The Evolution of Analytics

While you walk through a large supermarket or a mall with 200 outlets, your phone beeps. You got a voucher valid for next two hours, to be redeemed at a popular restaurant about 200 meters ahead in the direction of your walking. Or, when you exited the parking in that mall, you got three different messages through an app that you missed visiting such and such outlets which were running so and so sale. Sounds familiar, isn't it. This is just one example of how a well-connected system of Telecom Company / Wi-Fi provider, Real Estate Company, Mall Management Company, retail outlets use data on real-time basis and apply data analytics to enhance customer experience. This in turn improves foot-fall and conversion ratio as the person stepping into the outlet is already pre-disposed / aware of offer and has inclination to buy.
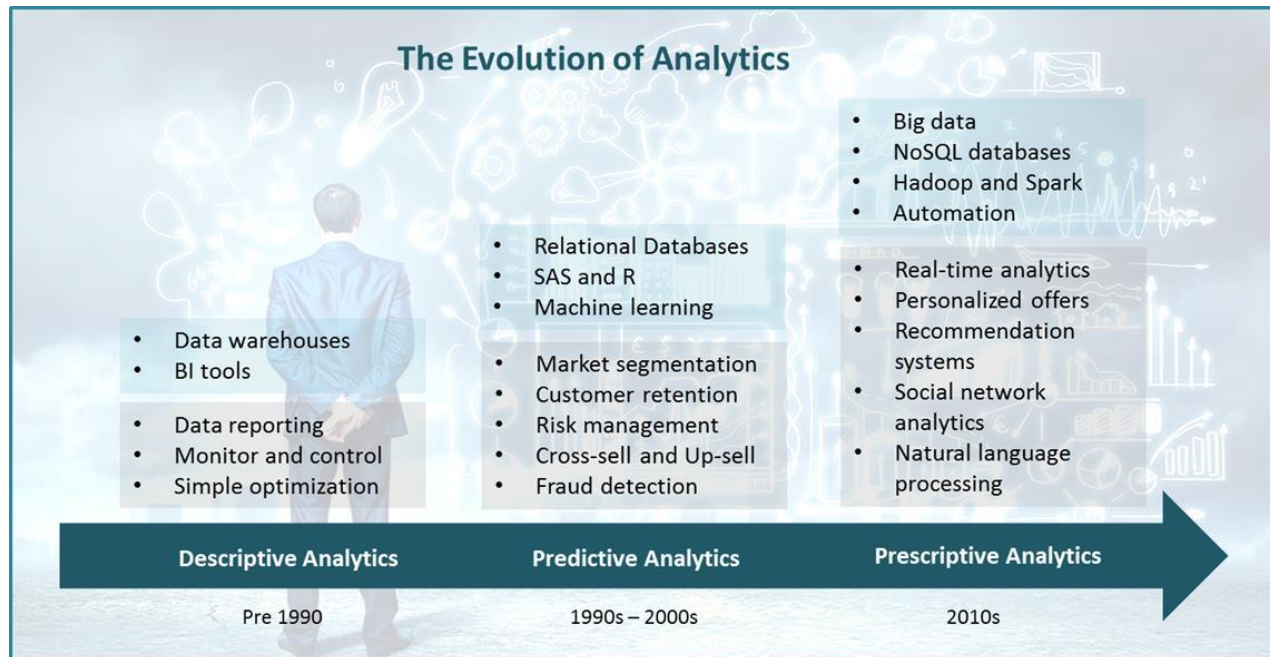
The purpose of analytics is to make data-driven business decisions. The idea of making decisions based on evidence or data is intuitive and the field of analytics was born in the 1950s, soon after the development of tools and devices that could capture and process data. Since then, analytics has rapidly and continuously evolved, especially in the last two decades. With the swift growth and diffusion of internet and telecommunications, the amount of data being generated everyday nowadays is staggering and so is the scope of data analytics.

Current state of data feeds, analytics and applications is a sea change from initial phases of analytics, which itself is an interesting story to read as follows.

Early phase – Data warehousing & BI (1960s – 1980s)

With the advent of computers and storage devices, bulk data was available for the first time. Data about processes, sales and customers were recorded, processed and analyzed. For the first time business decisions were being affected by something more than human intuition and human experience. At this point, data analytics capabilities were custom-build by big organizations, where the investment was justified. Later on, analytics services were commercialized and generalized by vendor companies. During this period, the main features of analytics were enterprise data warehouses for capturing data and business intelligence (BI) software to query and report it. Data size was comparatively smaller, however, data capturing usually involved some manual intervention. As a result, readying the data for inclusion in the warehouse took more time than the analysis itself.

The bulk of the analysis involved the creation of actionable performance reports and solving simple problems like route planning for logistics or travel, inventory management, etc. The impact was evident in terms of better operational efficiency.

The Evolution of Analytics

- Data warehouses
- BI tools

- Data reporting
- Monitor and control
- Simple optimization

Descriptive Analytics

Pre 1990

- Relational Databases
- SAS and R
- Machine learning

- Market segmentation
- Customer retention
- Risk management
- Cross-sell and Up-sell
- Fraud detection

Predictive Analytics

1990s – 2000s

- Big data
- NoSQL databases
- Hadoop and Spark
- Automation

- Real-time analytics
- Personalized offers
- Recommendation systems
- Social network analytics
- Natural language processing

Prescriptive Analytics

2010s

Analytics in the Mainstream (1990s – 2000s)

The 1990s witnessed explosive progress on the technological front – both in terms of hardware and software. Data processing, storing and visualization capabilities were taken to a whole new level while simultaneously becoming cheaper to deploy. With the advent of internet, mobile telecom and small computers; data capturing became easy and a massive amount of data was now available. The stage was set for analytics to take a huge leap.

Analytics was now being deployed not only by giant corporations but also mid-sized and some small-sized businesses. With the development of many new database technologies and UI, it became easy to handle and visualize large amount of data.

With the growth of powerhouses like Google and Amazon, heavy research began in the field data-driven algorithms like regression models, search algorithms and recommendation engines; bringing predictive analytics to the mainstream. Furthermore, with the development of data-centric tools like R and SAS, it became very easy to perform data exploration and visualization and apply various statistical

techniques including predictive analytics algorithms. Decisions were being guided by data like never before.

Analytics was now being deployed to solve complicated problems such as market segmentation, customer retention, cross-sell, risk management, pricing optimization, etc. Once providing only a competitive edge, analytics was now a necessity for survival.

Big data and beyond (2010s –)

Roughly 5 Exabyte of data was generated between 1950 and 2003. Now the same amount of data is being generated every day. With an absolutely staggering amount of data now available, there was a need for new and more powerful tools. It was the era of "Big data".

Innovative technologies of many kinds had to be created, acquired, and mastered. Big data couldn't fit or be analyzed fast enough on a single server, so it was processed with Hadoop, an open source software framework for fast batch data processing across parallel servers. To deal with relatively unstructured data, organizations turned to a new class of databases known as NoSQL. Much information was stored and analyzed in public or private cloud-computing environments.

There was also much focus on the automation of the entire process flow – from data capturing, to data processing, to model deployment, to action. Human intervention has been almost eliminated. This has made it possible to do real-time data analysis – data can be used to perform action as soon as data is generated. This has become a common phenomenon in online platforms such as ecommerce websites, where they suggest you new items based on items you just viewed.

Further, with the rise of social networking platforms like Facebook and Twitter, new analytics opportunities like sentiment analysis and social network analysis have emerged. These techniques can be combined with traditional techniques to generate even more powerful solutions.

Currently, data analytics is among the top priorities of almost all major industries across the globe. In one of the reports from IDC on survey with companies in the

US, 87% of large securities and investment companies deployed analytics, next major ones being manufacturing (84%), Life Sciences (83%), Transport (81%), energy & utilities (78%) and retail (70%).

It would also be interesting to see where analytics (big data, specifically) is being deployed and the direction ahead.

Figure 1 Impact from Big Data in the next five years. Source: Forbes

You could wonder if Big Data is only meant or relevant for large companies. That is definitely not so. Even if you are a small bakery in Munich or a boutique tailoring shop in Mumbai, you can use data analytics because data surely reveals great insights, irrespective of the size of operations. Companies can either get buried by this avalanche of big data or use technology tools to mine its riches. This ability to access and analyze endless sources and types of structured and unstructured data – such as social media chatter, commercial transactions, financial market data, GPS trails, and genomics – is revolutionizing marketing and transforming entire industries.

Because of its scope, big data has largely been the province of big businesses with big data centers. Large corporations have invested armies of data specialists and fantastic sums of money in big data. Those that harness big data can make highly data-driven business decisions, and respond and adapt to changing market conditions more quickly than their competitors. Marketing departments and ad agencies use big data to target customers with increasing granularity and accuracy.

There is no reason why every small business can't take advantage of big data without getting overwhelmed. Some tips for making a small start with big data, depending upon nature of your business:

- Establish a bidirectional digital channel – interactive website and social media presence — to get the data points you need to start accessing big data.
- The goal is to capture, sort and analyze relevant data from as many sources, and in as close to real time as possible.
- There is power in knowing what data not to track.
- Gather information directly from your customers by engaging with them via social media.

Summary

Data and data analytics have come a long way and very rapidly in last five decades. The next decade will see more changes and transformation than witnessed in last five. Unless you are in harmony and synchronization with this change, it could have serious implications. Don't miss out on the power of data and data analytics!!

TransOrg Analytics can help you to have the winning competitive edge through data analytics. Get in touch with us for a session on analytics and its applications, without any obligation at your end.

References

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