



Analytical Maturity

The Data Landscape

As the technology around data collection, storage and reporting continues to get cheaper and more efficient, the value in your business data grows. When analytics are applied to an organization's decision-making process, it has the potential to unlock massive value and improve both the top and bottom lines.

How can modern businesses take advantage of the vast untapped value buried within their data?

This paper summarizes the keys to building a modern, scalable, mature analytics ecosystem in an organization. It comes from having the right tools, managed by the right team of people, supported by clear executive vision.

Your Decisions Drive Your Business

Early on in the lifecycle of an organization, data is accessed from source systems or from simple data stores. As companies grow and invest in various systems and processes, data becomes less straightforward to access. The development of a centralized way to access and analyze data should be part of any company's growth trajectory. It's important to ensure that data assets and technology grow with the business, and are not trailing behind. As your company grows and you build your data warehouses, pipelines, and dashboards, you should continuously ask yourself:

- How can everyone in my company access the data they need?
- How can we be sure that the data is accurate, and that metrics inform our decisions?
- Who owns changes to our data systems and the business processes associated with them?
- How can we help users take advantage of the tools we have?

The Maturity Model

The maturity model in this paper is designed to help organizations understand where they currently sit on the analytical maturity spectrum. This model can help you determine an action plan of next steps and catalyze your business to the next level of analytical maturity. Businesses are all unique, and a single focus area would not effectively represent the complexities of varying business profiles, so this model tracks 5 pillars of analytics proficiency through 5 stages of maturity in order to provide a multidimensional overview of what is possible in analytical maturity.

The 5 Pillars of Analytics

1. Data Strategy & Vision
2. Organization
3. Data Warehouse
4. Analytics in Use
5. User Adoption

The Foundation of Strategy

Creating a holistic analytics strategy around these pillars and setting attainable goals makes for a successful data organization. While it is not necessary to be a leader in every area of analytical maturity for a company to be data driven, ignoring any one pillar will limit a company's analytical potential. Organizations should determine how far they want to progress in each area of analytical maturity. Then, they must set a plan to achieve those goals.

About the Authors

We are the [Professional Services Team at Looker](#) — leaders in the data and analytics space.

Looker is changing the way organizations unlock data and drive business outcomes. More than BI, Looker is a data platform that allows anyone, regardless of skill-set or experience, to quickly and autonomously ask questions, get answers and share results, to drive data-supported decision making.

We help organizations of all sizes and maturity levels use data better — from Fortune 500 companies to incubator startups. We know how the best companies are leveraging their technology stack and personnel to drive value from data, and in this paper we share the common aspects of these companies with you.

Table of Contents

Pillar 1	.....	04
Data Strategy & Vision		
Pillar 2	.....	07
Organization		
Pillar 3	.....	09
Data Warehouse		
Pillar 4	.....	12
Analytics in Use		
Pillar 5	.....	15
User Adoption		
So what do I do now?	.....	17

Pillar 1

Data Strategy & Vision

Everyone can appreciate the value of *informed* decision making, so how does a company support a framework that drives data-driven results? It's easy for teams to build flashy data visualizations, put data into spreadsheets, and stockpile records in databases. However, without an overarching strategy and carefully planned execution, teams develop their own ad hoc analytics in a silo. Without coordination and long-term planning, the impact of analytical efforts is lessened.

The first step in maturing analytically is defining an overarching vision and strategy for your company.

Vision = Where you want to go

Strategy = How you get there

There are many ways to develop a vision and strategy. The most effective vision-setting processes end with complete alignment while maintaining agility.

Your vision should focus on the outcome to the business.

Your strategy should focus on how to achieve the vision.

Already Have a Vision and Strategy for Analytics?

Use the matrix below to identify where your organization falls on the analytical maturity spectrum for this pillar (least mature on the left, most mature on the right). The matrix has been split out across: vision, strategy, and results.

The success of any business intelligence platform relies heavily on the organization's analytics vision and strategy. Pushing data into a warehouse before you consider why you would use it creates an uphill battle and, on the opposite end of the spectrum, not collecting data can limit insights. An organization must agree on what results they are trying to drive and focus on delivering those results by capturing appropriate data and pulling it through a streamlined analytics process. Below, you'll find tips and questions to ask of your data ecosystem.

	Non-Existent	Stop Gap	Siloed	Transformative	Powerhouse
Vision	No involvement from leadership team in how analytics should be used at the organization.	Analytics plan solves a single use case.	Involves multiple teams, however not all leaders are bought in or aligned.	Company wide approach with priorities for specific teams. Leadership is on board with a culture of transformation.	Leadership's long term vision recognizes that a business intelligence strategy is integral to organizational growth
Strategy	Individuals approach analytics using whatever skills, budget and resources they have.	Limit scope - focus on getting a short term use case out the door. Favor reports over core capabilities.	There is planning and understanding of a longer term goal and steps to get there for each team but not for the entire company.	Includes ownership and a clear plan for initial deployment. May still need guidance on best practices.	Continual feedback and iteration between users and developers. Internal BI teams and business teams operate as partners.
Result	Business intelligence tools are implemented with a 'hit and hope' approach. Analytical insights are limited, inconsistent and unreliable.	Weak consideration for how a business intelligence platform can play a wider role and lack of impetus to develop that growth. Single use case may be solved but nothing is done beyond that.	Leaders are not particularly bought in to analytics and there is no strong culture of collaboration. Key users understand the value of BI and its long term implications but can not drive broad valuable initiatives.	Analytics are core to the organization's growth strategy. Users can ask questions of data and build a feedback loop with the data team.	Open door policy on data exploration with very strong understanding of governance and security. Business users drive their decisions via analytics.

Align Your Team

- Organization and buy-in is key: ensure that you have the right people and the right alignment to drive results.
- Who needs to be involved as part of the larger vision and strategy?
- Are they clear and willing to provide the necessary support to execute on the development of this initiative?
- Do we have a balance between technical and business resources, as well as leadership buy-in?

Assess Your Organization's Data Culture

- How does the business get answers to their questions?
- Can our tech stack support delivery in a scalable manner?
- Who owns delivery of content and governance?

Start With a Use Case (Business Process, Question or Metric) That Could Benefit from Additional Data and Could Drive Decision Making

- Identify what data you have that can drive the results you want.
- Once you are clear on the data you have, identify what data is needed to supplement your analytics initiatives, and construct a plan to capture that data.
- Implement the use case with a small team and track that it improves your business outcome.
- Iterate as needed based on the business outcome.

Develop the Whole Stack and Iterate, Learning As You Go.

- Consider scale at this point. Determine if you should expand the footprint of your project or break down the scope of your project into smaller, more digestible pieces.
- Ensure that every component of your data strategy has a clear owner responsible for actively maintaining that component.
- How fast can you modify your plan? Change your schema? Audit a metric definition? Respond to vendor or product changes?
- If your strategy focuses on specific deliverables (i.e. dashboards or reports), you are missing the value of a data culture. Instead, it should focus on enabling your organization to cohesively align on analytical objectives and iterate quickly.

Once you have a solid vision and strategy, you can identify blockers and understand a critical path forward to success.

Pillar 2

Organization

Your company's data is an asset — but it's only valuable if the people in your company can access and use the data reliably. Creating a team within your organization that supports your data platform is key to leveraging the vast value in your company's data.

The time of individual departments managing all their own data is behind us. BI tools are now too powerful and access to clean, reliable data is too valuable for data management to be a part-time project for a business or IT team. When data warehouses are not set up to scale and data pipelines are convoluted, and unauditible, business reports are unreliable and requests for new reports cannot be processed fast enough. The result: people stop using data because they cannot get access to it quickly or can not trust it.

With an effective data team, your company can avoid those problems. A data team supports the reporting needs of the people in your organization, strategically and proactively. Your data team should be clear on the following questions:

- How are we executing our analytical vision and strategy?
- Who owns each component of the data stack?
- Who defines the business logic for our metrics, and how are they incorporated into our data platform?
- How is the integrity of our company's metric definitions maintained and audited?
- How do we process requests for new or updated reports from business users?
- How is data reliability ensured?
- How is access to data controlled?

How Mature is Your Company's Data Organization?

Use the matrix below to identify where your company falls on the spectrum of organizational maturity (least mature on the left, most mature on the right) across three primary components: team, outlook, results

	Free for all	Side project	Data person	Data team	Data platform
Team	<p>Every person or team for themselves.</p> <p>Teams only have the data they collect (from anywhere). Little or no sharing of data.</p>	<p>IT team or similar stands up and maintains one or more databases for the company as a non-primary task.</p> <p>Individuals and teams can pull from those databases if they know SQL.</p>	<p>One person manages the whole data ecosystem -</p> <p>From data collection to data storage to reporting.</p>	<p>Components of data ecosystem are owned by different individuals/teams within the larger organization.</p> <p>Experts can focus on their area of expertise.</p>	<p>A centralized data team manages the data ecosystem with self service.</p> <p>Business units can define new metrics and reports independently using consistent business logic.</p>
Outlook	<p>Low to no trust in data.</p> <p>Users often can't access the information they need.</p>	<p>Queries are often non-performant. Data governance is not well defined and data access is too loose or too restrictive.</p> <p>Pipeline has many gaps. Requests for data or fixes are slow.</p>	<p>Data is reliable but is not within a scalable system.</p> <p>Requests have to wait and are subject to a single failure point.</p>	<p>Each component of the data ecosystem is implemented effectively.</p> <p>Data is reliable and fast to access as well as scalable.</p>	<p>Components of the data ecosystem are managed by experts in those areas.</p> <p>Data is reliable and fast to retrieve. Data users can build reports for themselves in a "safe" self-service front end.</p>
Results	Data chaos	Data bottleneck	Single failure point	Data reliability	Data driven

Your Data Team should treat Business Intelligence as a product. It should deploy new reporting functionality regularly, support continual enhancements to existing systems, and manage content rollout to internal employees. Make sure the team collects feedback and new requests from business users to inform iteration priorities. Your analytical vision and strategy will dictate the appropriate number of people to have on your data team.

Along with establishing a focused data team, all strong data organizations collect the right data in the right way.

Pillar 3

Data Warehouse

Proper data storage enables the feasibility of your organization's analytical vision and strategy. Since data is an asset, you should invest in collecting, operationalizing, and storing it properly.

Data storage technology has advanced dramatically. Storage costs — even for enormous amounts of data — have become negligible. The new challenges organizations face in the data storage space revolve around scalability and ensuring quick access to fresh, trustworthy data.

The database is usually the first thing blamed for data integrity and analytics issues down the line. Keep in mind that a best-in-class data warehouse includes the ecosystem that surrounds it. Technology coupled with an optimized data-management process is key. Your data assets increase on an exponential basis as your company grows. As you experience this type of growth, the challenge to stay ahead of issues and maintain control of your data also grows. Assigning designated owners to your data stack and understanding that this endeavor is not a part-time or side job is key to maintaining a strong data warehouse.

How Mature is Your Data Warehouse?

Use the below matrix to identify where your organization falls on the spectrum of data warehouse maturity (least mature on the left, most mature on the right).

	Non-existent	Basic	Intermediate	Reliable	Powerhouse
Your Data	<p>Accessed via production application systems or via manual extracts.</p> <p>No specific environments or transformation layer is utilized.</p>	<p>Copied from production applications "as is" into various warehouses for different tools and owners.</p> <p>Quality is not monitored as data moves into the warehouse.</p>	<p>Copied to a single performant data storage system. Scale is not accounted for.</p> <p>Databases are monitored for capacity planning on an infrequent basis.</p>	<p>Flows through a transformation process that includes a partial quality assessment.</p> <p>Data is structured in a way that optimizes for analytics over storage. A process is in place to bring new data sources into the database.</p>	<p>Resides in a database managed by a data team, containing all the company data. Historical and recent data is available.</p> <p>Performance is continually monitored with appropriate scaling and indexing procedures in place.</p>
Results	<p>Poor performance and potential risk to production applications.</p> <p>Limited access to key metrics.</p>	<p>Basic reporting is possible, but multiple reports will frequently return different values for a given metric.</p> <p>It is not easy to know which value - if any - is correct.</p>	<p>Analytics take shape and reports rarely have conflicting values.</p> <p>Users can ask questions and design reports but may experience limitations.</p>	<p>Performance is acceptable but inconsistent.</p> <p>Analytic results are trusted.</p>	<p>Data culture drives business decisions due to the ability to quickly get data into a warehouse and integrated into daily activities.</p>

A company's data warehouse can be assessed in four components: Technology, Pipeline, Quality, and Performance. Here are some suggested steps to push your organization forward in those areas:

Technology

- Use a transactional database for production systems and an analytical database for BI tools to access. This will enhance analytical query performance and eliminates risk of analytical queries slowing production applications.
- Assign an owner to lead the evaluation of various analytical databases, make the final selection, and manage the database or DBA team going forward.
- Include an ETL tool that creates various levels of aggregation and normalization for analytics.
- Evaluate your data warehouse for new or additional technology needs on a regular basis.

Pipeline

- Use ETL or scheduling tools to automate the copying of your data.
- If you have many data sources, ETL the data from the disparate sources into one target database, maintain mapping tables as needed.
- Use an ETL tool that can modify some data into analytical structures for specific business needs.
- Move from drop-and-replace to an append strategy to speed up load times and maintain historical state.

Quality

- Monitor completeness of data copied as total number of records.
- Run simple "trust" reports on data to evaluate for duplication and basic aggregation.
- Put a QA process in place to evaluate data products on a regular basis for accuracy against source systems.
- Utilize a tool in your ETL process to evaluate accuracy of data on a row-level basis.

Performance

- Assign indexing (or equivalent) to tables and verify data types are correct.
- Evaluate data structure and slow queries for opportunities to modify tables and assign indexing.
- Clean/optimize tables and collect table statistics on a regular basis.
- Evaluate query speed over time and kick off projects to restructure schemas, increase capacity, or update database technology when appropriate.

With your company's data stored effectively, the data team can focus on surfacing analytics for business personnel and teams to use.

Pillar 4

Analytics in Use

Are users able to find answers to their data questions? Can they take action from the available metrics? Can they tell a compelling story with data? These are critical questions to ask – and answer – as you work toward enabling your organization to maximize the value it derives from your data ecosystem.

Today, every company has access to large amounts of data. Whether it's collected from 3rd parties like Google Analytics and Salesforce or from custom internal systems, how individuals and teams will use that data often seems simple compared to the technical components of data collection and warehousing. Do not overlook the importance of investing in analytics in use. **The way your data consumers leverage data should be given just as much attention as the systems that collect and store your data.**

Many business personnel who have only known “data scarcity” in their careers now find themselves in a state of “data abundance”. Eager to use the new resource but inexperienced in how to use it effectively, these users often create an excess of unfocused metrics. The result is overcrowded charts and graphs which report on disconnected data or repeat information in various different ways.

An impactful data report will not only provide context on current and historical information, but will also allow a data consumer to make informed business decisions with measurable impact.

How Well is Your Company Using Analytics?

Use the below matrix to identify where your organization falls of the spectrum of analytics in use (least mature on the left, most mature on the right) across uses and metrics.

	Vanity	Actionable	Insight	Prediction	Optimization
Uses	Nice to see, but no immediate action can be taken	Show trends or changes from the past	Support existing processes. BI system is an operational reference point	Forecast future results	Predict outcomes and recommend changes to implement
Metrics	Lifetime number of customers, monthly active users	Marketing spend month to date, revenue change over previous period	Cohort analysis, customer 360	Ad pricing targets, quarterly sales forecast	AB test results, marketing spend recommendations

Vanity metrics are the achilles heel of reporting and analytics. They show a data consumer information, but provide no actionable insights. If it is unclear what action should be taken when a metric hits a significant threshold, or if it is unclear what a significant threshold is for a metric, then that is a vanity metric. Vanity metrics are dangerous. They give a company the illusion of control and monitoring where they may not be. Reporting on actionable KPIs is a simple and valuable step forward.

- Marketing attribution: where should we spend our marketing funds?
- Customer acquisition cost and lifetime customer value: which customer profiles give us the best return on investment? Which give us the worst?

We all naturally think of “what” and “how” questions when presented with data. What is the bounce rate on our homepage? How many active customers did we have last week? Challenge data consumers to take it a step further. Have data consumers answer “why” and “what will I do if” for all of their metrics. Why am I tracking bounce rate on the home page, and what will I do if it changes by +/- 10%? Why am I tracking weekly active users, and what will I do if it hits 100,000?

A Few Examples of Useful Analyses

- Funnel conversion rates: at what point in the online shopping process do our customers tend to drop?
- Cohort analysis: are our customers equally loyal across sign up months? Which cohorts need extra attention?

The following sections have additional suggestions to help your company mature along the analytics in use pillar.

Vanity to Actionable

Think about what measures would change behaviors in your business. Are you just measuring metrics that are available to you, or can you tie your data insights to an action? If you cannot explain what you will accomplish by monitoring a particular metric, then toss it and consolidate your business reporting down so your reports only include elements that will drive business growth. Continue to build from there.

Actionable to Insight

Once you've built a cadence of iterating upon your data, metrics and goals to drive action, ask yourself why your metrics may change. Who are your customers, the good and the bad? What causes them to do what they do? Staying ahead of the curve and anticipating changes as your business changes and grows will ensure that the analytics you provide to your business users stays relevant.

Insight to Prediction

You know what makes a good customer and how many you have coming down the pipe. Now, you can use the conversion rates, churns, or repeat purchase rates to forecast what's going to happen later on. Keep track of predictions and use them to refine your assumptions based on reality.

Prediction to Optimization

If we are able to predict what will happen, can we figure out how to influence that behavior? Be strategic about identifying the optimal places to invest money, time, and effort.

Pillar 5

User Adoption

Imagine that you've built out a fantastic analytics environment for your company. Your organization has detailed a clear BI strategy, you have a best-in-class analytics team that is integrated with your various business units and functions, you have a strong data warehouse on the backend, and you have avoided the trap of vanity metrics.

That's fantastic progress. The final step is to onboard your teams so they can utilize what you've created.

Driving user adoption is as critical as any other pillar in your company's analytical maturity. Without user adoption and ongoing maintenance, your teams will not be able to drive action through all the data you've worked so hard to capture and curate.

BI platform adoption falls into two equally important buckets: optimizing *within* and *around* your content.

Optimizing within your content includes taking actions to operationalize data content. Think of your BI platform as a product that you are launching into your organization, and think of your data consumers as your customers. Utilize user design principles to make navigating your BI system intuitive and make it easy for users to find and share the data that is relevant to them.

The processes you implement around your data content will increase the rate of adoption as well.

Consider the following components to drive analytical adoption around your content.

Organizational Structure

Organizational structure ties back to the earlier pillar on building a comprehensive data team. We've found that a hub-and-spoke model effectively supports analytical adoption within an organization. In the hub-and-spoke model, a core BI team (the hub) aligns with analytically savvy members (the spokes) of each business unit being supported.

The spokes may be technical or not, but it is critical that they have an understanding of their business unit's reporting needs. In this system the team managing the BI platform has direct contact with the business groups, ensuring the needs of each set of end users are met. This system also allows for quick iteration based on feedback from the business units.

Rollout Tactics

A rollout roadmap is critical in driving an effective rollout to the right business users at the right time. An effective rollout team always knows what's next on their roadmap and messages the rollout strategy to the entire organization. A monolithic approach to launching analytics across an entire company at once usually leads to slow movement, miscommunication, and lack of adoption.

Training

In even the most technical organizations, a good rule of thumb is: "Everyone gets trained." Show users how to use the BI platform your data team has created and where they can go for help. Below are tips to launch an effective training program:

- Your training program should have an executive sponsor who delivers a consistent message that training is a valuable prerequisite to using a data tool.
- Trainings should occur on a regular basis. Team members who want to learn should never have to wait long. Training schedules and self-service materials should be easy to find.
- Opt for shorter, targeted training sessions with smaller groups. Users will stay more focused in smaller, shorter sessions. Make it easy for users to attend additional training sessions if they show interest.
- Show examples on content relevant to attendees. This makes the trainings more engaging for end users and will keep their attention longer.

Maintenance

Monitor your organizations analytics usage. Understand which individuals are using your BI system to drive their day-to-day operations, and pinpoint those individuals who are not in order to focus adoption efforts. The following metrics can indicate which teams and users your BI team should reach out to:

1. Teams with low numbers of trained personnel
2. Teams with high numbers of trained personnel but lower than average number of users
3. Users or teams whose usage has significantly dropped or increased recently

Use this data to identify what may not be working in trainings or in the BI platform itself and then re-work or refresh content accordingly. The goal is to keep iterating, keep training, and keep growing.

“So, What Do I Do Now?”

This multifaceted approach to maturity is a great way to assess your organization for strengths and weaknesses. Use it to:

1. Assess your current state in each pillar.
2. Decide where your company should be in each pillar.
3. Set goals and priorities for each pillar.
4. Create an action plan to achieve those goals.
5. Progress and iterate.

In helping thousands of customers become better data-driven organizations, we've learned how easy it is to develop a robust, reliable data ecosystem.

Define a vision for data at your company and develop a strategy to achieve it. Structure your data organization for success. Maintain a modern data warehouse. Provide effective analytical tools for your business teams. Help business users leverage data to achieve more.

There is so much value in your company's data. Utilize the information in this paper to realize more of that value by digging deeper, achieving greater insights, and doing more with your data.