BY FRANK DI LORENZO, JR. & BEN HARRISON

EMBARKING ON THE JOURNEY
to Become Data-Driven

"Data…is the sustainable endless energy source we have been looking for."[1] A well-crafted strategy transforms a company's culture into a data-enabled business that operates based on trusted information rather than data uncertainty.

Similar to planning a family vacation, the journey to becoming a data-driven company requires coming up with a vision and getting buy-in from everyone on the destination, planning the trip, and carrying out the plan.

THE VISION

Every journey begins with a vision and getting everyone on board and excited. To help convince your leadership and team, you might consider that data-driven companies are more productive and gain an advantage over competitors. They are also 23 times more likely to acquire customers, 6.5 times as likely to retain customers, and 18.8 times as likely to be profitable as a result.[2]

In our experience, many companies do not realize the need for a data-driven vision until after an event occurs – positive (a new revenue opportunity) or negative (a major cost over-run). Until they realize they need to use their data more effectively, the energy required to overcome the status quo and start the journey is too daunting.

We also often hear that companies are hesitant about becoming data-driven because their data is incomplete. They would rather clean up the data before they start advancing their analytics. However, an analytics system will often accelerate the data cleansing process because the tools highlight the messy data and provide immediate benefits for having it corrected.

PLANNING AN ENTERPRISE ANALYTICS STRATEGY

A successful vacation hinges on the coordination of several moving pieces (flights, transfers, hotels, language barriers, etc.) that are part of the plan. Similarly, becoming data-driven hinges on a comprehensive plan as well;
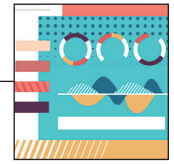
in this case, an enterprise analytics strategy. An enterprise analytics strategy will define how to extract, transform, and present your data to end users. It will also include a project plan, implementation budgets, infrastructure, training, and an adoption plan.

Following these essential elements of an enterprise analytics system will help change the way you think about reporting and analytics.

PROJECT LEADERSHIP

Analytics technologies are evolving rapidly, and someone should be responsible for setting course corrections and incorporating new capabilities that were not possible when this journey began. To do this, some companies have created a chief data officer role to guide their companies through this transition.

A smaller organization might consider working with a consulting partner as a trusted data advisor until the leadership team can dedicate a senior level position to drive data literacy

helping to manage the schedule, budget, and milestones for a smoother data-driven journey.

Whether creating a new role or hiring a consulting partner, your data journey should align with your business since data transformation is a business initiative, not an IT initiative.

Analytics Platform

Selecting the right technology requires a great deal of understanding and evaluation. Your hardware and software should be harmonized as a system, which is referred to as the analytics platform and includes such items as:

- Extract, transform, and load (ETL) software
- Server hardware
- Server database software
- End user software
- Data modeling software

Since the data is likely in multiple locations and databases, the analytics platform will need to be robust and expandable.

Best Practices for **Analytics Data Models & Data Sets**

Star Schema

Using star schema structures with a central fact table surrounded by dimension tables enhances the *usability* and will allow you to effectively analyze data across various subject areas of your business. Data sets are more user-friendly when they are built for a common purpose such as accounts payable (A/P) or work orders. Having user-friendly data sets should be one of the main results of an enterprise analytics system.

Time-Based Measures

Including time-based measures (e.g., month-to-date and year-to-date) in the fact table allows users to *calculate* measures consistently based on time and *compare* previous periods and years with ease.

Single Defined Formulas

The value of single defined formulas for calculated fields (i.e., revenue, profit, and backlog) cannot be overstated. Traditional reporting requires formulas to be defined once in each report, and changes to a formula would require every report to be edited. A properly constructed data set will centralize business logic, which is defined once instead of being

duplicated hundreds of times. This will result in users *trusting* the data they analyze.

Dedicated Analytic Sets

Business users running queries can significantly impact the performance of their enterprise systems. At the same time, their experience with the *speed* of the analysis will affect how many times they will drill down through the data to get to the "why" of a new trend or outlier.

For these reasons, it is recommended that the analysis be performed against a dedicated analytics data set that is separated from the transaction system. Ideally, the analytics cube should be "in memory" (e.g., a Power BI data set or an SQL Server Analysis Service (SSAS) tabular data model).

Refreshing Data

If you choose to have a separate data set for analysis purposes, you must plan for how it will be refreshed so that the data is *current*. Most companies will need some portions of their data refreshed periodically throughout the day and other portions nightly or weekly. Your analytics platform needs to have the flexibility and capacity to manage these refresh partitions.

Many data-driven companies end up using both internal data (from their own enterprise data systems) and external data (such as weather, interest rates, and fuel prices).

Data Models & Data Sets

The data needs to be transformed into valuable information for end users. The result of this transformation will be data models and data sets. Transactional data in an enterprise system (i.e., enterprise resource planning (ERP)) is structured different than aggregated data required for analysis tools to work effectively. The transformation process requires an analytics platform that is based on the source data types and locations. See the previous page for some best practices to build analytics data models and data sets.

Data Governance & Security

Data governance and security are important parts of a data-driven company's analytics program. Even as the number of people with access to information expands, you must control the definitions of the "facts" that users rely on to make decisions. Your analytics data sets will become an enterprise asset, which is as important as any other data system your company uses and will present a single version of the truth.

More people accessing the data also means more data protection, so be sure to plan your data security strategy so that it is manageable.

Budget

The journey to being data-driven will incur expenses, but the benefits realized by data-enabled businesses far outweigh the costs.

Identifying quick wins and achieving short-term milestones will help retain your management team's confidence in the journey. Your analytics program will gather steam as more people realize what is possible.

Some of the cost categories to consider in your budgetary planning include user licenses, hardware, software, training, staff time, and consultants.

End User/Citizen Data Scientist **Analytics Tools**

Be user-friendly.

Today, people expect user interfaces to be intuitive. If the selected tool does not look and behave like the other tools you have deployed, user adoption will suffer.

Support all internal and external data sources.

Companies have multiple data sources that will eventually be subject to analytics. Beyond your ERP system, there are other internal data sources (i.e., CRM programs and field production) and external sources (i.e., weather, interest rates, telematics). Make sure your analytics tool can incorporate all these potential sources.

Have mobile capabilities.

People expect to be able to access their data anywhere and anytime. Phone or tablet mobile apps are a necessity.

Allow users to drill into details to determine the "why" of a trend change.

The purpose of analytics is to gain insight into important business trends or outliers. You need to be able to quickly validate those details behind the trend to determine the correct action.

Be innovative and evolving.

As mentioned, the nature and volume of data is quickly evolving. The methods used to analyze vast data sets must be adaptable as well. (The Gartner Magic Quadrant for Analytics and Business Intelligence Platforms[3] is a good resource to explore the options).

Training & Culture

The people who need to be able to analyze the data are the current employees. As the data-driven culture expands within your company, it is important to provide training to set a minimum baseline of data literacy. Sharing insights will be easier when employees speak a common language and understand basic data analytics principles.

As employees become power users, or citizen data scientists, empower them to make decisions and hold them accountable for using the data analytics that are available. The best training in the world loses impact if not reinforced by actual practice.

Many data systems (e.g., ERPs and customer relationship management (CRM) programs) have built-in analytics (or at least built-in reporting) functions. These all behave differently and require unique skill sets. You should minimize the number of end-user tools required to analyze your disparate data sets. Optimally, users should have one analytic solution (such as Microsoft Power BI) for all data sets and should be experts in using that tool.
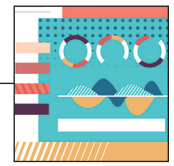
Mobile Capabilities

It is hard to imagine a successful data-driven culture that does not embrace mobile capabilities. Your citizen data scientists need to be able to dig in and research from anywhere, at any time, on multiple platforms.

If an employee needs to wait until they are near a computer, then the opportunity for research and analysis may be missed. Having mobile capabilities means that solutions are always within reach, even if it is forwarding the question to a colleague to resolve.

EMBARKING ON THE JOURNEY

Now that you have planned out your trip, it is time to embark on your journey. As shown in Exhibit 1, there are four specific phases to becoming data-driven. These are cultural shifts as much as they are technological shifts.

Traditional Reporting

Most companies find themselves stuck in the traditional reporting phase, making reactive decisions based on historical data (see Exhibit 2 on the last page). It mostly focuses on quantifying the past, and reports of this phase are often developed by IT and consist of rows and columns of numbers. Often, data outliers are hidden so that the cause of changes in a trend will need to be discovered by running a separate report.

Visualization & Analysis

In the visualization and analysis phase (see Exhibit 3 on the last page), more modern reporting capabilities are performed using data visualizations to tell a story. These are often interactive and allow users to "slice and dice" proactively through the data. Outliers within the data are instantly visible, especially after interactive analysis. Even though this is the second stage, it is an important step for companies to take on their journey to becoming data-driven. Most companies' recent analysis initiatives have been focused on this phase.
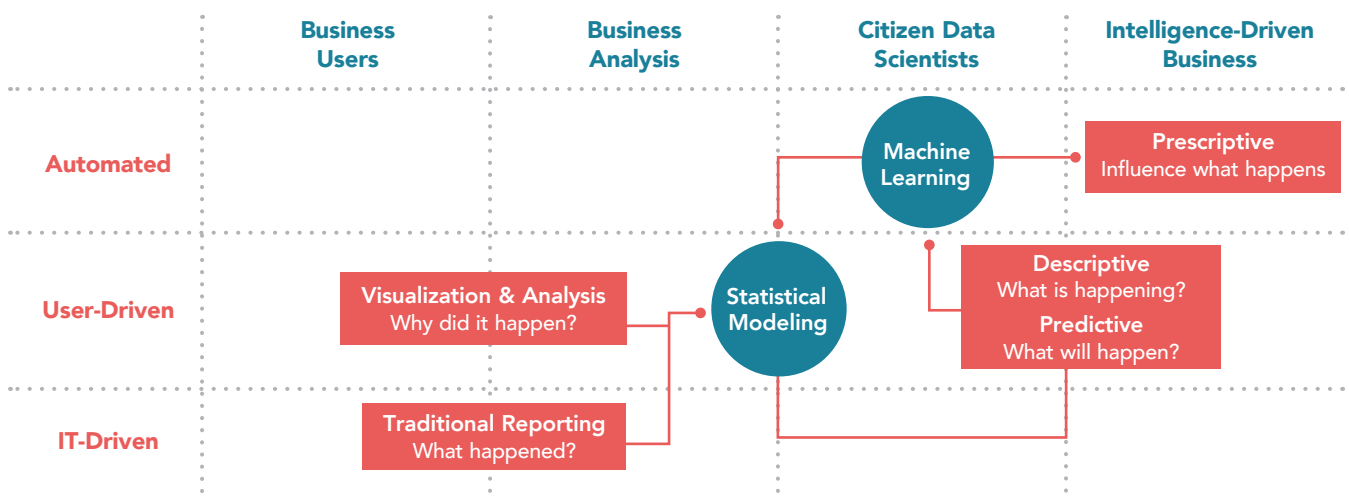
Descriptive & Predictive

The descriptive and predictive phase is when companies begin to transform into becoming more data-driven. In this case, outliers in the data are understood, and the course of action might be quantifiable. An example might be when you can understand and quantify the impact an increase in backlog will cause to your fleet utilization.

Prescriptive

In the prescriptive reporting phase, which will become more pervasive in the coming years, the outliers are anticipated and the corrective action is planned. It is a possibility – perhaps probability – that your data can help prescribe corrective actions. This does not mean that your company would run on "autopilot," but rather that the impact of corrective actions would be better understood. An example might be that you would know the effect on total revenue due to a drop in interest rates or an increase in fuel costs and the corrective action to mitigate the impact.

While all of these phases are milestones, the process is not strictly linear. There may be silos within your company that will be a few steps ahead, but the sophistication of your data analysis model will need to be better than it is today to strategically navigate beyond step one.

EXHIBIT 1: Your Data Transformation Journey

	Business Users	Business Analysis	Citizen Data Scientists	Intelligence-Driven Business
Automated			Machine Learning	Prescriptive — Influence what happens
User-Driven	Visualization & Analysis — Why did it happen?	Statistical Modeling		Descriptive — What is happening? / Predictive — What will happen?
IT-Driven	Traditional Reporting — What happened?			

The Destination

While the destination is the ultimate goal, becoming a data-driven company is more about the journey. By following these suggestions and best practices, you will begin to reap the benefits as soon as you begin your journey, especially if it is well-planned. Building the right data strategy will drive your business planning and move your corporate needle in a positive direction. ∎

Endnotes

1. Carruthers, Caroline & Jackson, Peter. "Data-Driven Business Transformation: How to Disrupt, Innovate, and Stay Ahead of the Competition." *Wiley*. 2019.

2. Bokman, Alec; Fiedler, Lars; Perrey, Jesko; & Pickersgill, Andrew. "Five facts: How customer analytics boosts corporate performance." McKinsey & Company. July 1, 2014. *www.mckinsey.com/business-functions/marketing-and-sales/our-insights/five-facts-how-customer-analytics-boosts-corporate-performance.*

3. Richardson, James; Sallam, Rita; Schlegel, Kurt; Kronz, Austin; & Sun, Julian. "Magic Quadrant for Analytics and Business Intelligence Platforms." *Gartner*. February 11, 2020.

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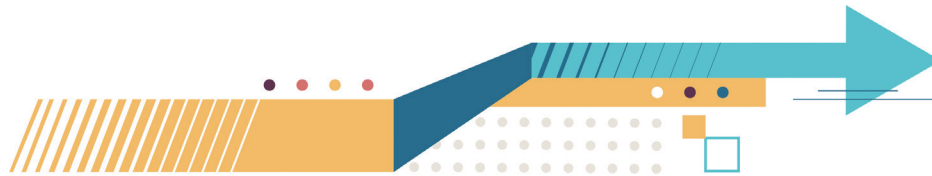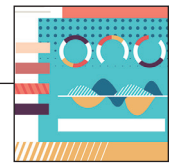Website: www.preferredstrategies.com

EXHIBIT 2: Sales Revenue

	January	February	March	April	May	June
Asia	$144,088,593	$112,065,075	$113,479,209	$127,474,506	$159,443,303	$155,293,304
Europe	$99,917,852	$147,650,044	$143,483,150	$157,414,490	$148,102,715	$144,235,084
North America	$317,210,453	$321,785,303	$311,403,997	$427,745,830	$436,009,606	$425,526,192
Total	$561,216,897	$581,500,422	$568,366,356	$712,634,825	$743,555,624	$725,054,580

	July	August	September	October	November	December
Asia	$165,375,165	$149,053,847	$146,236,760	$153,354,622	$176,584,798	$182,913,701
Europe	$151,663,329	$135,447,594	$130,965,225	$120,628,862	$120,252,310	$123,806,813
North America	$429,526,192	$432,344,758	$422,840,529	$447,912,650	$480,474,550	$479,104,404
Total	$746,564,686	$716,846,200	$700,042,513	$721,896,133	$777,311,657	$785,824,918

EXHIBIT 3: Sales Amount by Date & Continent