Anticipatory Intelligence

SUMMARY: Big data, data analytics, and artificial intelligence are enabling predictive analytics used to anticipate needs, opportunities, and threats in an organization's environment. The market for predictive analytics is growing rapidly, and major computing companies are key players. Organizations view predictive analytics as one of the most important ways to leverage big data.

Forecasts

- Organizations will employ machine learning (which occurs without explicit programming) and predictive analytics to predict demand, optimize pricing, and adjust sales and marketing campaigns. They will use sensor data to anticipate maintenance requirements of physical assets and patient data streams to improve healthcare. Other applications will include banking, threat analysis and security, and agriculture.
- Prescriptive analytics, which anticipate the effects of future decisions, will be adopted by a growing number of companies and organizations.
- For individuals, an online digital assistant available on any connected device will know as much about you and your friends as you do and will make individualized anticipatory recommendations and even decisions.
- Futurist and *Wired* magazine founder Kevin Kelly forecasts that digital intelligence will be viewed as a utility—"IQ as a service."

Key Uncertainties

Development of user-friendly applications accessible to non-experts

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Rate of development of supporting technologies, such as artificial intelligence, and components such as machine learning

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Impact of regulations that enable or impede development and deployment

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Concerns about privacy, intrusiveness of the technology, and surrendering decision-making to machines

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Risk that incorrect or corrupt data lead to poor forecasts or decisions

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Supporting Trends

- **Predictive analytics.** Organizations are adopting predictive analytics to develop anticipatory knowledge. Predictive analytics use techniques from statistics, data mining, and machine learning to identify patterns in datasets.
- **Anticipatory ambient intelligence.** Technology visionaries see ambient intelligence as the outcome of pervasive connectivity, ubiquitous sensing, and the spread of artificial intelligence. In such a vision, devices of all kinds closely monitor consumers and work to understand personal behavioral patterns and seamlessly anticipate needs.
- **Big data and marketing.** More effective use of big data will support a wide variety of new marketing capabilities.
- **Algorithmic microtargeting.** Social media platforms can enable customized and personalized marketing appeals.
- **Markets of one.** The "long tail" continues to stretch as customers increasingly expect products, services, and experiences that cater to their uniqueness. Big data and data analytics are enabling new levels of personalization in marketing.
- **Learning from machine learning.** While the focus on machine learning has been what machines can do, early research is showing that humans are learning from artificial intelligence as well.
- **Big investors.** According to Global Industry Analysts, key players in the predictive analytics market include IBM, Dell, Oracle, SAP, and Microsoft.
- **Top business priority.** In a 2015 IBM-sponsored Ventana Research study, "organizations ranked predictive analytics as the most important analytics category for working with big data."

Related Drivers of Change

- Personalized AI
- Fast Data
- Nichification
- Algorithmic Politics

Notable Data Points

GROWING MARKET - OVERALL

The global predictive analytics market will reach **$4 to $9 billion** by 2020, according to various forecasts.

Source: MarketsandMarkets and Global Industry Analysts, Inc.

GROWING MARKET - HEALTHCARE

The healthcare market for predictive analytics is forecast to total **$19 billion** by 2025.

Source: Research and Markets's "Healthcare Predictive Analytics Market Analysis By Application, By End-Use, By Region And Segment Forecasts, 2014 - 2025"

GROWING DATA

Global Internet traffic is forecast to grow at a 22 percent compound annual growth rate from 2015 to 2020, reaching **25 gigabytes per person per month**.

Source: Cisco's "The Zettabyte Era: Trends and Analysis"

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Strategic Insights

- Predictive analytics may be useful for forecasting demand for association products and services—for example, attendance at upcoming conventions or interest in specific training.
- Some associations have the opportunity to develop domain-specific expert predictive systems and offer anticipatory services and consulting to members.
- There may be opportunities to catalyze the development of predictive analytic systems that integrate the expertise of multiple member associations.
- Marketers and advertisers will need access to data from the anticipatory and prescriptive ecosystems used by their customers. Associations will need to develop relationships with systems used by members and prospects.
- Members and associations will need to agree to share data at various levels to take advantage of anticipatory technologies. Sharing will raise privacy, transparency, and competitive issues.
- Predictive and prescriptive analytics will be subject to risks including hacking and dark uses of hacked data.
- Predictive and prescriptive analytics reduce the need for routine decision making, but it will be important for associations (like all users) to avoid over-reliance on the technology.

Timing

- **Stage:** Growth stage in many applications, emerging in others
- **Speed:** Medium to rapid change, with potential technical, regulatory, and public acceptance barriers

Potential Alternative Futures

- **Hamstrung by doubts:** Concerns about intrusiveness and surrendering authority to machines limit adoption of predictive artificial intelligence.
- **Privacy problems:** Backlash against perceived surveillance and privacy violations limits adoption.
- **Catastrophic failure:** A major failure of anticipatory technology—for example, failure of predictive analytics in autonomous vehicles—causes widespread rejection of the technology.
- **Machines take over:** The success of predictive analytics hastens the intrusion of ubiquitous intelligence into everyday life—artificial intelligence becomes inescapable.

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Take Action

- **Inventory and improve the current integrity of your data and management processes.** Many associations need to increase data integrity, secure more member data than they now have, and integrate different databases and systems. This will require a technology plan and budget to make improvements.
- **Acquire data analytics proficiency.** Many associations will need to hire staff or consultants who can help establish a data-driven culture and processes. Current staff will also need additional training. Board members will need assistance in using data in decision making.
- **Use data to inform your strategy and business decisions.** Associations may be able to personalize and recommend appropriate services and content to members. Associations may be able to develop new markets for existing products. Predictive and prescriptive analytics could become a more reliable way to gauge member needs and interests than current surveys and focus groups. Associations will be better able to detect and define member networks and exploit these network relationships.
- **Clarify privacy and data management policies and practices.** Data security and privacy concerns will become important as members realize how much their associations know about them. Associations with multiple divisions or chapters may have to insist on consolidated data and standard processes of data management. Business partners and exhibitors may ask for access to data to target likely buyers; while this might erode interest in trade shows and general advertising, it could open up new sources of revenue.

Keyword Search

To continue researching this change driver, use these search terms:

predictive analytics, data analytics, artificial intelligence, machine learning, big data, digital assistant, predictive algorithms, decision support, smart systems

Who Will Be Affected

Better-resourced organizations may be in a better position to invest in systems capable of supporting sophisticated data analytics. Individual membership organizations will have greater access to data than trade associations may have. For trade associations, the opportunity could be in pooling and analyzing industry data. Technology partners and association management companies may enable smaller associations to access these capabilities.

About ASAE ForesightWorks

ASAE ForesightWorks is a deliberate, evidence-based research program and emerging line of products to provide association professionals with a continual stream of intelligence about the changes facing the association industry, including:

- regularly updated action briefs;
- tools for applying insights from the research in your association;
- guidance in performing environmental scans; and
- opportunities to engage with peers around the research.

Ultimately, the program's mission is to empower association leaders to create a culture of foresight in their associations and to lead their organizations confidently into the future.

Check **asaecenter.org/ForesightWorks** and follow **@ASAEfdn** on Twitter for updates on new findings and events.

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