Interpreting Benchmark Scores
Using TDWI's Maturity Model
TDWI BENCHMARK GUIDE
Interpreting Benchmark Scores Using TDWI's Maturity Model

Original model by Wayne W. Eckerson
Revised model and questions by Michael L. Gonzales

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Foreword

Impetus for the Model. TDWI’s BI Maturity Model was first created in 2004 in response to numerous requests from business intelligence and data warehousing (BI/DW) professionals who sought to understand how their BI/DW deployments compare to those at other companies, especially direct competitors. Many requests came from individuals who needed to supply benchmark data to executives or sponsors seeking an objective yardstick to evaluate BI/DW budget proposals. Other individuals simply wanted to know where their program stood relative to peers in their quest to provide best-in-class service and support.

The maturity model narrative seems to resonate with people. Many are quick to assess where their BI/DW programs fit within the model and find it a useful tool to help them understand where they’ve been, where they are, and where they need to go.

Value of the Model. The model also helps most people to recognize that they are not alone in the challenges they need to overcome. The most poignant aspects of the model are the Gulf and the Chasm—the two points in the evolution of a BI program where organizations face significant obstacles. The addition of the Gulf and the Chasm to the model makes it a great story—kind of like a Hollywood classic where the hero gets the girl, loses the girl, and finally wins her back.

In the same way, BI teams often roll out a BI program in an initial wave of enthusiasm and excitement, only to see it get bogged down by cultural, organizational, and technical challenges. However, with time and patience, many BI teams break through the logjam and gain the trust and respect of business executives and users by delivering a strategic resource they can’t live without. BI professionals whose programs are stuck in the Gulf or Chasm often tell us that the TDWI Maturity Model helps them put their problems into perspective and revitalizes their energy and determination to continue the journey.

Benchmark Survey and Assessment. The benchmark survey you took prior to downloading this guide is the next evolution of the TDWI Maturity Model. We are excited about this tool because BI professionals can use it to quantify the maturity of their BI/DW programs and compare them to programs at other organizations in an objective, quantitative way. This TDWI Benchmark Guide is designed to help you interpret your scores in the context of the TDWI Maturity Model and lay the groundwork for a more in-depth evaluation conducted by an independent BI consultant. We hope you find it useful.

TDWI Maturity Model: The Context for Benchmark Scores

The TDWI Benchmark Survey and Assessment measures the maturity of a BI/DW program in an objective way across the dimensions of people, process, and technology.

The tool is based on TDWI’s BI Maturity Model, which consists of five stages: Nonexistent, Preliminary, Repeatable, Managed, and Optimized. There are also two major obstacles: the Gulf, which occurs between the Nonexistent and Preliminary stages, and the Chasm, which occurs between the Repeatable and Managed stages. As organizations progress through the stages, they reap greater business value from their BI investments and achieve greater consistency in the way they define shared terms and metrics. The key elements of TDWI’s BI Maturity Model are illustrated in Figure 1.
The first section of this Benchmark Guide provides a generic description of each stage in the TDWI Maturity Model. These descriptions provide context to help you interpret your benchmark score, which assesses maturity in eight key dimensions: scope, sponsorship, funding, value, architecture, data, development, and delivery. You will receive a score for each dimension as well as an overall score. We’ll cover the scores and how they are calculated in the next section.

**TDWI’s BI Maturity Model—User Adoption Curve**

![User Adoption Curve Diagram](image)

**Figure 1.** A representation of the five stages of the TDWI Maturity Model, including the Gulf and Chasm. The Y-axis or bell curve depicts the percentage of organizations in any given stage. In 2004, TDWI estimated that a majority of organizations were stuck between the Gulf and Chasm. The Benchmark Survey will likely show that more organizations are now in the Repeatable and Managed stages, effectively moving the bell curve to the right.

**Stage 1—The Nonexistent Stage**

The Nonexistent stage is the conglomeration of two phases: operational reporting and spreadmarts. These phases are flip sides of the same coin and one leads directly to the other, as we shall see.

**Operational Reporting.** The first half of this stage represents a pre—data warehousing environment where an organization relies entirely on operational reports for information. An operational report runs directly against an operational system and shows data for that system only. In some cases, it may contain data from multiple systems if an organization consolidates data into an operational data store. In general, however, operational reports are static and inflexible and show a limited range of data for a limited set of processes. If a user wants to view a slightly different set of data in a slightly different way, the IT department usually needs to code a new custom report, a process that may take days, weeks, or months, depending on the complexity of the report and the current backlog of requests.

**Spreadmarts.** The lack of flexibility of operational reports causes certain users to take matters into their own hands, which gives rise to the second half of the stage. These users create their own reports using whatever tools are handy—usually a spreadsheet or desktop database (e.g., Microsoft Access). They collect, clean, transform, aggregate, and format data for individual or group consumption, essentially performing all the functions of a data mart or data warehouse. The end result is something called a spreadmart—a spreadsheet or desktop database on steroids acting as a data mart or data warehouse. Other names for spreadmarts are data shadow systems, analytical silos, and human data warehouses.

The TDWI Maturity Model is a useful tool to help BI teams understand where they’ve been, where they are, and where they need to go.
While spreadmarts give business decision makers the data they crave, they have significant downsides. Spreadmart creators, who are typically high-priced business analysts, waste an incredible amount of time collecting and massaging data—tasks that a data mart or data warehouse is designed to do. Worse yet, the analysts define terms and metrics according to their own parochial views of the business, creating a kaleidoscope of misaligned data silos that aren’t easily reconciled. Without a single version of the truth, executives can’t gain an accurate view of business operations to help them make smart decisions, and they risk falling out of compliance with financial regulations regarding information transparency and accuracy. More than one executive has commissioned a data mart or data warehouse primarily to stem the proliferation of spreadmarts.

The Gulf

The Gulf is not so wide or deep that organizations cannot cross it and move from the Nonexistent to the Preliminary stage, but it has significant perils. In fact, most organizations plant one foot firmly in the Preliminary stage and build their first data mart, but a combination of poor planning, data quality issues, cultural resistance, and spreadmart proliferation prevents the organization from making a clean crossing. Until the organization can deal with problems associated with the Gulf, its BI program will get stretched until it snaps and breaks apart.

To successfully cross the Gulf, your organization needs to address the following challenges:

- **Executive perceptions.** Executives in this stage equate BI with operational reporting and don’t care to spend any more money on information delivery. Of course, many have a cadre of highly paid business analysts at their disposal to provide them any view of information they desire but the rest of the organization does not. Until executives perceive BI as a strategic resource that is critical to conducting business, and ideally, winning and keeping customers, it will be difficult for a BI/DW program to make progress.

- **Adequate funding.** Many early BI projects are bootstrapped or funded by an energetic department head and are vulnerable to the budget axe, especially if the sponsor changes jobs or roles. Often there is not enough time to demonstrate value of the BI/DW initiative before the organization needs to prioritize its funding, and BI/DW budgets often get slashed or eliminated. It’s imperative to show quick wins to establish funding momentum.

- **Poor data quality.** Many initial BI projects overestimate the quality of source system data. The project tries to extract data from too many systems, often where the condition of the data is poor or not well understood. Compounding these issues, BI managers find it difficult to recruit busy business analysts to help them figure out the meaning of source data, how to fix errors, and how to map heterogeneous data sources, among other things. BI professionals sometimes
find out too late that it’s better to start small with well-known data sources to avoid problems in the long run.

- **Scope creep.** Initial BI projects tend to run behind schedule and over budget, largely because of the data quality problems mentioned above. Also, if the team hasn’t established project management and change control processes, or secured sponsorship and funding, BI managers will over-promise and under-deliver to keep business users happy. The key is to maintain tight control of the project but iterate quickly to satisfy new or changing business requirements.

- **The proliferation of spreadsheets.** The biggest challenge in the Gulf is people. How do you tear people away from their spreadsheets? How do you change people’s long-standing habits and ways of accessing and analyzing information and making decisions? This is not easy. It requires a robust BI tool environment, an executive mandate, and a multipronged approach to managing organizational and cultural change.

### Stage 2—The Preliminary Stage

The Preliminary stage represents an organization’s first foray into business intelligence and data warehousing. The initiative is departmental in scope and usually a one-off project without precedent or established processes for project planning, change control, and software development tailored to BI. If successful, the department may spawn multiple data marts, each of which tackles a different set of processes or problems running on a separate application and system. The department models subject areas using definitions and rules relevant to the way it does business. There is little, if any, attempt to align the project with other initiatives in the organization and sometimes within the same department.

During the Preliminary stage, an organization purchases its first BI tools—primarily ad query, reporting, and online analytical processing (OLAP) tools. It gives licenses to a handful of power users and business analysts who have the technical savvy, interest, and motivation to use the new BI tools. These users analyze trends in historical data from the past several weeks, months, or years to help the business improve plans and operations. The emphasis is on gaining insights by increasing awareness and understanding of how the business has run in the past.
Stage 3—the Repeatable Stage

The Repeatable stage continues the work begun in the Preliminary phase but in a broader, more integrated fashion. Rather than allowing departments to spawn a multiplicity of nonintegrated data marts, a business unit recognizes the value of consolidating these marts into a single data warehouse to save money and gain greater consistency in the information it uses to understand and analyze the business.

The division stops launching ad hoc projects and instead launches a BI program that develops multiple applications from a common data model and platform. It uses a standard set of project and development methodologies that incorporate best practices gleaned from earlier initiatives and outside consultants. Likewise, governance shifts from a single department head and a project manager to a cross-departmental team guided by a BI program manager.

Perhaps the biggest change in the Repeatable stage is the growth in BI usage among casual users—knowledge workers who need information to make decisions and develop plans but who, unlike power users, don't have the need, inclination, or skills to analyze data on a daily basis. Casual users prefer to receive information tailored to their role and job without having to expend the time or energy to create or find useful reports. Organizations, recognizing the value of providing timely information to their knowledge workers, create standard sets of parameterized reports (which users can filter with predefined prompts or picklists) or dashboards that are tailored to different groups of users. These reports are generally refreshed daily and contain key performance indicators (KPIs) that visually depict performance against plans using color coding and symbols.
The Chasm

The Chasm is deeper and wider than the Gulf. Many BI programs fall into the Chasm and are never heard from again. (They often resurface in the Gulf, afflicted with a severe infestation of spreadmarts and independently crafted data marts.) BI programs face many significant challenges in this phase:

- **Business volatility.** When the organization decides to make a strategic right turn and acquire or merge with another company, hire a new CEO or CIO, adopt a new strategy, or restructure the organization to better meet competition or comply with new regulations, the BI program suffers. Business volatility wreaks havoc on established BI programs, forcing teams to start from scratch. Ironically, the business needs BI more than ever during periods of significant change and upheaval. Agile processes, a flexible architecture, and business/IT alignment are key to managing business volatility.

- **Standardizing semantics.** Reconciling terms, definitions, and rules in dozens of data marts and data warehouses is a political nightmare. Each business unit and department sees the world through its own lens, and getting business leaders to agree on definitions and rules for common terms and metrics is almost impossible without a strong-willed CEO who forces them to reconcile their differing views for the common interests of the organization as a whole.

- **Transitioning to corporate IT.** Business units and departments are often reluctant to hand over cherished solutions to corporate IT. They fear that corporate IT will try to impose its standards on their solutions, effectively killing momentum—and their projects. But without a central organization to manage the data warehouse resource, it’s impossible to align and scale successful departmental applications to the rest of the enterprise. Cultural and organizational alignment between business and IT is critical here.

- **Report chaos.** Many IT departments believe the goal of BI is to empower users to create their own reports—an objective known as self-service BI. Their aim is to permanently offload the job of creating reports. Unfortunately, self-service BI leads to report chaos: Power users and some casual users create hundreds, if not thousands, of reports, most of which are variations on the same theme and rarely used. The upshot is that users can’t find the right reports and, out of frustration, they stop using the BI resource altogether. To avoid this, BI/DW teams need to create a standard set of interactive reports or dashboards that become the system of record for all casual users.

- **Avoiding architectural inflexibility.** Unlike operational systems, which are designed to provide a consistent structure around the execution of business processes, BI solutions need to adapt continuously to change. The questions users ask and the analyses they perform change from week to week and month to month, especially in fast-moving industries. The BI team needs
to create a flexible BI architecture that can respond to changing requests for information and support agile development processes to create new applications quickly. Failing this, BI won’t be able to keep up with the business and will be seen as more of a hindrance than a help.

**Stage 4—The Managed Stage**

The Managed stage occurs when BI/DW teams cross the Chasm and deliver a strategic, enterprise resource that enables organizations to achieve its key objectives.

**Unified Architecture.** The basis of this resource is a unified data warehousing architecture that defines a common set of semantics and rules for terms and metrics shared across business units and departments. In a majority of cases, the unified architecture will consist of a consolidated set of information contained in a single multi-layered repository, comprising a staging area, data warehouse, and multiple logical data marts (i.e., the classic Inmon approach). However, organizations can also use distributed architectures that are logically unified. For example, the Kimball approach links multiple, physically distinct data marts via conformed dimensions. A federated approach uses federated query tools to integrate disparate data sources on the fly using a global, virtualized semantic model.

**Fully Loaded.** The second characteristic of the Managed architecture is that it is populated with all the data that all users might need to do their jobs. In other words, it’s a fully loaded data warehouse. To meet any new request, DW designers simply repurpose existing DW data rather than extract and model new source data, which at best takes three months from start to finish (i.e., from identifying user requirements and appropriate data sources to testing ETL scripts, creating new reports, and training users). Thus, a fully loaded data warehouse is agile—able to meet new business requirements quickly.

**Flexible and Layered.** Managed stage data warehouse is also flexible. Designers have insulated the architecture with layers of abstraction that enable them to make changes in one component without having to rewrite other parts. The ETL code creates source and target mappings, which insulate each component from changes in the others. Report designers create query objects that insulate reports from changes in the data warehouse schema and vice versa. The use of surrogate keys, lookup tables, and other dimensional modeling techniques further insulate the architecture from changes in the target data model.

**Just-in-time Delivery.** On the application side, the Managed environment becomes a mission-critical resource to support operational processing. The data warehouse integrates with real-time data feeds to support operational applications that require just-in-time delivery of analytical information. It also supports mixed workload processing so that quick, tactical queries to look up a customer profile, for
example, don’t interfere with long-running strategic queries, as well as analytical modeling processes, real-time updates, and batch data loads.

**Performance Management.** The Managed stage also implements cascading scorecards to optimize the execution of business strategy at all levels of the corporate hierarchy. Now, organizations not only monitor processes via dashboards, but they also use scorecards to manage performance against strategic objectives. The monthly scorecard—which gets incorporated into monthly operational review meetings—improves users’ ability to understand and optimize business activity.

**Predictive Analytics.** Organizations also begin to use more sophisticated forecasting and modeling tools to anticipate, rather than react to, business activity. Sales and finance users can extrapolate future trends with uncanny accuracy. Business analysts create sophisticated analytical models that correlate patterns in large volumes of data and help organizations detect fraud, predict customer churn, or optimize delivery schedules, among other things.

**Centralized Management.** The Managed environment is also characterized by being centrally managed. Adult stage organizations create an Information Management (IM) group that consolidates all information-centric disciplines, such as BI, DW, content management, predictive analytics, and geographic information systems. This central IM group reports to the COO, CIO, or CEO, not a department head, and is governed by multiple layers of business-driven steering committees incented to invest in projects aligned with the organization’s strategic direction. The IM group often assigns business-savvy technologists to each business unit; these technologists serve as strategic advisors who recommend technical solutions based on existing capabilities and capture requirements for expanded services.

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**Stage 5—the Optimized Stage**

The Optimized stage completes the cycle by converting core BI/DW capabilities into services, both technical and commercial, and distributing development back out to the business units via centers of excellence.

**Federated Development.** To further accelerate development and adapt quickly to changing business needs, Optimized stage organizations redistribute some development tasks to the business units and departments. The central IM group maintains a central data warehouse as a repository for information shared across business units, but it lets distributed groups build their own applications within a framework of established standards, often maintained by a center of excellence. These centers can’t succeed unless the organization has established processes, procedures, and standards for delivering BI/DW solutions, which usually happens in a centralized environment. In other words, BI/DW teams need to centralize first, federate later.
Extended Enterprise. Perhaps the most distinctive aspect of the Optimized stage is that organizations use BI/DW to provide customers and suppliers with tailored, interactive reports, dashboards, and other information services. Here, the BI/DW environment plays a prominent role in providing value-added commercial services that generate revenue and provide a competitive advantage. Wal-Mart is perhaps the best known example of a company that uses BI/DW to cement its relationships with suppliers and gain a competitive advantage.

Not surprisingly, the alliance between the business and the BI/DW team reaches its apogee in the Optimized stage, as BI becomes a key revenue generator. Business and IT work harmoniously to win new customers and increase sales. The business sees the importance of delivering high levels of customer service as the number of BI/DW users skyrockets. At this point, the business is usually willing to make significant investments in BI/DW to create and maintain an industrial strength BI solution that meets stringent service levels.

BI and Data Services. Besides offering commercial services, Optimized stage organizations use service-oriented architecture (SOA) to accelerate the development of BI-enabled solutions. By wrapping BI functionality and query object models with Web services interfaces, developers can make BI/DW capabilities available to any application regardless of the platform it runs on or programming language it uses. Then, approved developers inside or outside the organization, can write applications that use various components encapsulated by the BI or data services.

The most common of these so-called composite applications today is a portal that displays charts or KPIs managed by a remote BI server. More sophisticated composite applications incorporate event-driven data capture techniques with rules engines, predictive models, alert notification, and workflow processing to monitor and execute business processes in real time. These event-driven analytic platforms blend the best of operational and analytical components into a seamless whole.

Evaluating Your Benchmark Scores

Now that you have a flavor for TDWI's BI Maturity Model, let's describe the Benchmark Survey and Assessment and how it works.

The Benchmark Survey has 40 questions in eight categories that represent dimensions of TDWI's BI Maturity Model. Each category contains five questions. (There are also a dozen or so demographic questions used for filtering.)

The eight categories are:

1. **Scope.** To what extent does the BI/DW program support all parts of the organization and all potential users?

2. **Sponsorship.** To what degree are BI/DW sponsors engaged and committed to the program?

3. **Funding.** How successful is the BI/DW team in securing funding to meet business requirements?

4. **Value.** How effectively does the BI/DW solution meet business needs and expectations?

5. **Architecture.** How advanced is the BI/DW architecture, and to what degree do groups adhere to architectural standards?

6. **Data.** To what degree does the data provided by the BI/DW environment meet business requirements?
7. **Development.** How effective is the BI/DW team’s approach to managing projects and developing solutions?

8. **Delivery.** How aligned are reporting/analysis capabilities with user requirements and what is the extent of usage?

**Scoring.** Each question in the eight categories has five answer choices. Each answer represents a different level in TDWI’s BI Maturity Model and is weighted from 1 to 5, with 1 representing the Nonexistent stage and 5 representing the Optimized stage. When you take the survey, you receive a score for each category, which represents the sum of the weightings for the five questions in that category. You then receive an overall score, which represents the sum of the weightings for all categories, divided by eight (categories).

**Category Scores.** For each category, you will receive a score between 5 and 25 and a designation of your maturity level. Table 1 below shows the mappings between scores and maturity levels for categories.

<table>
<thead>
<tr>
<th>SCORE</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 7</td>
<td>Nonexistent</td>
</tr>
<tr>
<td>8 to 12</td>
<td>Preliminary</td>
</tr>
<tr>
<td>13 to 17</td>
<td>Repeatable</td>
</tr>
<tr>
<td>18 to 22</td>
<td>Managed</td>
</tr>
<tr>
<td>23 to 25</td>
<td>Optimized</td>
</tr>
</tbody>
</table>

*Table 1. TDWI maturity scale. Statistically, when a score falls on the dividing line between two ranges, then it is associated with the higher range. So a score of 7 would equate to the Preliminary stage, not the Nonexistent stage.*

**Overall Score.** Your program’s overall BI/DW maturity is calculated by summing the weighted values of all questions and dividing by eight. The overall score of all respondents is calculated in much the same way: we sum the weighted scores of all questions for all respondents and divide by the total number of all respondents divided by eight. To determine your average maturity level, map your score to the corresponding stage in Table 1.

**Gulf and Chasm Ranges.** We can overlay the Gulf and Chasm onto our existing scale to reinforce the notion that at certain points in your evolution, your BI/DW program will move through the Gulf and Chasm and experience significant turbulence. Table 2 includes scores for the Gulf and Chasm.

<table>
<thead>
<tr>
<th>SCORE</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 7</td>
<td>Nonexistent</td>
</tr>
<tr>
<td>6 to 9</td>
<td>The Gulf</td>
</tr>
<tr>
<td>8 to 12</td>
<td>Preliminary</td>
</tr>
<tr>
<td>13 to 17</td>
<td>Repeatable</td>
</tr>
<tr>
<td>15 to 19</td>
<td>The Chasm</td>
</tr>
<tr>
<td>18 to 22</td>
<td>Managed</td>
</tr>
<tr>
<td>23 to 25</td>
<td>Optimized</td>
</tr>
</tbody>
</table>

*Table 2. Maturity scale with gulf and chasm*
Fluctuations. Don’t be surprised if your scores for each category vary dramatically. BI/DW programs don’t evolve at the same rate across all dimensions. For example, your company may be more advanced in information delivery than in architecture. Take the example below:

Example: Company XYZ

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>20</td>
<td>Managed</td>
</tr>
<tr>
<td>Sponsorship</td>
<td>10</td>
<td>Preliminary</td>
</tr>
<tr>
<td>Funding</td>
<td>15</td>
<td>Repeatable</td>
</tr>
<tr>
<td>Value</td>
<td>12</td>
<td>Preliminary</td>
</tr>
<tr>
<td>Architecture</td>
<td>16</td>
<td>Repeatable</td>
</tr>
<tr>
<td>Data</td>
<td>14</td>
<td>Repeatable</td>
</tr>
<tr>
<td>Development</td>
<td>22</td>
<td>Managed</td>
</tr>
<tr>
<td>Delivery</td>
<td>18</td>
<td>Managed</td>
</tr>
<tr>
<td>OVERALL</td>
<td>15.9</td>
<td>Repeatable (Chasm)</td>
</tr>
</tbody>
</table>

Company XYZ has an overall score of 15.9 (Total=127/8), which places it in the Repeatable stage for overall maturity—and also means it has just entered the Chasm. Meanwhile, the company scored in the Preliminary phase for sponsorship and value; the Repeatable phase for funding, architecture, and data; and the Managed stage for scope, development, and delivery. A mixed set of results like this is not unusual.

Value Statements. The chart below provides a quick synopsis of the levels of maturity for each dimension in the Benchmark Survey. The value statements in some categories, such as delivery and value, are additive, not exclusive, as an organization moves from stage to stage.
Summary

The TDWI Benchmark Survey provides a quick way for organizations to assess their BI/DW maturity and compare themselves in an objective way against others in the industry. The survey is based on the TDWI BI Maturity Model, which consists of five stages and two major “sticking points.” The model resonates well with audiences that have heard it presented in narrative form, and we hope the Benchmark Survey will be well-received, as well.

Although it may be tempting to use your scores from the Benchmark Survey as a definitive statement of your organization’s BI/DW maturity (especially if you score in the upper ranges), remember that it is only a rough gauge. It consists of only 40 questions in eight categories; this merely scratches the surface of most BI/DW programs.

To truly assess your maturity and discover your areas of strength and weakness, you should hire an independent consultant to perform a comprehensive assessment periodically. These assessments can shed light on your Benchmark Survey score and provide an actionable set of recommendations to accelerate your BI/DW journey.
TDWI Research provides research and advice for business intelligence and data warehousing professionals worldwide. TDWI Research focuses exclusively on BI/DW 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 business intelligence and data warehousing 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.