

Creating a Culture of Data Visualization

A HARVARD BUSINESS REVIEW WEBINAR FEATURING

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OVERVIEW

As more and more companies try to leverage Big Data and analytics, they are recognizing the power of data visualization in providing access to insights that foster faster, better decision making. But while business leaders see benefits in visualizing complex data, many have found their organizations lack strong data visualization skills. Technology tools make it relatively easy to create charts, but the output is often hard to interpret and ineffective in telling the whole story. Too often an organization's data visualization skills are limited to only a few people: many employees feel intimidated by data visualization and don't try to master it.

Fortunately, a new generation of data visualization tools makes it easy even for non-experts to create graphic data stories. Companies that gain competitive advantage with data viz learn to build a culture of data visualization, by creating a team approach and championing pilot projects, as well as providing training for employees.

CONTEXT

Scott Berinato described why many organizations struggle with data visualization. He discussed ways to address this problem by taking different approaches to visualization.

KEY LEARNINGS

As technologies like data visualization become democratized, user adoption increases.

The path to democratization advances as technologies become inexpensive enough to acquire and easy enough to use. The evolution of synthesizers is a good example. The first synthesizer was patented in 1900. The device was massive, expensive, and required specialized knowledge. Over time, new synthesizers were developed that were more accessible, more affordable, and easier to use. Widely accessible synthesizers led to the development of "synth pop," a new genre of music. Today, tools like GarageBand let users store music samples, merge them, and create new music.

The path to democratization is driven by innovations that increase user acceptance, and user acceptance drives new innovations. This creates a set of "virtuous switchbacks."

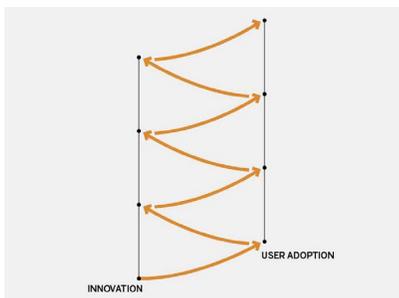


Figure 1
Virtuous Switchbacks Lead to Democratization of Technologies

CONTRIBUTORS

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Democratization is all around us. Word processing has made it easy for people to create their own newsletters. HTML enabled widespread digital publishing of websites. With content management tools, anyone can create electronic magazines. Facebook Live and similar tools let anyone broadcast live over the Internet.

Democratization is also occurring with data visualization, and it has followed a similar path as synthesizers.

- In 1912, teams of people used punch cards to generate data with tabulating machines, and draftsmen created hand-drawn visualizations of factory process flows and more.

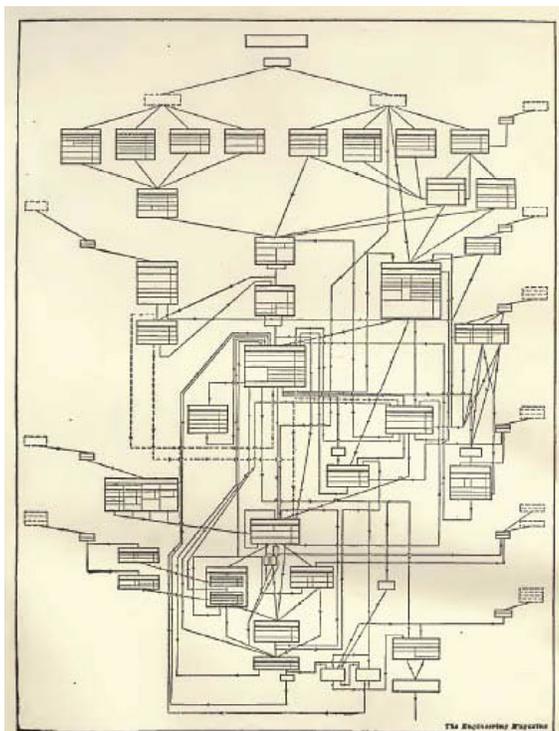


Figure 2
Data Visualization Circa 1912

Fig. 14. Graphic Representation of Processes and Routing in a Representative Plant
Names of departments and operations are omitted by request of the proprietors of the establishment in which this chart was made

- In the 1950s, experts were still required for data visualization, but the technologies were a bit more accessible. The U.S. Bureau of Labor Statistics had a room devoted to charts, but only a small group of people had the skills to create and understand these charts.
- In the 1990s, everything changed with Excel’s Chart Wizard. This opened up chart-making capabilities to virtually everyone. This widespread accessibility turned out to be a double-edged sword. While it became possible to quickly create a large volume of charts, the output was not intuitive.
- Today, digital tools like TIBCO Spotfire and others enable users to store data, manipulate it, and create charts easily.

High levels of user adoption don't automatically translate into effective data visualization.

Democratization of technologies is necessary and useful, but it is not an efficient process. Just because users can make a chart, it doesn't mean they should. Similarly, just because today's tools make it easy to create a chart, it doesn't mean the chart will be good. The democratization of data visualization has resulted in many bad charts and only a few effective ones.

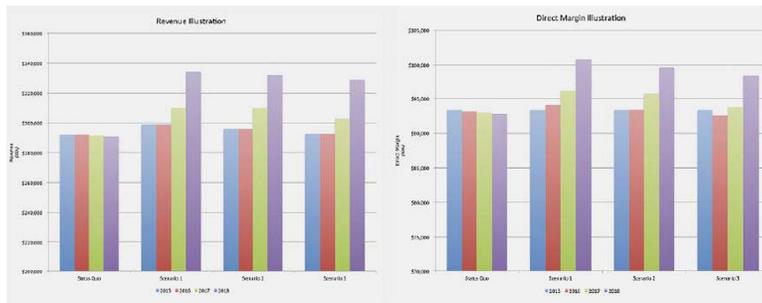


Figure 3
A Poor Data Visualization – Revenue and Margin Information

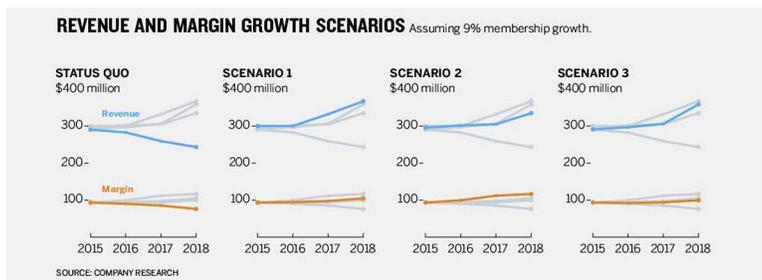


Figure 4
A Good Data Visualization – Revenue and Margin Information

A team approach is the best way to create powerful data visualizations.

When it comes to data visualization, executives want results. They feel their organizations gathered data, bought software, and hired data scientists. Yet, the visualizations they receive often aren't useful. Organizations want people who are design thinkers, data wranglers, and subject matter experts. Finding one person with all of those qualities is next to impossible.

Instead, organizations must create teams that are skilled at presenting data in meaningful ways. This means connecting design thinkers, data wranglers, and subject matter experts, and asking them to collaborate.

When working on a data visualization team three best practices are:

1. **Be agile.** Focus on solving small problems incrementally. Use an agile strategy to address bigger-picture challenges.
2. **Sit together.** It is often helpful for team members to be co-located. Organizations may consider embedding chart experts in different functional areas.

“Companies are starting to understand the importance of the data visualization journey. If they don't invest in this area, they will fall behind the competition.”

– SCOTT BERINATO

3. **Learn about each other.** Cross training can be beneficial. For example, data scientists could take a design course, while designers might take an introductory course on statistics.

Organizations can create a data visualization culture through pilots, training, and outside resources.

To build a culture of data visualization:

- **Start with a small pilot project.** Ask data visualization enthusiasts in the organization to participate. Small wins can then be scaled more widely.
- **Offer data visualization training.** The more data intensive a company is, the more important training is for employees. Data visualization training can also help employees become literate data consumers. Data literacy is the key to recognizing flaws in the way data is presented.
- **Consider leveraging outside resources.** Organizations may seek assistance from information design consulting firms or from universities that offer data visualization programs.

Simple charts and storytelling are proven techniques for communicating information effectively.

When faced with complex information, it is helpful to break down the data into several simple charts and use storytelling techniques to make the information actionable. Storytelling has three steps: setup, conflict, and resolution.

Using simple charts is highly recommended for large audiences, where it is difficult to set a specific context. If the audience is fluent with a particular topic, it is okay to put a complex version of a chart on paper as a handout after the presentation is over.

OTHER IMPORTANT POINT

- **Interactive charts.** Interactive charts often suffer from the “eye candy” problem: they are eye catching but don’t convey information clearly. Developers and user experience specialists can help create more effective interactive charts.

BIOGRAPHIES

**Scott Berinato**

Senior Editor, Harvard Business Review

Scott Berinato is a self-described “data-viz geek” and a senior editor at *Harvard Business Review*. In addition to editing features for the magazine, he has championed the use of visual storytelling and data visualization at HBR. He is the author of *Good Charts: The HBR Guide to Making Smarter, More Persuasive Data Visualization*

**Angelia Herrin (Moderator)**

Editor, Special Projects and Research, Harvard Business Review

Angelia Herrin is the editor for special projects and research at HBR. Her journalism experience spans 25 years, primarily with Knight-Ridder newspapers and *USA TODAY*, where she was the Washington editor. She won the Knight Fellowship in Professional Journalism at Stanford University in 1990. She has taught journalism at the University of Maryland and Harvard University.

Prior to coming to HBR, Angelia was the vice president for content at womenConnect.com, a website focused on women business owners and executives.

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