TATA CONSULTANCY SERVICES

How the Pandemic Drove Companies to Raise Their Data and Analytics Game

By Dinanath Kholkar

Essential points

- Companies with success as digital businesses demonstrate the areas where it is most productive to focus on and invest in data and analytics.

- While some companies have shown success during the pandemic in applying advanced analytics and intelligent automation to their decisions and operations, the lack of data or advanced analysis of it has hamstrung the supply chains, sales, and other central functions of many companies during a sudden economic downturn with new physical restrictions.

- Research shows that high-performance digital organizations use data and analytics to drive mass customization, create exponential value, participate in the digital ecosystem, and embrace risk.

- Four practices have been demonstrated to help a company gain the most advantage from its data and analytics: active management of its data; automating its analytics operations; increasing the diversity of its data; and moving its core business systems to the cloud.

The urgent necessity of digital transformation

The COVID-19 pandemic is a disruptive force remaking our world at a pace the virus chooses. Everything it touches is transformed, fast: education, medicine, travel…the list is

limited only by our willingness to tally the toll the virus has exacted. It is not surprising that some people are struggling to cope.

Businesses have also had to scramble to adapt to the pandemic's timetable. Senior business leaders say that COVID-19 has forced them to evaluate the strategic purpose of their activities and quickened the digitization of their customer interactions and their supply chain operations.

This accelerated pace can be both exciting and enervating…and thus unnerving. According to a TCS survey of nearly 300 large companies in North America, Europe and the Asia-Pacific region, most were unprepared to respond to the radical and transformative digitization demanded by the pandemic's requirements for social distancing and technology-mediated interactions and transactions. Only 25% report the ability to offer an end-to-end digital customer experience (with just 24% possessing artificial intelligence-based analytics to inform and improve it); a mere 23% have automated their core business processes, and just over a fifth (21%) possess key partnerships in critical digital ecosystems.[1]

Among the most interesting (and perhaps surprising) findings in this research: the constraints on the development of these essential digital capabilities were not financial. Indeed, in the face of pandemic-related losses across all economic sectors, 90% of the businesses we surveyed have either maintained or increased their investments in their digital transformation efforts.[2] The problem, we've found, lies partly in outdated data models and insufficient and inadequate data management practices.

How critical is good data and good data management? A pre-pandemic study reported that "it costs ten times as much to complete a unit of work when the data are flawed… as it does when they are perfect." And the same study found that only three percent of companies' data "fell within the minimum acceptable range of 97 or more correct data records out of 100."[3]

Data management difficulties are a longstanding challenge facing many enterprises. But that doesn't mean data analytics excellence is out of reach. We've identified leaders who — through their successes in leveraging analytics and analytics platforms, a broad range of internal and external data, AI, automation, and by going "all in" on the cloud — are illuminating those areas where it is most productive and cost-effective to invest to get their data right.

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[1] TCS, "Digital Readiness and COVID-19: Assessing the Impact" (Overview)
https://www.tcs.com/business-impact-survey-2020

[2] TCS, "Digital Readiness and COVID-19: Assessing the Impact" (Full report),
https://www.tcs.com/content/dam/tcs/pdf/perspectives/covid-19/business-impact-survey-2020.pdf

[3] Harvard Business Review, September 11, 2017, "Only 3% of Companies' Data Meets Basic Quality Standards,"
https://hbr.org/2017/09/only-3-of-companies-data-meets-basic-quality-standards

Using data to fight a disease and mitigate its disruptions

Since COVID-19 introduced itself to humanity, the world has been focused laser-like on the development of potential treatments and a vaccine. Within the life sciences sector, charged with developing those new drugs, the pandemic has been profoundly disruptive. The challenge of recruiting patients for clinical trials has increased exponentially, for example. On top of that, pharmaceutical companies have had to create new ways to collect data and new formats with which to report them to national regulatory bodies.

Of course, disruption is often the key that unlocks innovation.

AstraZeneca, for example, successfully has deployed analytics to redesign its early stage clinical trials by deploying artificial intelligence (AI) and machine learning (ML) to integrate dense data sets to "maximize their value."[4] Analytics has enabled the company to conduct trials with fewer patients (through predictive analysis of early results) to get data on outcomes sooner so it can advance the most promising medicines faster. The company also is using real-time data analytics to create more flexibility for trial patients — addressing the recruitment challenge — with data integration central to allowing them to have check-ups at local clinics (or even at home) rather than forcing them to travel to test sites. And these changes will no doubt continue post-pandemic.

The imperative to become more digitally capable in the age of the novel coronavirus is not confined to the life sciences and healthcare. Being physically distanced from their customers — with their workforces largely at home — almost all businesses have been forced to market and sell remotely, and conduct both customer and employee interactions virtually. As they rush to digitize their business processes, some companies are realizing the importance of getting better at data and analytics so they can create new business models and participate in digital ecosystems to enter new markets, establishing new service and product lines that, in turn, will drive the mass customization of marketing and sales campaigns. Online furniture retailer Wayfair, for instance, now has "more than 2,300 engineers and data scientists"[5] building machine learning algorithms to personalize their customer experiences and marketing campaigns to more than 20 million customers.[6]

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[4] AstraZeneca, "Innovative Analytics,"
https://www.astrazeneca.com/what-science-can-do/topics/clinical-innovation/innovative-analytics-bridging-the-gap-between-science-and-patient.html

[5] ZDNet, "Wayfair expands Google Cloud deal for hybrid cloud strategy,"
https://www.zdnet.com/article/wayfair-expands-google-cloud-deal-for-hybrid-cloud-strategy/

[6] Statista, "Number of active Wayfair customers from 2013 to 2019,"
https://www.statista.com/statistics/660780/wayfair-active-customers/

The pandemic also has spotlighted the importance of having flexible supply chains that can shift quickly from global to regional or local manufacturing and distribution. For example, a lack of supply chain flexibility contributed to last spring's toilet paper stock-outs in big box stores, leading to consumer frustration and hoarding. Manufacturers had difficulty changing their production lines over from the thinner toilet paper hotels and restaurants bought in bulk to the thicker style of paper consumers preferred even as demand from those hotels and restaurants cratered when the pandemic shut them down.[7]

These virus-related disruptions and others — and the often-inadequate responses to them — has made it obvious that companies need to ask why investments in data and analytics may not have paid off as they had hoped. Why have they not yielded actionable insights? Why have business processes and models proved so inflexible and resistant to change?

The answer lies in the data models they use, the way they collect and manage data, and how they organize their analytics practices. There are effective ways to strengthen each of these practices.

How to improve analytics and data management

Our research indicates that while companies have been furiously collecting and storing data, both internal and external, in a laudable attempt to become increasingly data-driven, they have allowed their data models to age. While the collection, storage, organization, and preparation of vast volumes of new data has been a labor-intensive job, that should not distract from the fruitful work of refining and revisiting the models that companies use to gain insight from all that data. And new tools, automation and artificial intelligence can increasingly do much of the heavy lifting of such tasks.

Models must be continually reexamined and refreshed to optimize the data's value. This requires a holistic view of the organization's data and analytics landscape, beginning with an understanding of the data available to the enterprise and how it is being used at every level. And as is often the case with technological challenges, achieving this enterprise-wide view begins with an organization's people, not with its machines or even its investments. "Many companies have invested heavily in technology as a first step toward becoming data-oriented, but this alone clearly isn't enough," writes Thomas H.

Davenport, co-founder of the International Institute for Analytics. Companies "must become much more serious and creative about addressing the human side of data if they truly expect to derive meaningful business benefits."[8]

Indeed, TCS has found that companies that are becoming leaders in their sectors by virtue of their digital proficiency have broad board-level and C-suite support for their data-driven strategies. That's because unless digital transformation and innovation is a priority for the senior management team, the necessity of funding the data gathering and insight analytics to drive innovation will fall outside the core budget of most organizations, and they will tend to be limited to scattered pilot projects and one-off proofs-of-concept that will rarely roll-up to enterprise-level returns on investment. However, with senior-level support, companies can create specific budget lines for investments in data analytics, including not just the machines but in both manager- and employee-level training in data literacy. (In some companies, especially larger ones in which business units may have their own vested data interests, it is advisable to appoint a Chief Data or Chief Analytics Officer both to discourage data hoarding and to establish data accountability at the C-level.)

A recent survey TCS conducted of 62 Dutch organizations indicates that their success in leveraging data and analytics is proportional to the extent to which they have instilled a culture around data and analytics. The high-performance digital organizations (HPDOs) use data and analytics to focus on such behaviors as driving mass customization, creating exponential value, taking full advantage of digital ecosystems, and embracing risk. Consider the case of one typical HPDO: the company spends 10% of revenue on digital initiatives, outsources very little of its analytics (less than 10%), automates between 50% and 70% of its analytics, operates analytics on a cloud platform, has an enterprise-wide data literacy program, and follows agile methods for all organizational processes.[9]

In fact, a sure way to measure an organization's commitment to becoming a digital business is to assess its strategic investments in data, analytics, AI and automation — and track their growth over time.

HPDOs do not do all this work for its own sake; they focus on data monetization. This monetization primarily comes from improved processes and the democratization of data across the organization for informed decision making. Monetization may also come directly by adding value to products and services by wrapping them in information or selling information offerings in existing or new markets.

[8] Harvard Business Review, "Companies Are Failing in Their Efforts to Become Data-Driven," February 5, 2019,
https://hbr.org/2019/02/companies-are-failing-in-their-efforts-to-become-data-driven

[9] TCS, "Data-Driven Business Behavior for Stellar Business Performance," May 26, 2020,
https://www.tcs.com/digital-data-driven-business-behavior-for-stellar-business-performance-blog

Real-world problems, realized solutions, and three real challenges

The most common investments in data and analytics are related to improving the quality of current data sets and optimizing business processes. Some of that work is necessary merely to stay abreast of regulatory requirements, such as the EU's General Data Protection Regulation (GDPR). But enabling more robust data management processes and governance can also free up organizations to innovate and improve their business's efficiency and profitability.

In our work with clients, we have seen the implementation of strong processes and governance deliver results across industries and sectors:

Financial services. A leading U.S.-based financial services company deployed an analytics system that highlighted the value of using multiple data sets. This helped the company improve its loss prediction accuracy by 84% across its non-residential Comprehensive Capital Analysis and Review (CCAR) risk-modeling stress test, thereby enabling it to comply with federal requirements the first time it was tested — which most companies struggle to achieve in their initial attempt. This accelerated business outcome saved the organization both time and money while it improved its decision making and its risk-management policies, putting it in an admirable competitive position.

Retail. Another kind of competitive advantage was gained by a Dutch grocery retailer that managed a 150% increase in sales volumes and a 600% rise in its stores' ordering and distribution capacity as the pandemic advanced. Those increases came with a 400% increase in customer service call volumes. The retailer handled all this through a combination of an analytics-driven warehouse management system and TCS's Integrated Virtual Command Center that served as a collaboration platform for decision-makers. That allowed them to continuously evaluate the health of the business and make proactive, data-driven decisions.

The public sector. On a larger scale, the government of India is using integrated data derived from multiple sources both to monitor and direct its responses to the spread of COVID-19. This work entails ensuring data security and the privacy of individuals, wiping out confidential information completely and maintaining an immutable trace of the activities in compliance with regulatory rules. The government, in partnership with academia, is making use of various technologies, including blockchain and database

management systems, to make data essential for India's coronavirus-related management efforts.

While such successes are within reach, acquiring fully mature analytics and data management capabilities remains extremely challenging. Yet, as with many other major business challenges, the greatest obstacles are centered around openness and willingness and less about resources. Some of these challenges include:

1. Changing the mindset of company leaders. Even now, years after "Big Data" became a buzzword, too many C-suite leaders don't fully appreciate the value of having deep, up-to-date, and well-analyzed data with which to run their businesses. It makes sense for organizations to assign a C-suite peer to lead the task. Such a champion can educate both fellow leaders and employees about the value of analytics and data to the business's future.

2. Making the data that companies collect a source of insight. It is essential that companies have a clear picture of all the data they possess, where it resides, a plan for using it, and the ability to distinguish between what is important and what is just noise. A Chief Data Officer, or Chief Analytics Officer, can establish a team to orchestrate this work.

3. Being responsible and ethical in storing and using sensitive data. Consumers and regulators are becoming increasingly knowledgeable about and sensitive to the data businesses possess and use. Complying with data privacy regulations, such as GDPR, is now table stakes for all businesses. More complicated — and ultimately more rewarding for a company in the long-term — is the application of AI to ethical ends, including ensuring that predictive algorithms making assumptions about future customer behaviors do not contain all-too-human biases in their design. It is critical to make such models explicable and transparent. This provides guardrails for company decision-making, and helps organizations explain their actions when questioned about their use of data and the operations of their automated systems.

The four keys to achieving data maturity

"Data maturity" describes organizations that have established successful data management and analytics practices that elevate everything they do. In the final analysis, the data and analytics maturity of an organization is closely correlated with its effectiveness as a business.

The TCS study of 62 Dutch companies found four practices that helped them get better at leveraging data for business effectiveness:

1. Active management: Acquiring, validating, storing, protecting, and processing data to ensure it is accessible, reliable, and current. Managing it includes the quality of the data, governing its accessibility and use, and implementing information lifecycle management.

2. Automating analytics: Reducing the need for people to do the repetitive and predetermined work of turning data into analytics and insights saves organizations time, money, and improves both accuracy and employee morale.

3. Heterogenous data types: Moving beyond internal enterprise data (such as sales and supply chain reports) to leveraging ecosystem data (including marketplaces and partner data) and then including universal data — provided by governments, non-governmental organizations and publicly available sources (social media, economics data, GPS data, and more) — is how organizations travel the path toward becoming truly data-driven. This requires deploying advanced data platforms to replace the transitional platforms — enterprise data warehouses, departmental data marts, etc. — with which companies typically begin their data journeys. Leaders typically invest in more advanced platforms such as active data warehouses and data lakes.

4. Cloud adoption: It is impossible to participate in emerging digital ecosystem markets, equip one's business with advanced analytics capabilities, and become resilient and agile unless operational software and systems are hosted in and advantaged by the cloud. An organization simply can't move or grow fast enough if it is tied to costly, inflexible architectures.

To what purpose?

Data has great potential value, but on its own, it achieves nothing. Even analytics capabilities must be applied to a greater purpose, or else they are irrelevant pictures and descriptions, not tools yielding a competitive advantage. But applying advanced artificial intelligence algorithms to the analysis of data can yield insights for companies and let them automate many of the necessary but time-consuming decisions, communications and actions that are of lesser value — and thereby accomplish things of greater value by empowering employees to achieve what wouldn't be possible without the aggregation and analysis of that data.

In the more immediate term, efficiency and effectiveness can be improved, but as its data maturity progresses, a company can create new jobs to support new business models and explore new opportunities better aligned to its future and the future of the planet. It's an audacious goal — and it begins with data.

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