EXECUTIVE COMMUNICATION:

Creating Irrefutable Business Stories With Data
Getting through to key stakeholders can be easier

surveygizmo

It's not news to state that we live in a totally saturated information era beyond the point of feeling overloaded. We are simply drowning in data.

A survey[1] of 500 CEOs, CTOs, presidents, executives, engineers, directors, and professionals across industries reveals that while organizations have plenty of data to work with there is a significant gap in how to effectively analyze, apply, and communicate the data insights.

The same survey found 49.8 percent anticipate the importance of data changing within their organization over the next 3-5 years "only slightly", yet 52 percent say that it plays a large role in their long-term business strategy.

And while 50.7 percent say that over the last five years, their use of data has only "somewhat matured" as an organization, the findings show a strong appetite toward investing in making use of their data in more efficient ways. Nearly 50 percent say they're only "sometimes" able to communicate data findings to key stakeholders.

In short, the findings of the study tell us there is a lack of knowledge around how to effectively communicate and take action on organizational data.

In this short guide, we will unfurl the most complex challenges around making the vast amount of data available at our fingertips actionable. This is not a guide for how to collect data or best practices around doing so; rather, this guide will help you take those bland spreadsheets and flat charts and graphs and bring them to life through the art of storytelling and the science of data visualization.

The next time you present to your board or other key stakeholders your narrative will not be chock full of presentation slide after presentation slide of 3D generated visuals, pie charts, or worse yet, raw Excel tables.

Using the techniques shared here, your audience will be able to easily digest your findings and understand what action to take in order to make more informed business decisions.

Visual analytics combines automated analysis techniques with interactive visualizations for an effective understanding, reasoning, and decision making on the basis of very large and complex datasets.

Daniel Keim, Jorn Kohlhammer, Geoffrey Ellis and Florian Mansmann, "Mastering the Information Age Solving Problems with Visual Analytics"

[1] SurveyGizmo. "Data Usage Study." Survey. Jan. 2018.

The Power of Story

From fables and fairytales to folklore and bedtime stories, humanity is deeply rooted in the art and science of a well told story -- subconsciously and consciously. As humans, we inherently need connection and that is done most commonly through stories. No matter how technologically advanced our society becomes, stories bring us back to authentic experiences time and again.

Intrinsically, stories are how we inform, communicate, and spread information. They are how we interact, share, and collaborate. Combining the elements of storytelling with data science methodologies allows what is otherwise difficult information to grasp to be easily digestible and actionable without sacrificing the quality of the data.

"Stories are how we think," says Dr. Pamela Rutledge, Director of the Media Psychology Research Center at Fielding Graduate University. "They are how we make meaning of life. Call them schemas, scripts, cognitive maps, mental models, metaphors, or narratives. Stories are how we explain how things work, how we make decisions, how we justify our decisions, how we persuade others, how we understand our place in the world, create our identities, and define and teach social values."

Data is flat. Presented on it's own, it lacks the emotional hook a story can provide. Applying story structures and narrative elements to the data provides the intellectual hook key stakeholders need to make sense of it; to see value in the data from a 1,000-foot view.

When backed with the immense power of a narrative data is brought to life -- people have a tangible and authentic way to make out what the raw data conveys. The challenges become believable. The characters are relatable. The hurdles can be felt and overcome. The outcome is clear. Through this perspective, the data becomes dimensionsional, embodied, and actionable.

> "It begins with the data and then moves into the format by which it is presented or communicated, which can include visuals, such as charts, infographics, dashboards, etc. It has a narrative with a 'so what' or insight that can lead to an outcome, i.e. influence, inform, drive action/change."
>
> Jennifer Brett, Ph.D., AMER Senior Insights Manager, LinkedIn

> "Data analysis isn't about graphics and visualizations; it's about telling a story. Look at data the way a detective examines a crime scene. Try to understand what happened and what evidence needs to be collected. The visualization -- it can be a chart, map, or single number -- will come naturally one the mystery is solved. The focus is the story."
>
> Daniel Waisberg, Analytics Advocate, Google

In addition to having great developers, analysts, marketers, sales people, and visionary leaders, companies today need to seek out those with a talent for data storytelling. Presenting data in the right way is imperative for companies to become more agile and data-driven, not to mention efficient, accurate, and proactive.

Stories are meaningful, memorable, impactful, and personal. When it's your job to share with management and the executive team the facts, it's not always easy. It requires storytelling nuances to make it stick. And for many, those nuances are not second nature.

Combining the nuances of good storytelling with the granularity and factuality of data analysis is no easy feat. Start by breaking down the story to the basics: who, what, when, where, why. From there, form the narrative making sense of the data.

Story Structure

"Using a structure that is broadly familiar to audiences and hitting familiar story beats will help ensure that a data story leverages the hooks that storytelling already has in people," says Zach Gemignani, founder and CEO of Juice Analytics.

Effective stories carry a simple three-part structure, that of a beginning, middle, and end.

1. **Beginning**. Set the stage for your audience and give context by providing background information as it relates to the story. Make it personal and bring in anecdotes from your own life to trigger immediate connection and relatability.

2. **Middle.** Hook the audience with insights, share what you've discovered through your analysis, and explain in layman terms what it means for the audience and why they should care.

3. **End**. Great endings provide audiences with a new understanding through the transformation of the story's characters. Data story endings should not only capture that traditional 'a-ha' moment for your audience, but inspire your audience to action.

Map Data Findings to a Story Arc

A story arc is used as a skeleton or the behind-the-scenes framework for a story to take shape. When analyzing your data, map the findings against the story arch while capturing the story elements below.

By doing so, you're audience will be able to easily follow your storyline and absorb the information in a learning method they are likely highly familiar with.

Climax

Rising Action

Falling Action

Resolution

Exposition or Stasis

Storytelling Element: Characters

The characters people relate with the most are flawed, just like we all are in our own ways. Flaws not only help your audience relate to the story's characters, but it's why they begin to care about them.

In data analysis, there are certainly flawed data points -- outliers and unexpected findings. And while these characters don't convey the entire story, they provide your audience a clear insight and context to the state of your data.

Storytelling Element: Challenge

Data analysis allows you to uncover findings that help answer otherwise amorphous business questions. The deeper the analysis, the more you will find the challenges needed to tell the story.

These findings will be the core of your story, so the more you and your team can uncover, the better the story will be.

Storytelling Element: Moral

The moral of a story is the key message or main point the story is trying to convey. When crafting the narrative around your data findings, make sure the key message is clear so it's equally clear to your audience what you want them to do.

Dashboards for Decisions

By Donald Farmer, Principal, TreeHive Strategy

Years ago, before the technology industry talked about Business Intelligence, or Data Visualization, or Advanced Analytics, we had a simple name for our work: Decision Support. It's a good term and still very relevant, as it describes the job function of the software very clearly. Good reports, good dashboards, and useful visualizations to support you in making good decisions.

Yet even today, many dashboards and analytic projects fail to make a business impact because they overlook this simple requirement. So, let's consider how you can focus dashboard design on decision support, leading to a more data-driven organization.

Understanding Decisions

Let us first understand that there are different kinds of decisions.

Operational decisions are narrowly scoped, have a clear structure and are very repeatable. The same inputs will typically lead to the same outputs. Each operational decision may be small, but there are many in the course of your business. In fact, for many, daily work is an endless flow of operational decisions. How do I respond to this error condition? Which supplier should I use for this order? Do we make this promotion? Do we offer this customer a loan?

The results of operational decisions can be influenced by **tactical decisions** which are more broadly scoped. What is our target time for dealing with error conditions? Who are our preferred suppliers? What is our goal for issuing loans this quarter?

Tactical decisions are the realm of mid-level managers, responsible for departments, regions or teams who in turn make operational decisions. However, tactical choices are themselves influenced by **strategic decisions.**

Strategy is the domain of the most senior leaders of your business. Is it time to move to a new system? Do we build components ourselves, or do we purchase from suppliers? Should we offer business loans or instead invest in domestic mortgages? The inputs to strategic decisions can be very complex, ranging from detailed understanding of the market, to the "gut feel" of a leadership team.

Start with the User

A common problem with dashboards is that they do not have a clear focus on these decision types. Instead, too many dashboards try to give the user as much data as possible, whether in tables or visualizations. You may think this is a good plan. More data is surely better for decision making? Well no, not if the user is confused by a cluttered visual experience which includes too much information for the task in hand.

It is best to start by understanding your users and the decisions they make. You'll see from the different decision types that it will be easier to start with users who make operational decisions, simply because their work has a narrower scope. These users will likely be in more junior roles.

Your ultimate goal may be to build tactical and strategic dashboards, but starting with junior roles and operational decisions can help you focus and practice the art of building highly usable experiences. As you gain confidence and experience, you can move on to more tactical dashboards and ultimately even strategic systems.

Clarify the Decisions

With an operational user in mind, it is time to work out the decisions they make and how you can help them. Start by understanding their job role and how their work is measured.

Single out measures or Key Performance Indicators (KPIs) that matter to your user. They should know these themselves, but it is also useful to get input from managers about priorities.

Next, list the decisions these users make in the course of their work which affect these measures.

> " *Each dashboard you design should focus on a single decision, visualizing the data clearly.*

Now you can identify the data that will be most useful to them for each decision. Each dashboard you design should focus on a single decision, visualizing the data clearly.

As you design more dashboards, you can use multiple tabs or pages to group related decisions together. Your aim, however, should always be clarity and decision support.

Real-time and right time

A common challenge for the dashboard designer is finding the correct "rhythm of the business" for the decisions you are modeling. For example, deliveries may be leaving your warehouse every few minutes. Does every dashboard have to be updated with every shipment?

It is tempting to update all information as quickly as possible, and users often ask for "real-time" data. But just as before, too much information can be confusing and unhelpful. It is better to focus on getting data to your users in the "right time."

For these situations, a simple rule of thumb will help you to choose the right timescale for displaying data. It is not helpful to show data updating more rapidly than the user can respond.

In our warehouse example, the manager of the packing line probably does need to see every order quickly. If there is a problem, they can - and should - deal with it there and then.

In the same warehouse, a staffing manager planning temporary contract staff, does not need to see these numbers changing in real time. Even if they see the numbers, they cannot respond with their decisions at that speed. They do, however, need to know the daily or shift totals. That is an impactful number for their business. More detail would be unnecessary and confusing.

The decisions of the company's CEO evolve over an even longer period. Unhappy with the temporary staffing agency, they may decide to hire more direct staff. In that case, they may need only monthly or even quarterly information to help with that strategic choice.

Putting it all together

Thinking of your dashboard designs as "decision support" does not mean you are taking a step in time. Rather, it means you are focussed on exactly what your users need. With this focus, you will be build analytic experiences that are grounded in the real data and the real workflow of your business. Meaningful impactful insights and better decisions will follow.

User Experience for Analytics

By Nicholas Kelly, NickSight

Companies invest millions of dollars year-over-year in data and analytics without leveraging the true value of it. By applying an approach rooted in the software industry - one of user experience -- to understand how dashboards are, or are not, being adopted throughout the business, unfolds the layers that are needed to understand how to better implement, integrate, and utilize a visualized dashboard.

While using a user experience approach is the name of the game for those in software, for those in analytics, it's a new concept. It's rather odd that the approach hasn't been leveraged in analytics given its high stakes and high investment.

A typical analytics project includes a set of costly skillsets like data scientists, developers, and business analysis, that places emphasis on technical delivery and implementation of requirements but often misses key elements of ensuring user adoption.

Dashboard Adoption

Step 1:

Determine who the users of the dashboard will be. Connect with them directly to figure out what their needs are, what their goals are, and how they align with the overall strategic and business goals for the initiatives. Having measurable outcomes from the dashboard helps measuring its success later on. Outcomes such as "Reduce attrition costs by $6M per year" or "Increase gross margins by %2 at the end of the current financial year".

Step 2:

Get everyone in the same room. Review the main dashboard users with the entire group, including business stakeholders. Learn their needs, their goals, and what the dashboard is going to help solve.

Step 3:

Develop a wireframe for the dashboard. Think of this as your blueprint. The wireframe should detail what elements are necessary in the dashboard, what it will look like, etc. Don't worry about chart or graph types, colors or fonts at this step. The focus here should be on the broad strokes -- the general footprint of the dashboard -- the must haves.

By applying an iterative methodology, the process creates a high fidelity design of what the end dashboard would look like. At this point, the dashboard is not connected to data, but will provide a high level projection of what it will be.

Often times, this early version of the dashboard is displayed in an interactive PDF or even in Microsoft PowerPoint and its core objective at this stage is to allow end users to click around and get an idea of what the interaction's like.

During this step, the group should be focused on answering business questions such as, *"What's my revenue year-over-year?"* And then, *"What are the results' impact on the business?"* This will get people in an action oriented mindset and avoid going down a rabbit hole that will only result in needing more dashboards.

For example, it's one thing to look at a chart and conclude that the organization's gross margin is 20 percent and it should be 30 percent. Rather than having an interesting find, being action oriented will prompt what action to take from the finding.

Doing this heavy lifting early on eliminates clutter and noise that often derails people once the dashboard is developed. Mapping business questions to actionable charts is tricky and the distractions of picking chart types often derails the activity, using dashboard templates or a dashboard design kit helps stay focused on the outcomes and not the means of the outcome at these early stages.

Step 4:

Circulate the results from Step 3 to all stakeholders. Ask for feedback and document any requested changes. Iteration here is key until all stakeholders are happy and can sign off. That sign off is critical for the data scientists and developers to take that wireframe and build it. It's egregiously more costly to fix and make changes during later stage development than during the iterative design phase.

The biggest risk you have in this kind of approach is that when things go against plan and something needs to be tweaked after it's been brought into development, it's usually due to a stakeholder being on holiday or not being involved in the design phase. Or, worse yet, for political reasons a stakeholder or user was not identified for inclusion.

Yet, the work of improving the dashboard, the quality of the connected data, and iterating over time never stops. The more data that you get and the more decision making that is done with the data results in behavior change that impacts the business.

Put simply, a dashboard has a life. You don't just build and release it and wash your hands with it. It's a commitment you are now bringing into the daily routine of work and that should constantly be evolving as the business needs evolve. Without that mindset and attention, the dashboard will flatline.

To nurture a dashboard for optimal performance, you need to:

- Revisit its performance frequently with key stakeholders

- Collect regular usage feedback

- Mature its capabilities as the business matures

Dashboards should encourage increased efficiency and help determine:

- How much money is the business saving?

- How much time is the business saving?

- What percentage of revenues can be attributed to having more accurate analytics to make decisions from?

Determining Dashboard ROI

There are many factors when determining an analytics dashboard worth. ROI can be broken down two main ways: a dollar value and/or a hours value.

Dollar value

- Cost to build

- Cost to maintain

- Dollar value of any intellectual property used in its creation

- Dollar value to the business over X number of years?

- How many times can the dashboard be reused?

- Projected lifetime value to the business

Hour value

- How much time is the dashboard going to save?

- How much faster are decisions made?

- How much time is freed to do other tasks?

Generating Dashboard Feedback:

Think Like a Product Owner

Think of your organization's analytics dashboard as an internal product and whomever "owns" and heads up it's operation is its product owner. The dashboard's owner is not the developer, the data scientist, the business analyst, or the business owner.

If you apply a product feedback approach on the performance, perception, and use of all your dashboards, collecting feedback will simply be a part of its life cycle.

I advise companies to leverage three common methods to feedback management for each dashboard they have:

- **In dashboard feedback** that often comes from simply clicking a button within the dashboard that allows them to provide feedback while they're experiencing the product. This provides granular real-time feedback that can easily get lost or forgotten.

- **Consistent in-person feedback sessions or discussion forums** allow for dashboard owners to see first hand how users feel about the dashboard, what they love and what they don't, what could be improved, how it's being used, etc.

- **Via the Knowledge Management platform** the dashboard is hosted on. Dashboards needs to be located somewhere in order for users to access them, such as SharePoint. A recent trend is to enable content-specific discussion/chat functionality that provides a more casual means of generating feedback.

Visualization Best Practices

By Donald Farmer, Principal, TreeHive Strategy

If you are looking to improve your data visualization techniques, the internet is full of advice for you. Never use pie charts! Avoid 3D effects! Use this advanced chart type or that new chart type ... it can be quite intimidating, especially as people often hold very strong opinions. Fortunately, there are a few simple principles which can guide you towards your own best practices.

Know your Audience

Information design isn't about the science of data, it's about people. You share visualizations in order to give useful information to others. So, it's important to understand their needs, skills and interests. Is your audience data literate? Will they readily understand the charts you are showing them? Some chart types may need some explaining – for example, I still have to think twice when looking at a bullet chart. The more you know about your users and their understanding of data, the better. You'll be able to craft visualizations that work for them simply.

Focus on your Purpose

When planning your visualization have its purpose clearly in your mind. What is the visualization for? At the stage, don't worry about the information you will show, but ask yourself: what decisions will be made, using this visualization? After all, if the visualization will not help with some decision, why are you building it? Hopefully not just for decoration. A good visualization provokes conversations and discussion about the topic; it doesn't just answer questions, it raises questions too.

What do you want to show?

Once you know your audience and have a good idea of the purpose of your visualization, it's time to get down to choosing your chart types. What do you want to show?

Relationship

To show how two or more values are related (for example, age and educational level) consider using a scatter plot to show both in a simple way. Each data can be shown as a point or bubble positioned as an x,y co-ordinate representing the two values. Some scatter plots also allow you to change the size of the bubbles to show another value, such as income.

Change Over Time

If you are showing change over many time periods - more than just a few data points - then a line graph is most useful. Also lines make it easy to plot multiple series together. However, if you are showing change over just a few values - says changes over the last six months - consider using a bar chart again, unless you have multiple series.

Composition

This means showing how a single value (sales, perhaps) is made up of other values (say, for each region.) The pie chart is a notorious example of a composition visualization. It has a bad reputation because so many pie charts are badly used. It probably is best to avoid them unless you have a good reason. Certainly they are easy to understand, so long as they only have a very few values, and so long as you don't want people to make exact comparisons at a glance.

Comparison

If you want readers to compare values bar charts of various kinds are very useful. You can easily compare between items.

Colors and Aesthetics

Choose colors carefully to convey information. It's a good practice to use one color for consistency throughout your document, web page or presentation. Introduce new colors when you want to make comparisons or show contrasts in a single visualization.

You can use shades of the same color to convey information. Shaded maps are popular, but shaded charts can be very effective too. Note that it can be difficult to make exact readings of a shade, so don't rely on shading for precise interpretation.

Multiple colors, as I said, can show contrasts. But too many colors is confusing and almost literally sore on the eyes. If you are thinking of using more than 10 colors, think carefully. If you plan on using 20 - think again!

Test Your Work

The most important best practice I can recommend is also the most overlooked. Test your work!

It's a really good idea to sit down with a typical user of your work. See what they like and don't like. Ask them to explain to you what conclusions they can draw from your visualization. What questions does it raise? What questions does it answer? What conversations do you have when discussing the chart?

Perhaps make two or three versions of your visualization to try out different techniques. See what works best in practice by asking users.

As you get confident with your design, you'll increasingly know what works well, but it's good not to become complacent. Remember that visualizations are not just about information - like all work, our focus needs to be on people and their needs.

Hone Your Craft

Throughout your life, you likely remember learning from stories whether they were told to you as child at home or in school by your teachers and peers. One of the oldest forms of communication, storytelling continues to play a fundamental role in sharing information.

As businesses begin to integrate the skill sets of great storytellers and brilliant data scientists, developers, analysts, this communication method is a sure way to get your data's messages across.

Every number has a story, and with the basics we learned here, you will be able to turn your next presentation into an engaging and memorable session that leaves your audience with the motivation to take action.

Contributors

Donald Farmer, Principal, TreeHive Strategy

As the Principal of TreeHive Strategy, Donald is an internationally respected thinker in the fields of data analysis and innovation, with over 30 years of deeply practical experience. His background is very diverse, having applied data analysis techniques in scenarios ranging from fish-farming to archaeology to advanced manufacturing. He has worked in award-winning startups in the UK and Iceland, and spent 15 years at Microsoft and at Qlik leading teams designing and developing new enterprise capabilities in data integration, data mining, self-service analytics and visualization.

Donald is an advisor to globally diverse academic boards, government agencies and investment funds on data and innovation strategy. He also advises several startups worldwide, developing products and services ranging from restaurant management software in the Philippines to intelligent supply-chain automation in Silicon Valley. He mentors individuals from junior inside sales reps to globally-focussed executives.

Donald lives with his wife, Alison, an artist, in an experimental woodland house in Seattle.

Contributors

Nicholas Kelly, Principal, NickSight

Nick has built a career on gaining business insight from data. He is a hands-on leader in analytics with over 15 years of international experience spanning management consulting, analytics and software development, deployment, adoption and user experience.

Nick's passion lies in building user-centric analytics capabilities that align with business strategy and produces insight; actual value back to the business. Having managed teams of up to 25 data scientists to coding and developing by himself, he knows the full analytics process and how to scale it. He has codified all his experience into several self-directed dashboard design kits.

Nick is an experienced management consultant, having implemented analytics projects and strategies for a number of the Fortune 100 in multiple industries including finance, human capital, supply chain and healthcare. Being featured in videos and articles, he has also been a speaker at international conferences and has personally trained over 500 management consultants in data visualization and analytics best practices.

ABOUT

Founded in 2006, SurveyGizmo is a powerful, survey and data insights platform that empowers business professionals to make informed decisions. Through high-powered application software, it offers user-friendly data collection tools for understanding your customers, markets, and employees in real time and communicating this information across an organization. It provides data insights in over 205 countries, with 50,000 new surveys created and 7.5 million responses collected every week, for customers like Fedex, Microsoft, Bloomberg Television and GE.

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