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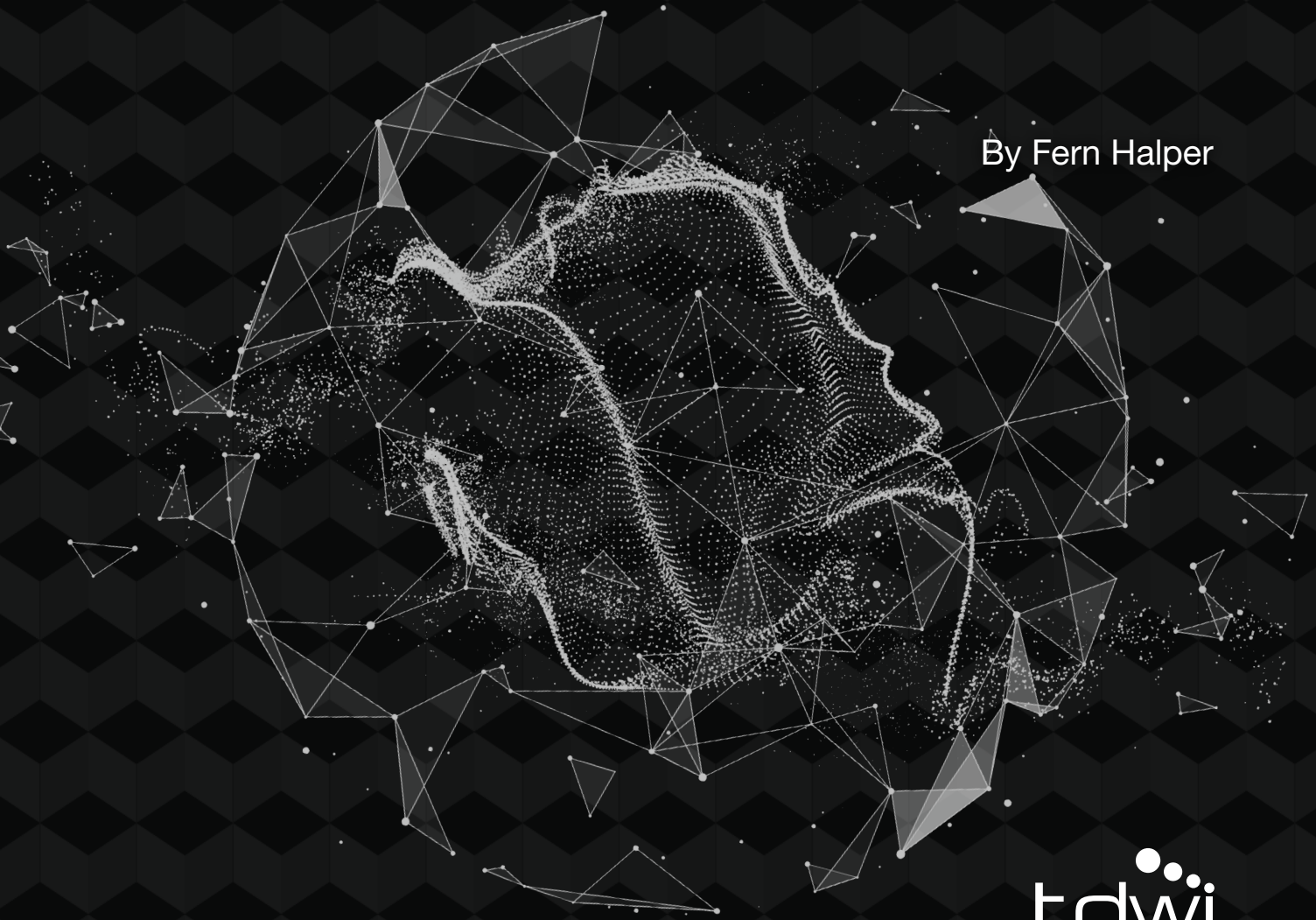
TDWI Analytics Maturity Model

Assessment Guide



By Fern Halper

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About the Author

FERN HALPER, PH.D., is VP and senior director of TDWI Research for advanced analytics, focusing on predictive analytics, social media analysis, text analytics, cloud computing, and other "big data" analytics approaches. She has more than 20 years of experience in data and business analysis, and has published numerous articles on data mining and information technology. Halper is co-author of "Dummies" books on cloud computing, hybrid cloud, service-oriented architecture, and service management, and *Big Data for Dummies*. She has been a partner at industry analyst firm Hurwitz & Associates and a lead analyst for Bell Labs. Her Ph.D. is from Texas A&M University. You can reach her at fhalper@tdwi.org, @fhalper on Twitter, and on LinkedIn at https://www.linkedin.com/in/fbhalper/.

About TDWI Research

TDWI Research provides research and advice for data professionals worldwide. TDWI Research focuses exclusively on data management and analytics issues and teams up with industry thought leaders and practitioners to deliver both broad and deep understanding of the business and technical challenges surrounding the deployment and use of data management and analytics solutions. TDWI Research offers in-depth research reports, commentary, inquiry services, and topical conferences as well as strategic planning services to user and vendor organizations.

Sponsor

Amazon Web Services, Matillion, Snowflake, and Tableau sponsored the research for this TDWI Analytics Maturity Model Assessment Guide and its accompanying Interactive Assessment Tool.

Foreword from the Author

Today, many organizations realize that analytics can provide an important competitive advantage. These organizations want to move forward to evolve their analytics strategies beyond spreadsheets and dashboards; many seek to build self-service capabilities to democratize analytics. Still others are moving to utilize machine learning and other advanced forms of analytics such as natural language processing (NLP). TDWI expects interest will continue to build for analytics technologies and methods, particularly as organizations include less traditional users as part of their growing analytics culture.

Of course, analytics maturity is not just about analytics techniques and software. It includes the data management to support disparate kinds of data from various internal and external sources. For example, is your infrastructure scalable to support increasing amounts of diverse and disparate data? Maturity also involves the cultural and organizational processes that enable companies to become more data-driven. This includes development techniques as well as the current processes that allow a wide range of people throughout the organization to manage, govern, and utilize the data and analysis.

TDWI created the Analytics Maturity Model and Assessment in response to requests from organizations to understand how their analytics deployments compare to those of their peers in order to provide best-in-class insight and support. The assessment measures the maturity of an analytics program in an objective way across five dimensions that are key to deriving value from analytics.

Value of the Model

The Analytics Maturity Model can help guide business and IT professionals on their analytics journey. It provides a framework for companies to understand where they've been, where they are, and where they still need to go with their analytics deployments. The model can also provide guidance for companies at the beginning of their analytics process by helping them understand best practices used by companies that are more mature in their deployments.

A great feature of the Analytics Maturity Model is the interactive benchmark assessment. At the end of the survey, you will be able to measure the maturity of your deployment in an objective way and compare your maturity level to that of your peers. This TDWI Assessment Guide is designed to help you understand the phases of maturity in analytics as well as help you interpret your benchmarking scores. I trust you will find it useful.

Fern Halper,
TDWI VP Research, Sr. Director Research for
Advanced Analytics

Introduction

Increasingly, organizations are looking to gain competitive advantage using data and analytics. In a recent TDWI survey, for example, 90 percent of respondents agreed that they will need to undergo some sort of digital transformation to compete in the future. Digital transformations change how organizations do business, and data and analytics are at the heart of the transformation. Analytics can provide tangible benefits such as deeper insights, increased productivity, improved customer service, improved operational efficiencies that drive cost savings, and top-line growth that delivers higher profits. For innovative companies, analytics can drive new products and services.

TDWI sees organizations analyzing data to understand customer behavior, improve operational efficiencies, and identify fraud as well as for a host of other use cases. To do this, companies are using traditional query and reporting tools as well as newer approaches such as machine learning. Many organizations are also looking to visual data discovery approaches to find insights within their data. Self-service is a top priority among companies. Additionally, as organizations look to analyze new data, they realize that to succeed they need a scalable, flexible data architecture to support data management, data access, data governance, and data security.

Not surprisingly, the demand for analytics continues to increase as its value becomes clear. At TDWI, we see that those organizations that become more sophisticated with analytics also tend to derive more value from it. In fact, the more mature the organization is in terms of analytics, the more likely it is to measure top- or bottom-line impacts. This is part of a virtuous cycle where, as organizations begin to reap the benefits of analytics, they tend to put more advanced analytics in place. The success builds on itself.

DEFINITIONS

ANALYTICS.
When people think about analytics, they generally consider a range of techniques. These run the gamut from spreadsheets and dashboards to more advanced techniques such as self-service data discovery and machine learning. For the purpose of the maturity model, we refer to the complete spectrum as analytics.

DATA INTEGRATION.
A key to analytics success is data integration, and in this assessment we define it as the collection of technologies that capture and prepare data for analysis and operations. Data integration includes such technologies as data preparation, data quality, and metadata management.

DATA PLATFORMS.
Data platforms are where data is ingested and persisted to be provisioned for a wide range of applications and operations, including relational DBMSs, columnar DBMSs, analytics DBMSs, in-memory databases, NoSQL, Hadoop (and other open source technologies), and storage subsystems.

Trends in Analytics

There are several interconnected technological and organizational trends that are relevant to companies looking to become more mature in their analytics efforts. These important trends include:

SELF-SERVICE ACROSS THE ANALYTICS LIFE CYCLE. An ongoing trend in analytics is the move to make it available to more people in the organization. In fact, self-service—using solutions that enable many types of nontechnical users to be productive because they are easier to use, do not require coding, and do not require IT to set up all data access, queries, visualizations, and preparation—is a top priority among organizations that we survey.

In this definition, self-service isn't just about the actual analysis portion of the analytics life cycle; more organizations want self-service functionality across the analytics life cycle. Self-service provides business analysts and users with more flexibility and agility to build pipelines, access data, and derive insights, which frees up the data experts to deal with the complexities of an increasingly modern environment. In terms of maturity, this often requires a balance between business and IT and building a partnership to ensure trustworthy data.

ARTIFICIAL INTELLIGENCE (AI) AND OTHER MODERN ANALYTICS. AI is the phrase *du jour* and market hype around it is soaring. Two key technologies under the AI umbrella include machine learning (ML) and natural language processing (NLP). Machine learning, although not new (early algorithms were developed more than 20 years ago), provides a way for computers to perform tasks without being explicitly programmed. This includes learning and identifying patterns across vast amounts of diverse data which enables insights, classification, and prediction. Machine learning is fueling new use cases such as image classification and diagnostics.

NLP involves analyzing, understanding, and generating responses that enable interfacing with systems using human rather than computing languages. NLP, which can also utilize machine learning, is being used in chatbots as well as personal assistants and to understand customer sentiment and intentions. Many organizations are on the cusp of utilizing AI technologies.

AUGMENTED INTELLIGENCE. Tied to the previous trends is the move to provide easy-to-use interfaces in analytics. A recent trend is to embed advanced analytics such as machine learning or NLP into the software itself to automate analysis. For instance, some tools provide automated insights that are available when the user logs in to the system. Some analytics vendors offer tools that help business analysts (and even many business users) construct machine learning models. Here, all the user needs to do is to specify the outcome or target variable of interest along with the attributes believed to be predictive. The software picks the best model. Other tools are more automated.

Many view these tools as a way to put more complex analytics, such as machine learning, in the hands of business analysts. This is often referred to as "augmented intelligence" or "smart tooling" and is one way organizations are planning to upgrade the skills of their business analysts to do (at least some of) the model building. These tools can also help data scientists be more productive. At TDWI, we see more organizations interested in using these tools, but a mature organization will put the right processes in place to make sure these tools are used properly.

NEW ROLES SUCH AS MLOPS. As organizations scale their analytics efforts, they are often hiring more data engineers to develop complex data pipelines. Likewise, as machine learning models go into production, organizations see the need for a new role—that of MLOps. This team is responsible for deploying models into production and monitoring them thereafter. The MLOps team can be overlooked, but successful organizations typically have an MLOps team to help validate models and put them (and other AI apps) into production. MLOps teams are often skilled in newer open source

technologies such as Spark and Python, as well as in understanding the output of models built using commercial tools.

OPEN SOURCE. Open source has become quite popular for analytics because it is a low-cost source community for innovation. This appeals to many data scientists and analytics application developers—especially those who like to code. In fact, TDWI research indicates that organizations are looking to open source projects such as R and Python to be a big component of their analytics strategies, especially for data science initiatives. Many analytics vendors already incorporate support for R and Python into their packages.

THE CLOUD. The cloud has become a major platform for data and analytics. At TDWI, we see organizations moving more of their data management to the cloud. Cloud data warehouses and data lakes are becoming increasingly popular.

Organizations like the cloud because it provides scalability, elasticity, and flexibility. When you need to perform analytics processing on a large data set, the cloud enables you to procure as much storage and compute services as necessary. When you are finished with the analysis, you can release these services so you are no longer paying for more capacity than you need. Likewise, with the virtual resources of the cloud, incorporating new data sources and setting up analytics sandboxes or data labs in a cloud data warehouse environment can be fast and easy.

One newer trend is the use of multicloud deployments. Multicloud is where organizations use multiple cloud providers (two or more cloud service providers) to provide infrastructure, applications and key business functions. It's basically a services model. Instead of a business using one vendor for everything (cloud hosting, storage, and the full application stack), in a multicloud configuration, enterprises use several. At TDWI, we typically see more mature organizations utilizing the cloud for data management as part of a multiplatform strategy.

UNIFYING DATA PLATFORMS. As organizations collect and analyze increasing amounts of diverse data from disparate sources, they often want to unify that data for trusted analytics. There are numerous approaches. Some organizations move their data to a cloud data warehouse for analytics. Others look to a data fabric that might be enabled by data virtualization. Still others look for a unified technology stack that includes data management (and ETL) and analytics. The key is to develop a high-quality source of data. As part of this, more organizations are also looking to technologies such as data catalogs to help access trusted data.

TDWI Analytics Maturity Model: The Context for Benchmark Scores

Analytics maturity can be described as the evolution of an organization to integrate, manage, and leverage all relevant internal and external data sources into key decision points. It means creating an ecosystem that enables insight and action. In other words, analytics maturity is not simply about having some technology in place; it involves technologies, resources, data management, governance, and organizational components. It can take years to deploy and instill an analytics culture in an organization.

Model Dimensions

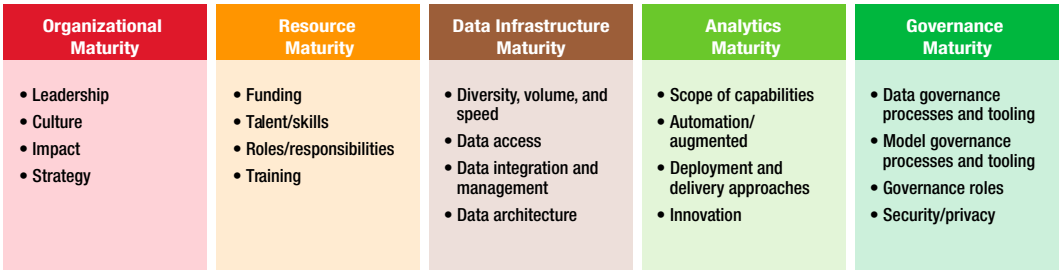


Figure 1. *TDWI Analytics Maturity Model dimensions.*

The TDWI Analytics Maturity Model Assessment is made up of 52 questions across the five categories that form the dimensions of the TDWI Analytics Maturity Model (see Figure 1). These dimensions are:

- **ORGANIZATION.** Organizational factors can often make or break an analytics effort. To what extent does the organizational strategy, culture, and leadership support and evangelize a successful analytics program? Are analytics used for decision making across the organization? What percent of teams use analytics for day-to-day decision making? Is it easy to deploy analytics into production? Is there a culture of trust in the analytics? A willingness to try new things? A unified strategy?
- **RESOURCES.** Performing analytics requires skills and budget. How are analytics projects funded? How is adoption facilitated? How does the organization grow talent and build skills? How does it organize to execute? Does it have the talent and skills needed for modern analytics including data literacy, model building and deployment, and data engineering? Is it struggling to maintain the infrastructure? Working around the clock to maintain it?
- **DATA INFRASTRUCTURE.** Data is a key component of any analytics initiative and more advanced organizations often utilize more diverse data types and volumes. What kind of data does the organization use for analysis? High volume? High frequency? High integrity? Is it accessible? How is the data integrated? Is the architecture distributed? Utilizing cloud services? Is the architecture coherent? Can the infrastructure handle the growth in users? Can it scale by use case/seasonality? Can it scale on demand to fit users' needs? Is it monolithic or microservices-based?

- **ANALYTICS.** What is the scope of your analytics? This includes the kinds of analytics utilized (e.g., machine learning, real-time analytics, etc.) and how analytics results are delivered in the organization. It also includes the percent of people with access to analytics. What percent of people in the organization perform their own analytics? Are analytics embedded into business processes? Are predictive analytics or machine learning models built? Deployed into production? Are automated analytics part of the picture? Is the company innovating with analytics?
- **GOVERNANCE.** How coherent is your company's data governance strategy in support of your analytics program? Is the company able to balance users' data discovery and analytics explorations against IT processes and policies effectively? Is there collaboration between business and IT? Is the organization able to ensure the proper access and use of data? Are advanced models governed? What guardrails and controls are put in place to ensure that "correct" models are deployed into production? How are they tracked? Are the right roles in place from both business and IT? Is the organization utilizing modern tooling such as data catalogs to help build trusted data assets? Are security and privacy measures deployed for personally identifiable information and other sensitive data types?

Stages of Maturity

The TDWI Analytics Maturity Model consists of five stages: Nascent, Early, Established, Mature and Advanced/Visionary. As organizations move through these stages, they should be gaining more value from their analytics investments. Figure 2 illustrates these stages.

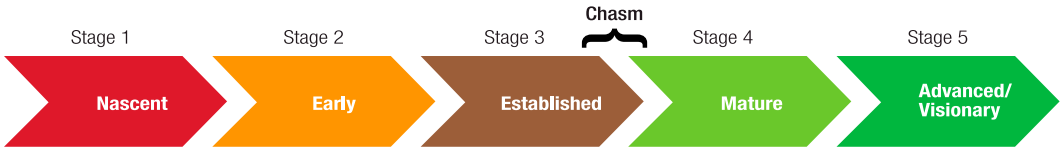
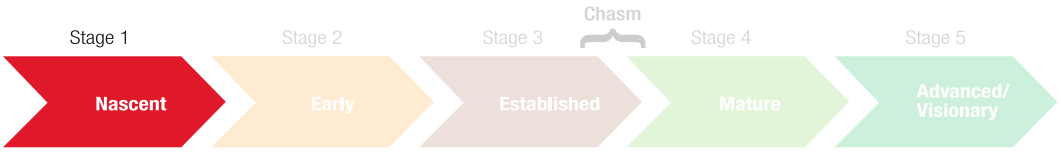


Figure 2. *Stages of maturity in the TDWI Analytics Maturity Model*

This Guide provides an overview of each of the stages of the TDWI Analytics Maturity Model. These descriptions provide context to use to interpret your scores when you take the assessment.

Overview of the Stages

Stage 1: Nascent



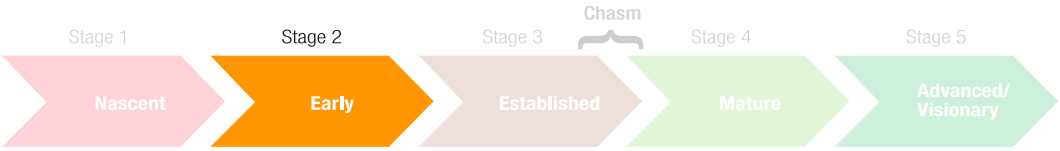
The Nascent stage represents a pre–analytics environment. In this stage, most companies are not utilizing analytics except perhaps for spreadsheets. There is no real support for analytics, although there are pockets of people spread throughout the company who may be interested in the potential value of analytics and who may be trying out some analytics software. Generally, in the Nascent stage, the culture is not analytics-friendly—that is, the culture is not data-driven and decisions are made based on gut instinct rather than facts.

ORGANIZATION. In the organization at the Nascent stage, most executives are unaware of (or don't care about) the power of analytics to help drive action. IT and the business typically do not work together to make analytics happen, although either group may want to. Often, IT is not necessarily interested in helping the business get access to data unless it is under IT control because they believe they know best. Business may have developed its own systems for various activities that might be useful for analysis, but the analyst is typically a spreadsheet super user. There is no strategy to move forward because the business doesn't care enough to do so. In this spreadsheet culture, there may be pockets of people who are trying to get educated on newer kinds of analytics because they know the old way won't help them remain competitive.

DATA INFRASTRUCTURE. At this stage, the typical Nascent organization does not have a sound data management strategy in place. IT may believe that it has some sort of data management strategy—perhaps with some databases or data sets that they use for reporting—but they haven't really thought about how the company data could support analytics. Data quality and consistency may be poor. Data volumes are typically low or in disconnected silos, and any data is generally structured data only. On the business side, organizations are asking IT for data or reports, or if they have their own data sources for a business activity, they are typically siloed for analysis, which is done by bringing spreadsheets together. It can be a long undertaking to assemble a data set for analysis.

ANALYTICS. In the Nascent organization, the spreadsheet typically rules. Most of the analysis is slicing and dicing. Dashboards may be developed in a spreadsheet and emailed to those "who need to know." If the company has an analytics group, it is generally within a department or line of business and targeted at a specific function such as marketing. In other words, analytics is occurring in pockets and silos in the organization, and one group does not know what the other is doing. Best practices are not shared and there is no effort at creating a broader analytics culture involving nontraditional users of analytics. However, in many Nascent organizations, employees are getting tired of not having access to data to make decisions. They want analytics tools and access to trusted data so they can answer important business questions.

Stage 2: Early



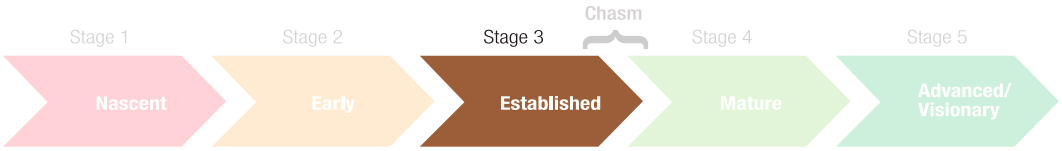
As the company moves out of the Nascent stage, it is starting to do its analytics homework. Staff may be reading up on the topic and perhaps attending webinars or conferences. One or more organizations may have invested in some analytics technology such as single instances of self-service data discovery and visualization tooling, a database, a data mart, or a data warehouse for managed reporting. People are starting to understand the power of analysis for improving decisions and ultimately business outcomes. Key characteristics of the Early stage organization include:

ORGANIZATION. In the Early stage, an executive sponsor may step up to the plate to try to drive the analytics discussion in the company. S/he may be frustrated because decisions are being made in the absence of data. Or, the executive comes from a company that is more data-driven. In this stage, one business unit might be starting to use commercially available tools or open source tooling to do some analysis. Other groups will see the possibilities and might start to get on board. Analytics discussions are beginning, although a culture around analytics has not yet formed.

DATA INFRASTRUCTURE. Often, in the Early maturity stage, business and/or IT leaders are envisioning the potential value of combining multiple sources of data for analysis. The company has realized it needs some sort of data infrastructure to support its efforts. It may be that too many errors have been made with the existing data set or someone is pointing out the errors in the data. Whatever the reason, at this stage the company is struggling, so it may have some sort of data mart or data warehouse on premises. Data is still primarily structured and volumes are low (e.g., less than a terabyte).

ANALYTICS. In this stage of maturity, reports and dashboards rule. Analytics are still rudimentary, but pockets of advancement are starting to occur. Business analysts are realizing the power of self-service visualization, for example, and may have invested in visualization tools to understand their data. Marketing or other departments are starting to ask questions that need answers. Some parts of the organization may have hired a few data scientists to start to look at specific problems that require more advanced analytics, such as predictive analytics or machine learning (PAML).

Stage 3: Established



During the Established phase, the company is putting analytics tools and methodologies in place. The enterprise typically has a data warehouse and is utilizing it for reporting or dashboard needs. The company has moved toward self-service but is not necessarily data literate. IT may own the data and the business owns the analytics. The two groups may start working together.

ORGANIZATION. In this stage, the company is putting a solid analytics strategy in place. IT and the business may be working together as a team on selected projects. Often, this is because an executive or someone with clout has realized that IT is not helping the business and vice versa. There may be a business crisis or changes detected in customer preferences and behavior that are driving this. The team is working to determine the right business problems to solve and how to incorporate analytics into the decision-making process. Analytics projects led by individuals or single departments in the company could be bearing fruit, and there is interest in building prototypes to see how analytics could be advanced and extended further across the enterprise. As the organization gets excited about the prospects for how analytics could improve decisions and outcomes more broadly, more people start to come on board.

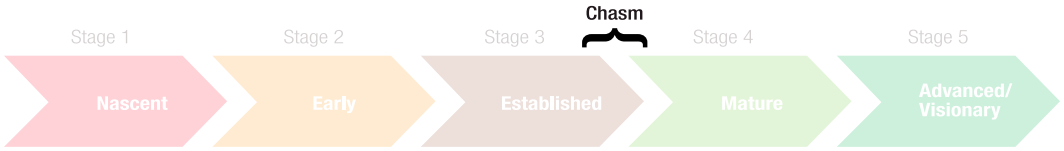
RESOURCES. At this stage, the organization most likely has formed a group that is responsible for analytics in IT. This may be in a center of excellence (CoE) and marks the start of setting up data literacy programs to help business users. Additionally, the organization is starting to hire more data scientists and data engineers to help with more advanced complicated analytics. A virtuous cycle starts to take hold.

DATA INFRASTRUCTURE. During the Established maturity stage, the organization typically has some sort of data warehouse or data mart(s) in place—typically still for structured data only, although it is looking at other platforms for new kinds of data. The company may be considering or even evaluating proofs of concept for deploying data warehouses or data lakes in the cloud to increase flexibility and reduce costs for some of its analytics initiatives. It understands that its on-premises data warehouse probably cannot support more complex analytics. It is moving toward a more hybrid architecture with more data (perhaps 1-2 TB) that it needs to manage.

ANALYTICS. In this stage, organizations are utilizing reports, dashboards, and some kind of self-service tools that enable data visualization. Typically, at this stage the organization is thinking about making the move to utilize predictive analytics more widely for use cases in IT, operations, or marketing. Skills start to become an issue here because there is substantial handholding involved in self-service and more data scientists are needed to perform more advanced analytics.

GOVERNANCE. At this point along the maturity path, a data governance team has formed but there are no real guardrails for analytics governance. Some organizations might have a steering committee overseeing data governance, with department representatives providing progress reports and compliance updates. However, most do not.

The Chasm



As organizations try to move from the Established stage to become more mature, they must overcome a series of typical hurdles. There is the obvious challenge of obtaining the right skill set. There may also be political issues. For example, one organization may have been driving the company's analytics effort and has encouraged other departments to join in. However, when it comes time to extend the platform or put more stringent standards and governance in place, departments begin to fight for control over who owns the data. They may quarrel about which vision should be followed. Often times, analytics isn't available in a way that encourages adoption.

To successfully cross the chasm, you'll need to address the following challenges:

ORGANIZATION. Often it is the cultural and political issues that can stop analytics from becoming more pervasive throughout the organization. For example, a company trying to operationalize analytics as part of a business process (which is a sign of maturity) might hit a roadblock. Operationalizing analytics—especially embedding it so that others can consume it downstream—takes time because users must build trust first. It can take time for even the concept of self-service to permeate through an organization because of cultural issues. If a company does not have a culture of making decisions based on data, workers must adapt to new ways of doing things.

RESOURCES. Many early analytics projects are driven by a visionary executive champion. Of course, it is critical to establish wins with these projects in order to secure funding. This funding needs to be both IT- and business-driven. Business involvement is needed because analytics projects must have business value with tangible business outcomes.

A big barrier for analytics projects moving past the Chasm stage is skills development for new technologies such as self-service, NoSQL databases, or more advanced analytics. The skill issue comes up most often as a barrier to moving forward with analytics. If the company can afford it, it will hire staff to fill the skills gap. Many companies are using a combination of approaches such as hiring from the outside as well as training from within. Some organizations are utilizing internal user groups to help build skill sets.

DATA INFRASTRUCTURE. To become more mature, the enterprise must develop a solid data management plan. Data management must adjust to different and often dynamic requirements, data availability rhythms, and performance needed to support "democratized" self-service analytics. Additionally, more advanced analytics often requires a platform where data scientists can iterate and build models. This may involve new data types. This is often quite different from standard and heavily scheduled BI reporting.

Data must be shared across the organization, and even more important, it must be trusted. That means that companies will need to build toward a more unified architecture to provide data access and ensure that data integrity for analytics is in place.

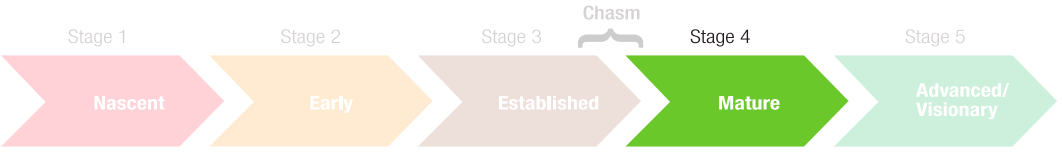
Companies will also need to ensure that they can scale their data management efforts. Many look to the cloud to do this, utilizing cloud data warehouses or data lakes. It is key that any data lake an organization deploys not become a data swamp. That means governance (see below) is critical.

GOVERNANCE. To get across the chasm, organizations must implement strong data governance capabilities. This includes plans to govern a multiplatform environment that includes on-premises and cloud deployments of data warehouses and data lakes. Metadata, data lineage, and data catalogs are often part of this plan.

Becoming more mature will also require the organization to consider an analytics governance team that will deal with issues such as model management, deployment, and monitoring.

To cross the chasm, companies need to ensure that the right governance, data architecture, data life cycle management security strategies, and organizational structures are in place. In our observations to date, we have seen many organizations spend extra time in the Established stage as they near the Chasm stage and require additional staffing to move to the next stage.

Stage 4: Mature



In an analytically mature organization, end users typically get involved, and the analytics transforms how they do business. For instance, users may change how decisions are made by operationalizing analytics in the organization. They will be using disparate kinds of data and even data that is semi- or unstructured for their analytics efforts.

For most organizations to reach this stage of maturity, they might have repeatedly addressed certain gaps in organization, infrastructure, data management, analytics, and governance.

ORGANIZATION. At this stage, the company realizes that analytics is a competitive differentiator and has some successful projects in production. Innovation around data and analysis is a core value, and an analytics culture prevails. The business strategy is generally a blend of top down and bottom up, with a data infrastructure that can support this. Business and IT view themselves as a team and have experience working together successfully on analytics projects. A growing analytics culture and mindset pervades the organization. These organizations often think outside the box when expanding the reach of analytics, such as by holding competitions or other events. Importantly, the organization acts on its insights.

RESOURCES. A company at the Mature stage typically has IT and analytics teams that include data scientists, data engineers, and MLOps (for putting models into production). There is budget to support these roles. The organization at this stage might even have a chief analytics officer or a chief data officer. Here, the virtuous cycle has taken hold.

DATA INFRASTRUCTURE. The more mature a company is, the better it is able to manage and make use of its data specifically for advanced analytics, not just BI reporting. In this stage of maturity, organizations can use many forms of data and absorb new sources of data as they emerge. The company will most likely have a data warehouse in the cloud and possibly a data lake. Data integration supports modern tooling. There is a coherent architecture to support data access by multiple personas and the company is able to scale its data management infrastructure to meet its requirements.

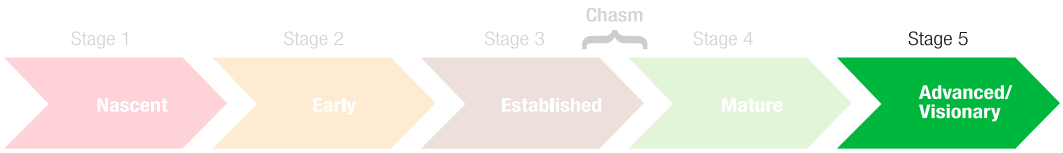
ANALYTICS. Any company might collect a lot of data but not make use of it—it's a sign of maturity when new data coming into the organization can be quickly analyzed and incorporated into the

logical infrastructure. In this stage, analytics supports the organization. Typically, a company at this juncture also has a center of excellence (CoE) that serves different parts of the organization. The CoE includes the data science team, which might even train other groups in the use of analytics in different forms.

At this point, analytics might be operationalized as part of a business process. In other words, analytics might be automated or integrated with the business process. Different kinds of data are analyzed, including unstructured data and geospatial data. Mature companies are typically using new technologies such as machine learning and NLP. Multiple models are in production.

GOVERNANCE. A company at this stage of maturity understands that analytics, for all its benefits, can be a liability waiting to happen, especially if data from external sources is part of the equation. A company at this stage should be concerned with answering questions such as Whose data was it? Whose data is it? Where did it come from? At this stage of maturity, organizations will have program governance, with program management office (PMO) guidance for the program and a steering committee that oversees the program from a companywide perspective. Tools such as data catalogs are used. Additionally, a company at this stage of maturity will have some sort of model governance as well as data governance to be able to version, validate, monitor, and update PAML models.

Stage 5: Advanced/Visionary



Only a small percent of companies currently have visionary analytics. At this stage, organizations are executing analytics programs against a highly tuned infrastructure with well-established data governance strategies. Well-governed but flexible data access is available for users so they can explore data and develop visualizations in a self-service fashion and are not completely dependent on IT. Many programs are executed as budgeted and planned initiatives from the company perspective. In the Visionary stage, there is excitement and energy around analytics and a healthy and agile analytics culture enables nontraditional users at middle management and even frontline positions to benefit.

ORGANIZATION. Companies at the Visionary stage share several characteristics. First, executives have bought into analytics and view it as critical. Analytics is seen as a competitive weapon. Second, analytics is not simply used to drive strategy or insight; instead, the businesses are always looking for opportunities to use analytics in new ways. These companies realize that analytics is becoming more common and they need to be thinking outside the box and looking for monetization opportunities. Analytics is a way of daily life with these organizations, whether they are consuming the analytics or developing it.

DATA INFRASTRUCTURE. The way you manage complexity is key to analytics maturity. The Visionary company has deployed a coherent data infrastructure that is fully operational and can be used in the mission-critical aspects of the business. Part of the infrastructure includes the ability to integrate new sources of data for analytics, whether they are internal or external to the company. The infrastructure uses what has worked in the past, including data warehousing, and leverages the cloud.

ANALYTICS. In the Visionary company, the mindset is to continually develop analytics. Typically, this kind of company uses all kinds of data, including unstructured data and real-time data, for decision making and for incorporation into business processes. The Visionary company can connect the dots

between new data and existing assets. CoEs exist and are paying off. Teams are delivering new and exciting forms of analytics. Some Visionary organizations build a team of business and IT staff to explore technological innovations, test them for the business, and put the more useful ones into production. Machine learning, deep learning, NLP, and other AI technologies are commonly in use and in production. In fact, the Visionary company may have hundreds or even thousands of models in production. These models are versioned, managed, and monitored.

Evaluating Benchmark Scores

The TDWI Analytics Maturity Assessment has 52 questions across the five categories that form the dimensions of the TDWI Analytics Maturity Model.

These dimensions should now seem familiar because they are the same categories we have been referencing throughout this guide. These factors, and others, are used to explore relationships in the data in order to help determine best practices for analytics.

Of course, organizations can be at different stages of maturity in each of these five categories, and most are.

Scoring

The questions are either provided singly or grouped together in a matrix. Questions may be weighted differently depending on their relative importance. Each dimension has a potential maximum score of 20 points. Because organizations can be at different levels of maturity in the five dimensions, we score each section separately as well as provide an overall score. The output of the assessment is a score in each dimension and a total score.

Interpretation

Once you complete the survey, a report-based interface will show how your responses compare to those of your peers. The breakdown of scores for each dimension is as follows:

SCORE PER DIMENSION	STAGE
≤ 5	Nascent
6-10	Early
11-15	Established
16-19	Mature
20	Visionary

For instance, if you receive a score of 11 in the Organization dimension of the assessment, you are in the Established stage for that particular dimension. You should expect to see your scores vary for the different dimensions. Analytics programs don't necessarily evolve at the same rate across all of the dimensions. For example, your company might be more advanced in terms of bringing data sources together than it is in analyzing them or governing this data.

The Chasm can be overlaid between the Established and Mature stages.

When you complete the assessment, you might see scores like this:

DIMENSION	SCORE	STAGE
Organization	10	Early
Resources	7	Early
Data Infrastructure	11	Established
Analytics	4	Nascent
Governance	7	Early

Total Score: 39

This means that you are more mature in your data infrastructure but less mature in the other areas.

Summary

The TDWI Analytics Maturity Assessment provides a quick way for organizations to assess their maturity in analytics and compare themselves in an objective way against others with analytics initiatives. The assessment is based on the TDWI Analytics Maturity Model, which consists of five maturity stages plus a chasm between stages 3 and 4.

The assessment serves as an initial measure of your analytics maturity. Its 52 questions across five categories merely touch the surface of all of the complexities involved in building out your analytics ecosystem. To gauge precisely where you are, it may also make sense to work with an independent source to validate your progress.

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Transforming Data With Intelligence™

555 S Renton Village Place, Ste. 700
Renton, WA 98057-3295

T 425.277.9126
F 425.687.2842
E info@tdwi.org

tdwi.org