How do you measure the value of data?

There's no one right way to determine if enterprise information is useful, but there are plenty of ways to try.

Lessons for leaders

- The easiest way to measure the value of data is by simply tying it to its contribution to the bottom line.

- Data can usually be valued based on its level of inherent risk: Higher risk = more value.

- Smart enterprises need to invest ahead of time in tools and tactics to prepare for data-intensive questions that haven't yet arisen.

There's no question that data has value, a fact that of late has become the loudest rallying cry of the enterprise. But if data has value, trickier questions arise: How much value does it have and how do you measure it? How do you tell the difference between data that is valuable and that which is worthless?

Stuart Stent, senior director for advisory and solutions for HPE GreenLake, starts this discussion by framing it around a topic we can all understand: a fast food giant's popular pork rib-based sandwich.

For its creator, the seasonal limited release of this sandwich is a major exercise in data. According to pundits, the famous faux-rib sandwich is produced only when pork prices are low enough to make it profitable, which means that the burger chain must begin its calculus with an analysis of production and sales data—one of the most critical and obvious sources of digital value.

From there, the fast food chain has to make some more difficult decisions: Given limited supply, where does it prioritize its deliveries of frozen pork patties and barbecue sauce? Next, "the company will need to look at all restaurants across the country to determine where the sandwich does well—and what the local demand is likely to be," says Stent. "Where's the sweet spot that maximizes value?"

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– Andy Cotgreave, technical evangelist, Tableau

That clearly results in a complex analysis of how many sandwiches are likely to be sold at each location, which could involve an analysis of everything from historical sales data to weather conditions to social media chatter. In that sense, the relative value of all that data can ultimately be measured in terms of its contribution to corporate profits.

How do you answer questions you don't yet know about?

To be sure, an analysis like this is just the beginning—and fairly straightforward. When you delve into less quantitative and more unstructured data, such as surveillance video, Facebook posts, and sensor log data, the value calculus becomes more complex.

"Data isn't like a traditional asset," says Andy Cotgreave, technical evangelist at Tableau, which produces the eponymous data visualization tool. "For real-time applications, data only has value for a short period of time, but large volumes of data might contain valuable insights that have to be mined. Measuring both ends of this spectrum is a challenge. It can be hard for chief data officers and leaders to justify expenditure on analytics if its value is not adequately captured."

Cotgreave says that one approach to measuring data is to quantify the various ways in which data is used in an organization. Data has costs—related to collecting, analyzing, and storing it—and provides benefits as it is monetized or used for decision-making. Data also suffers from depreciation, as it can lose value over time.

"The trick for data leaders is to understand there are two parts of a successful data strategy," says Cotgreave. "On the one hand, you know the KPIs your organization needs to track: total revenue, employee retention, customer churn, etc." A value can fairly easily be placed on data that directly helps to determine these metrics.

The second part of the strategy deals with unanticipated questions. "As a leader, do you have new questions about your business every day? Of course, you do," Cotgreave says. It is impossible to build a data-driven dashboard that addresses these new questions because you simply don't know what they are going to be. He says the solution is to invest "in all areas of the data cycle," including the provision of data access technologies to all employees, investment in the raw skills needed to confidently analyze and understand data, and investment in ad hoc tools that can help people perform quick analyses of information in real time, as a first pass in advance of a more refined analysis.

"It's not possible to know which data will be valuable in the future," Cotgreave says. "However, it is vital to build systems that have the flexibility and resilience to let the most important data and insights surface when they are needed."

A question of risk

HPE's Stent suggests an alternative—and complementary—approach to valuing data, one based on risk. (This is similar to his methodology for determining when to delete data.)

"On the security side of things, we often perform a threat risk assessment," says Stent. "You can look at the financial, political, or any other type of risk of anything and then determine whether you have a method to mitigate that risk." Consider a database of every Social Security number of the U.S. population, tied to a name and address, all stored in unencrypted plain text. The risk involved with that data set is huge because, if it were hacked, it would result in an enormous level of fallout for the organization, both financially and reputationally. However, that immense risk also implies that the data has a commensurate amount of value.

Stent is careful to note that the converse isn't true—that not all valuable data carries risk. "Consider a business that has data on the number of containers it ships in a month," he says. "Losing that particular number is probably not high in external risk because competitors wouldn't find much use for it and [the company] can't get sued over it, but it's quite valuable information for the company." In this case, the risk of losing that data is rather high because it would impact the organization's ability to create financial reports, plan production, decide staffing levels, and so on. Risk doesn't always have to involve an external attack.

Optimizing for gummy bears

Every problem is a data problem, as exemplified by a recent data-driven endeavor at SnackMagic, which sells an array of snacks online. SnackMagic has limited inventory space and was experiencing stockouts because it wasn't replenishing its inventory optimally. CEO Shaunak Amin says that shifting customer demands, especially during the holidays, made it difficult to intuitively see ahead of time what products would soon need restocking.

"We took a hard look at our data to discover which items were slow moving versus those that sell out fast," Amin says. "Because we took the time to do so, we can now better identify our inventory turnover rate for each product, improve our demand forecasting, and refine our safety-stock product quantities."

That, in turn, led to a new "top-off strategy" for the company's warehouse, where inventory is measured at the beginning of each shift and replenishment orders are initiated at the end of each shift. "By topping off inventory at specific points in the day, we found we can maintain higher inventory levels for the order pickers," he says.

Whether it's bags of gummy bears or pork rib sandwiches, "there's a balancing act among the value you're going to get from the data, what it's going to cost you to manage the data, and what the risk is of having that data vs. not having it," says Stent. "If you can balance those three things, you probably have a decent model for determining what data is going to be the most useful for your organization."

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