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The Iceberg effect in Business Intelligence gathering

Our solutions to a cross industry problem

An Infosys Consulting Perspective
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Executive summary

With significant advances in the field of storage and data science, a lot of companies are now focusing on industry buzzwords such as data science, analytics, machine learning, 3D visualization, modern ways of reporting and the like, to improve the way they do business.

This point of view attempts to articulate the challenges in implementing these modern ways of working and suggests a way forward to create solutions that will stand the test of time.

Some context

Companies are increasingly looking to use modern technologies in Industry Revolution 4.0 to bring more information to the surface to improve the way they do business. Many companies believe that creating information visualization solutions will allow users to find value locked within their data, which will ultimately create value and help monetize the data. There has been a surge of new projects, cross-functional groups are coming together, and companies are getting excited about building these dashboards to provide data in presentable and consumer-ready format to users. Companies are increasingly hiring data scientists to mine datasets, and business intelligence designers to craft innovative, visual, and good-looking dashboards with the intent of generating value insights to assist in decision making.

While these are all important and need to be done, companies must realize that visualization and data science only work when what lies beneath (i.e., the data) is the right data, is available, cleansed, structured, and accessible. Companies that focus a lot on business intelligence gathering without fixing the underlying data related issues would never be able find the right answers. Apart from this companies also must understand who they are addressing when they create dashboards (i.e., the personas). A senior leadership persona may want something very different to what an operational user of the business intelligence data may want, and it is very important to distinguish this. Lastly these solutions must be built such that they will stand the test of time and appropriate sustenance methods are in place.

Well designed and accurate business intelligence solutions are a game changer for any industry and any business can use these to make decisions to their competitive advantage.
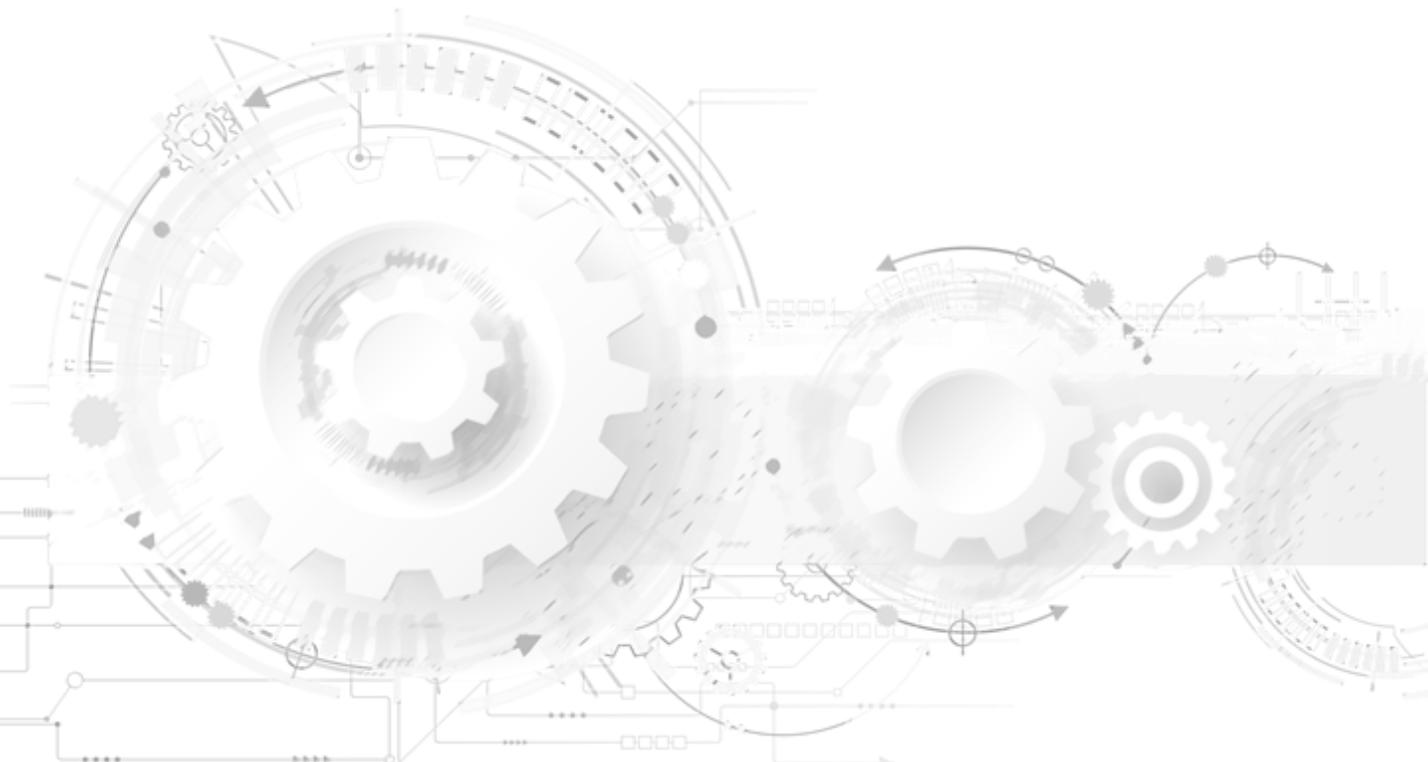
CHALLENGES

Many organizations tend to focus on what is "visible", i.e., reporting tools, 3D visualization of the assets, data science outputs on small scale proof of concepts etc. (we refer to these as what is visible above the water in an iceberg and constitutes <10% of the actual problem)

The alluring shiny surface

- Curated data presumed fit for purpose
- User friendly & interactive
- Visually attractive

The murky depths

- Poor data quality
- Unknown data sources
- No MDM
- Ungoverned transformations
- Erroneous interpretation
- Lack of design standards
- Unclear ownership
- Lack of metadata

However organizations should instead focus more on the portion of the iceberg that is beneath the water, such as creating digital systems of record (and move away from Excel), fixing data quality issues and agreeing to data standards and implementing them in the organization, data integrity issues, ensuring governance of data, have a clear master data management strategy, clear data ownership, uniformity in the way the data is interpreted and visualized consistently throughout the organization, build dashboards that are fit for purpose, have a clear roadmap for sustaining the dashboards and lastly easy accessibility to this data.

The iceberg is an effective analogy for this problem – the visible layer only constitutes 10% of the overall size of the problem, and what lies beneath often gets overlooked causing organizations to miss what it really takes to tackle this problem

Here are some ways by which these challenges manifest in various organizations

01

No system of record

Most of the data is recorded in an ad hoc manner. Business units largely manage their work via spreadsheet like solutions

02

Data quality issues

Different units within the company do not maintain the data in the necessary format, structure, frequency thereby resulting in various problems with data quality that eventually impede in gathering meaningful and actionable data from the relevant sources

03

Lack of data governance

There is no clear ownership defined in terms who owns the data, whom to reach out if access is needed and how it is being consumed and interpreted

04

Data integrity issues

The data gets compromised while sourced and transferred from source system to consuming application. This leads to either data being corrupted or lost over period.

05

Ad hoc sourcing requests

Multiple requests are sent to data owners for same data set, leading to duplicate effort and waste of resources. This encourages restrictive sharing of the data-by-data owners.

06

Data quality issues

The data gets shared and stored in "as-is" format, leading to multiple challenges while attempting to mingle data from different source system to draw meaningful insights

07

Lack of data governance

missing information such as provision to provide feedback, someone to reach out for data queries, no communication on data refresh issues, etc leads to lack of trust within the tool, hence leading to lower adoption rate.

Finally, all the above results in **dashboards which look great on visualization aspect** but has all the foundational issues highlighted in above points

Approach to solving these challenges

Although these know n problems have been around for a long time, not all industries and organizations have taken the necessary action(s) to address these. Different companies and industries are along different points of the maturity curve of implementing the solutions to these problems. How ever, w ith significant advances in technology in managing the data such as cloud enablement, better security, low er total cost of ow nership, ease of implementation, advances in artificial intelligence & data analytics, blockchain etc. the time is now ripe to look at solving these problems once and for all.

The key to success of any business intelligence gathering exercise is to look at the design from first principles - break dow n complicated problems into basic elements and then reassemble them from the ground up

Here are the key ideas that w e had implemented for some of our clients:

Create systems of record

Identify areas w here Excel® is still a preferred w ay of capturing and storing data. Design data capture solution(s) w hich eliminate spreadsheet-based solutions and encourages capturing of data in standardized and harmonized manner. This w ill enable organizations to gather data over a reasonable period thereby enabling dow nstream data analytics as w ell as bring structure to the w ay data is captured, managed, and consumed. Without a system of record, an organization can never learn from its past and identify benchmarks to improve for the future.

Defining and executing data standards

We encourage companies to invest time in producing a standard data dictionary for the organizations. To do this successfully, the organization has to invest in setting up the necessary business teams that w ill both create these standards as w ell as drive adoption across the organization. This standardizes the usage of terms and context for same data set across the regions, functions, and units w ithin the company.

Data cataloguing

Catalogue key information about availability of data in source systems, its refresh date/time, description of business logic, data ow ner name, etc. This w ill provide transparency to users w ho w ants to know w hat information is available in the data set, w ho is the data ow ner, w hom to reach out to clarify any information, etc. Based on size and scale of the organization, a small app-based tool or custom off the shelf tools can meet this objective.

Build curated products

We ask our clients to first create a single list of metrics repository w hich is tracked across all the functional areas and then identify w hich metrics are reported multiple times on different dashboard. These metrics need to be centrally built only once as curated products and can be made available to consuming applications. This w ill help eliminate the duplicate effort spent by different projects to build and support these metrics.

Build a centralized data repository

Identify data needs w hich is frequently sourced by multiple consuming applications and store them centrally. Organizations create automated data provisioning mechanisms through API's or pipelines to store data in central repositories w hich can be accessed by w ider user community.

This benefits organizations in multiple ways

- o Reduce the burden on source system owner to individually meet the data needs of multiple consuming application
- o Removes data silos and artificial boundaries which gets created over period
- o By channelizing all the data consumption needs to single repository, keeps track of who is consuming the data and for what purpose
- o Ensures systematic availability of reliable and quality assured data with minimal downtime

Present data based on the consumer persona needs

The needs and wants of all the users are different. We guide our clients to understand 5 W's (What, Why, Who, When, Where) and 1 H (How) of what the end user needs. Understanding the architype of user group and their information needs, does help structure the underneath data model correctly and present the correct information on the visual layer.

Contextualize the view by presenting a clear story

Organizing the layout of visualizations helps the user to follow the intent of the display and to extract meaningful information within the correct business context. Having a UX designer within the team helps to accelerate implementing a company-wide look/feel to the dashboards and reports, yielding a consistent flow.

Develop support and sustain mechanisms

Engaging with end users and seeking their feedback is key to the success of any digital tool. We promote setting up of processes to engage with end users to capture their feedback on released (or upcoming) features. This allows organization to keep a pulse on what end users are thinking and accordingly shape the future releases of the production. We also encourage our clients to dedicate some portion of sprint's capacity to work in these feedbacks based on priority agreed with the product owner.

As companies accelerate their digital transformation to become fully data-driven, the topics explained in this point of view help understand what these players are doing, and what they might consider doing bring data challenges to the surface. Re-defining data ownership, data governance, embracing design principle are good initiatives, but companies should not lose sight of the culture, change management and data mindset element, which is vital for successful transformation.

Effective change management & organizational readiness

One of the key considerations is to evaluate if organizations are prepared to make the technological, people and data investments to 'do more' with their data.

- A data mindset is needed from leadership down to trickle down. Inhibitions due to complex organizational structure, laggards of technology adoption, lack of data strategy and lack of skills can hinder the maturity or growth of the data organisation.
- It is no longer enough for a compact change team to support a single project or group of products. The challenges are bigger than this. Working with real users on real use cases brings the product and possible underlying issues closer to leadership and decision makers. A sustained change agenda is crucial, at leadership and group/sector level within an organization to build, and sustain awareness among the user community, product sponsors and the underlying web of stakeholders.
- Demonstrating the tangible benefits of implementing these data management initiatives, whilst recognizing early adopters, facilitates the change program to market with real stories and use the network to spread the word on the benefit of adoption.

Robust change management is crucial to adoption of topics discussed in this POV at both a granular and strategic level.

CONCLUSION

To successfully navigate your organizations data & business intelligence journey, you need to focus on what lies underneath what is visible and invest in the building the right data foundations first.

Initiatives such as digitized source systems, data governance processes and all the other things mentioned in this paper will help you to have a lasting foundation to sustain your organization's vision.

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