential by 10x • Requires persistent improvement to achieve competitive advantage
Strategy & Business Portfolio	Case 2: Prioritize global growth markets for P&C insurance	<ul style="list-style-type: none"> • Using additional data helped expand model accuracy • Rationalized focus from 160 to 30 markets with an addressable ~\$210B market
Demand Generation	Case 3: Review revenue strategies to assess market potential and brand impact Case 4: Maximize media spend and return on investments by market	<ul style="list-style-type: none"> • Several revenue ideas predicted to cause mid/long term brand deterioration and share loss; linear extrapolations didn't reflect complexity • Marginal costs way different than average and highly dependent on media mix
Customer Experience	Case 5: Maximize LTV by optimizing retention and promotion spend Case 6: Optimize media spend and willingness to pay in context of geography & channel	<ul style="list-style-type: none"> • Over promotion and contact can negatively impact brand and churn in certain segments • Isolated varied price sensitivity for commodity based on market, consumption patterns and behavior
Sales & Operations Planning	Case 7: Focus sales resources on highest potential accounts	<ul style="list-style-type: none"> • Pilot and rollout (to date) have generated 5%-7% revenue lift with 16% leaner sales force and greater insight into high potential accounts
Production, Operations & Processing	Case 8: Optimized appearance, promoted attributes and location of gaming machines Case 9: Predictive Modeling to enhance loss prevention capability	<ul style="list-style-type: none"> • Appearance and location create anchoring and impact performance • Demonstrated lift against existing risk scoring index by 60%

We have developed a suite of 'jump-start' solutions that help our clients move quickly from data to insights to decisions to actions

Sales Impact™

Analyzes a company's customer, sales, and HR data to drive business decisions concerning territory and account coverage, evaluate and predict salesperson effectiveness, and to model the sales process.



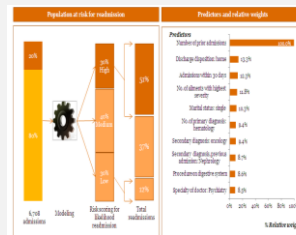
Demand Estimator™

Helps clients optimize marketing and distribution by geography by mashing internal client data and external proprietary data to define market potential by zip code for segments, products, or channels.



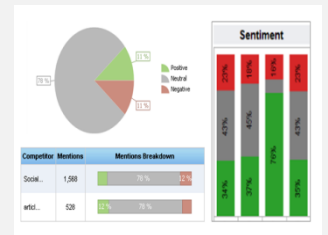
Healthcare Outcome Analytics™

Analyzes patient health record and claims data to increase effectiveness in treating patients by segmenting the population based on health characteristics, evaluating targeted treatment options and assessing efficacy of treatments based on measureable outcomes.



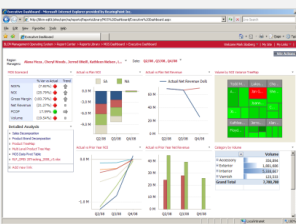
SocialMind™

Analyzes a wide range of unstructured social media data – including Facebook, Twitter, and Wordpress – to derive insights around consumer sentiments, high-risk topics, branding, and competitive positioning.



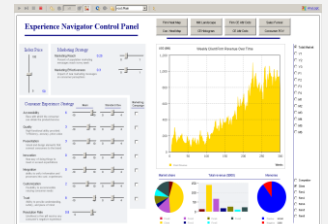
Pricing Analytics™

Analyzes a company's sales histories, product data, and customer information in order to optimize price strategy with respect to price setting, customer management, deal evaluation, etc.



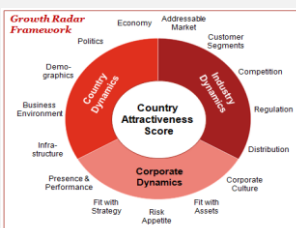
Experience Navigator™

Enables the design and testing of experience stimuli in the market (e.g., product design and marketing changes) and their impact on ability to price more aggressively, gain market share, increase loyalty, etc.



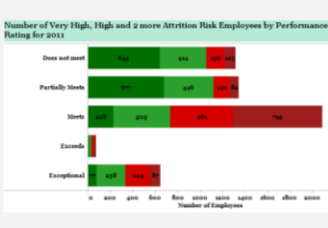
Global Growth Radar™

Applies an analytical framework for structured and transparent evaluation and prioritization of different geographies, based on hundreds of macro-level, industry-level, and company-specific considerations.



Human Capital Analytics™

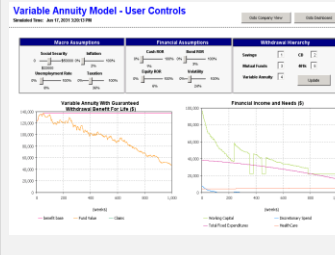
Brings science into HR decision-making by leveraging relevant historical employee data and applying advanced analytic techniques to produce actionable HR insights that drive business outcomes.



We have a suite of 'jump-start' solutions that help our clients move quickly from data to insights to decisions to actions

Life Annuity Retirement Insights

Generates key insights into consumer, employer, distributor, and provider behaviors and strategies on an ongoing basis to enable clients to predict future outcomes, monitor actual outcomes and modify parameters for better prediction.



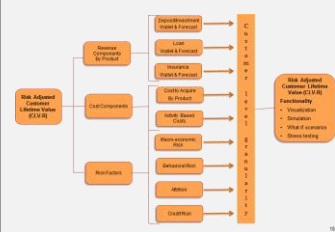
Experience Radar™

Measures the experiences of US consumers to understand customer perceptions of value and willingness to pay for different product design and experiential features.



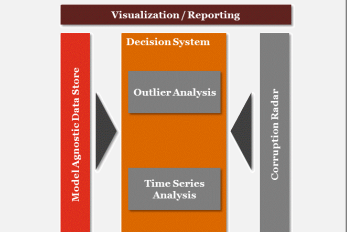
Consumer Lifetime Value & Risk

Uses customer data and external data to segment bank customers, estimate individual customer's lifetime value, and provide a 360 view of their demographics, psychographics, behaviors, and account information to increase profitable demand.



FCPA Analytics

Adds depth to the existing FCPA transaction analysis process and improves investigation efficiency by augmenting existing, rules based analysis with comparative statistical analytics and scoring models.



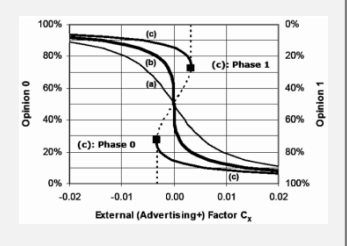
Service Impact™

Analyzes a company's customer, sales, customer service, and HR data to drive business decisions concerning customer service channel options, customer service expense as it relates to growth, field service rationalization, & creating customer success.



Marketing Analytics

Optimizes performance, including ROI & incremental volume attributable to each marketing mix decision point. Analyzes customer paths and provide corresponding segmentation.



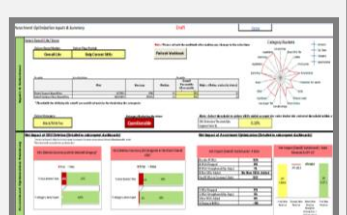
Supply Chain Risk

Models supply chain risk to help companies identify and mitigate hidden risks in supply chains and plan for uncertain demand patterns.




R&C Analytics

Suite of analytics models to help retail and consumer clients make effective marketing, merchandizing and retail execution decisions.



What can you do?

Cultivate expertise but be a strong generalist
Develop and grow relationships and networks
Learn to listen
Develop communication skills
Love the edge, creative destruction happens there
Step outside your comfort zone, frequently
If you have the appetite, read up a book or two on statistics
Think laterally, this just means do not be afraid to connect the dots
Ask a lot of questions
Develop and demonstrate empathy



Embrace
ambiguity

Q&A

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