# Data Value and the Search for a Single Source of Truth: What is it and Why Does it Matter?

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## Abstract

*Organizations aspire to a single source of truth to improve data-driven decision making. All too often, data is locked inside data silos, raising the question: if a single source of truth is key to unlocking value from data, what should organizations do to get there? This paper presents findings from a survey of 400 E.U. and U.S. organizations. First, cluster analysis reveals three organization types based on value from a single source of truth: data laggards, data followers, and data champions. Next, we show that data champions are more likely to have an adaptable and flexible IT infrastructure alongside a culture of data sharing. They report fewer inhibitors of a single source of truth such as conflicting data standards. Data laggards report fewer IT enablers but also, paradoxically, fewer inhibitors. We turn these results, and insights gleaned from follow-up interviews with IT executives, into a set of non-technical prescriptions for organizations.*

**Keywords:** data value, single source of truth, data champions, data laggards, data followers.

## 1. Introduction

Interest in data management and its implications for improved decision-making and data-driven organizational performance has, in recent years, begun to feature prominently in surveys of information technology (IT) executives (Johnson et al., 2023). Lured by the promise of data analytics and the mantra – data is the new oil – users and key decision makers are quick to launch into promising data-driven projects, but then reality intervenes. They often find that data needed for decision-making is outdated, duplicative, contradictory, untrustworthy, and locked inside inaccessible data silos (Dykes, 2018). Consequently, the promise of data value falters. So, what can be done to address this problem?

The path to unlocking value from data increasingly calls for a *single source of truth*, defined as consistent technical and organizational practices associated with the management of data. The goal is to have a single definitive source of data, accessible, trusted, credible, and reliable. A single source of truth can remove questions as to inconsistent data formats, reliability, and timeliness. A single source of truth provides a consistent, integrated view of real time or historical data on products, customers, and processes. The terms *single source of truth* and *single view of data* are often used interchangeably but have different meanings in the practitioner press. The latter is often presented as a technical solution that allows the continuation of data silos but with data controls whereas the former is both technical and organizational in its efforts to minimize or otherwise consolidate data silos.

The opposite of a single source of truth is a siloed view of data, one that lacks compatible data formats or with duplicative and inconsistent versions of the same data. The case of Nestlé paying 29 different prices to the same vanilla supplier for an identical ingredient due to inconsistent supplier codes across its businesses, shows the potential advantage from pursuing a single source of truth (Worthen, 2002). Nestlé provides a poignant example of the technological challenges organizations face when trying to integrate multiple systems within a culture that is historically unwelcoming of data sharing. Nestlé's two-part solution entailed a global SAP rollout with new rules for data governance (Worthen, 2002). Nestlé recognized that failure to promote a culture of data sharing and data-driven decision making to correct structural factors that created mistrust, isolation, and denial of requests for data could forestall efforts to engineer a single source of truth.

A single source of truth that facilitates relevant, timely, and actionable insight is a prerequisite capability for those wishing to excel at data analytics, business intelligence, forecasting, and big data. Without this capability, managers could base decisions on incomplete or inaccurate data; not unlike Nestlé when managers made sourcing decisions using data held inside their local silos. Many organizations recognize the benefit of a single source of truth but often lack awareness of how to realize this elusive goal. The purpose of this article is to reveal the organizational and technological factors that can both enable and inhibit progress towards a single source of truth. We conclude

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with five prescriptive recommendations based on our findings that emphasize organizational rather than technological factors, explaining how managers can transition to a single source of truth and, thus, increase value from data.

## 2. Benefits of a Single Source of Truth

Research recognizes the strategic value of data and the risks associated with failing to manage data according to its financial, regulatory, reputational or social value (Tallon & Scannell, 2007; Wixom & Owens, 2019). Whether treated as a digital asset that is held for future use or as input into a short-term decision, more data may not always lead to better outcomes. More data could lead to information overload and delay the decision-making process, but few would argue that less data is preferable (Hemp, 2009; Seo & La Paz, 2008). The question as to how a single source of truth generates value involves knowing *what* data to share (relevance), *when* data should be shared (timeliness), and *with whom* (accessibility). Knowing when it is appropriate to share data speaks to privacy issues which are of growing importance as data stewards grapple with data breaches, financial penalties, and the threat of further regulation. If data is relevant, timely, and complete, it is more likely to benefit decision outcomes (a first order effect) with further downstream potential for greater agility, reduced costs, increased market share, and higher profit margins (all second order effects) (DeLone & McLean, 2003; Norton, 2018).

A single source of truth may create IT benefits if organizations are able to curtail IT complexity by avoiding disparate IT standards or by lowering costs associated with duplicative data or the need for time-consuming data munging, i.e., transforming data from one format into another. More efficient use of IT could permit organizations to reallocate IT resources to new strategic initiatives, potentially allowing organizations to scale up faster if slack resources can be deployed at short notice (extra data storage or processor capacity, for

instance) (Tallon et al., 2016). But for IT to achieve this degree of technical effectiveness, there may be a need for specific complementary organizational capabilities.

## 3. Data Sharing: A Resource and Capabilities View

Data sharing is at the heart of a single source of truth. Unless an organization uses a centralized system where data may be standardized and consistent, data is generated in a decentralized manner by distributed or standalone applications that are often managed by independent business units. It is not uncommon for organizations to accumulate hundreds of bespoke and home-grown applications. Duplicate applications, often due to M&A activities, are not unusual and are a primary cause of data silos. The ability to consolidate data from disparate systems down to a single point may, therefore, be enabled by integrated applications with centralized data retention and management. Alternatively, the ability to consolidate data may be hurt by incompatible applications with potentially conflicting data standards. If different applications are used across the organization for the same activity and if there is no consistency in how such applications are used, it can be difficult to engineer a single source of truth. Thus, IT is something of a double-edged sword. The challenge facing organizations is knowing when IT is enabling a single source of truth and when it is hurting and being able to architect systems that respond quickly to users' needs without limiting their ability to share data.

A question that organizations must seek to resolve is whether the benefits of a single source of truth outweigh the costs and whether there is a point, somewhat short of a single source of truth, that might deliver enough value. In other words, organizations might ask whether a single source of truth is only possible with an *optimized core* – the most mature form of enterprise architecture with shared IT applications and a common infrastructure – and whether this should be their goal or whether it might be acceptable to retain

| | Enablers | Inhibitors |
|---|---|---|
| IT Resources | IT is flexible, scalable, integrated, does not stretch financial resources, operates at high performance / not swamped with high data volumes, easy to use, affordable, easy to manage, reliable, safe and secure, easily maintained, and availability of IT support | Lack of technical IT skills or IT resources, no ability to judge possibilities of integrated data, strict IT regulation, high cost to integrate systems, multiplicity of different data formats, lack of metadata hurts data search, high rates of data growth put pressure on IT infrastructure |
| Organization Capabilities | Users are empowered to use data to boost performance, data is wrapped in products and services, promotes open data access, digitization of processes, push to use data for customer-led decision making | Culture that fosters siloed data ownership or that curtails access to key data, too many data silos, inability to create a data-driven decision culture, drowning in data/starving for insight |

**Table 1: Enablers and Inhibitors of a Single Source of Truth**

some number of data silos if they are less destructive of data value. While an optimized core has been tied to higher profit margins, lower operating costs, and greater business agility, realizing an optimized core is challenging. It typically requires significant investment in IT resources, organizational capabilities, and the risk of disruption to business unit activities. As a CIO at a healthcare provider remarked to us on lessons learned from a multi-year effort to obtain a single source of truth across more than two-dozen medical facilities (some acquired through M&A): "*IT is not always the problem; people and organizational structure are part of the problem too*". Thus, a single source of truth requires continuous awareness to ensure organizational action and adaptation occurs, and to prevent slippage if some business units try to recreate their own data silos. Greater awareness of the forces that enable and inhibit a single source of truth provides essential cues that support ongoing decision making and consistent adaptation. We provide a summary of IT and organizational capabilities that enable or inhibit the pursuit of a single source of truth in Table 1. These enablers and inhibitors are drawn from a broad swath of IT research in the areas of strategic IT planning, IT use, IT business value, agile methodologies, IT risk assessment, IT governance, data monetization, and IT management (DeLone & McLean, 2003; Tallon et al., 2019; Tallon et al., 2014).

## 4. Survey Overview and Results

To better understand the different enablers and inhibitors described above and the level of value realized from initiatives around a single source of truth, we studied responses from a telephone and online survey of top IT executives. Data were collected in mid-to-late 2018 by a UK-based market research company. The use of market research companies for data collection has become increasingly popular due to their access to panels of potential respondents willing to complete surveys (Chatterjee et al., 2020). When using a market research company, researchers typically indicate eligibility criteria for participants and a specific sample size (Chatterjee et al., 2020; Lowry et al., 2016). Data were collected for this study from top IT executives at 300 U.S. and 100 E.U. organizations (N=400). Participation was restricted to non-governmental, for-profit, organizations with at least 500 employees. Respondents were first asked whether a single source of truth was an organizational priority; we could then identify what they were doing to achieve that objective. In Table 2, we provide descriptive details of our sample. Survey data were later supplemented by data from interviews with three IT executives in 2019 in the areas of global banking, healthcare, and logistics.

To better understand differences between the organizations in our sample, we first analyzed a series of 18 items designed to measure value from efforts to pursue a single source of truth. These items included first order impacts on the performance of the IT resource and broader second order impacts on firm performance. Respondents checked a box to indicate the perceived presence of a particular type of effect. Using K-means cluster analysis (K = 3), we then used these items to divide our sample into three groups. As shown in Table 3, the groups emerging from this analysis exhibit low value (2.81 out of 18 possible benefits), medium value (6.55), and high value (13.49) from a single source of truth. To aid in an interpretation of our results, we label these groups as: *data laggards*, *data followers*, and *data champions*, respectively. The results in each line in Table 3 reflect the percentage of firms in each cluster with each type of impact. Data laggards with low value comprise the largest group in our sample (46%), compared with data followers with medium value (38%), and data champions with high value (16%).

| | Percent |
|---|---|
| ***Organization Size*** (Employee Count) | |
| 500 – 999 | 25.2 |
| 1,000 – 2,999 | 28.5 |
| 3,000 – 4,999 | 27.5 |
| 5,000 or more | 18.8 |
| ***Country*** | |
| U.S.A. (N=300) | 75.0 |
| E.U.: Germany, Spain, France, U.K. (N=25 each) | 25.0 |
| ***Respondent*** | |
| Chief Technology Officer | 23.8 |
| Director of IT | 21.3 |
| Chief Information Officer | 15.8 |
| Director of Production / Operations | 14.5 |
| Corporate Development Officer | 11.0 |
| Chief Financial Officer | 6.3 |
| Other Title | 7.3 |
| ***Industry Sector*** | |
| Financial Services | 16.3 |
| Telecommunications | 11.5 |
| Information Systems | 10.3 |
| Business and Professional Services | 9.8 |
| Manufacturing | 9.5 |
| Retail and Transportation | 9.0 |
| Construction | 8.8 |
| Exploration and Utilities | 7.8 |
| Media and Entertainment | 7.3 |
| Other | 9.7 |

**Table 2.  Sample Descriptive Details (N=400)**

We also asked about the pervasiveness of data silos to establish if data laggards had relatively more data silos and whether this might explain their relative lack

of value and, similarly, whether data champions had fewer data silos. The results in Table 4 show that the three groups are largely similar in terms of the pervasiveness of data silos. On average, roughly 70% of the organizations in each category report having data silos in more than 50% of their business units. Hence, the pervasiveness of data silos is largely the same for all; no one group can claim to have eliminated all data silos.

We also asked organizations about the status of their efforts to achieve a single source of truth, thinking that those who had only just begun might not have had enough time to achieve noticeable value from their efforts. The results of this question in Table 5 indicate that some 60% of the organizations in each group have an active single source of truth initiative under way with a further 20% about to launch an initiative. More importantly, no group seems to be significantly behind or ahead of any other group. Overall, 98% of organizations in our survey have a current or pending single source of truth initiative.

## 5. IT and Organizational Enablers of a Single Source of Truth

If all groups are alike in terms of their exposure to data silos and their progress toward the goal of a single source of truth, why then are there such differences in how much value they have realized? We did not find significant differences in value from a single source of truth based on employee count as a proxy for organization size and yet some organizations are better able to derive value from a single source of truth than others. It appears that the incremental value from efforts to achieve a single source of truth are unequal but why is this? To identify possible answers to this question, we next looked at IT and organizational enablers and inhibitors of a single source of truth. Survey respondents were asked to evaluate whether a particular enabler or inhibitor applied to them. Survey items reflected a range of IT resource and organizational enablers and inhibitors as previously shown in Table 1.

Figure 1 provides a graphical representation of the presence of ten different IT enablers for the three groups in our study. On each item, we found statistically significant differences between the three groups ($p<0.01$). On average, data laggards report 2.96 IT enablers (out of 10) compared with 5.15 for data followers and 7.57 for data champions. Among the ten IT enablers, there are noticeable differences in terms of IT reliability, IT integration, security, usability, and

| Current efforts around a Single Source of Truth have positively impacted our ability to do the following: | Data Laggards (Low Value) | Data Followers (Medium Value) | Data Champions (High Value) |
|---|---|---|---|
| **First Order Impacts** | N=185 | N=150 | N=65 |
| Analyze larger-scale data pools across multiple data sources | 16% | 27% | 80% |
| Reduce complexity of data storage infrastructure | 12% | 25% | 69% |
| Better use of data collected through new IT (e.g., IoT) | 16% | 33% | 78% |
| Produce faster data analysis | 22% | 56% | 92% |
| Increase scalability (ability to store more data) | 21% | 29% | 74% |
| Save time accessing different data sources | 15% | 47% | 85% |
| Increase IT agility | 16% | 63% | 72% |
| Complement existing data management investments | 11% | 17% | 49% |
| Free up resources (e.g., fewer IT staff needed) | 15% | 22% | 58% |
| Increase data security | 18% | 48% | 75% |
| **Second Order Impacts** | | | |
| Launch new products/services | 18% | 15% | 57% |
| Increase customer satisfaction | 16% | 18% | 72% |
| Gain new business and customer insights | 14% | 20% | 78% |
| Increase user productivity | 10% | 49% | 82% |
| Reduce costs | 21% | 47% | 71% |
| Increase revenue | 18% | 31% | 75% |
| Better use of data analytics | 12% | 56% | 92% |
| Increase operational efficiency | 12% | 50% | 88% |
| Average Number of Benefits Realized (Max: 18) | 2.81 | 6.55 | 13.49 |

Note: Percentages indicate the proportion of organizations in each group with that type of benefit. An analysis of variance (ANOVA) on each item reveals significant differences between the three groups ($p<0.001$).

**Table 3: Perceived Value from a Single Source of Truth (K-Means Cluster Analysis)**

|  | Data Laggards (Low Value) | Data Followers (Medium Value) | Data Champions (High Value) |
|---|---|---|---|
|  | N=185 | N=150 | N=65 |
| Across all business units | 28.1 | 20.7 | 23.8 |
| Majority of business units (> 50%) | 24.9 | 35.3 | 30.5 |
| 50% of business units | 16.8 | 17.3 | 16.8 |
| Minority of business units (< 50%) | 14.6 | 15.3 | 14.8 |
| No data siloes at all | 9.7 | 8.1 | 8.8 |
| At least half of all business units | 69.8 | 73.3 | 71.1 |

Note: Chi-square difference test: 9.98 (df=10, N=400), not significant

**Table 4: Prevalence of Data Silos (Percentage of Organizations in each Category)**

|  | Data Laggards (Low Value) | Data Followers (Medium Value) | Data Champions (High Value) | All Firms |
|---|---|---|---|---|
|  | N=185 | N=150 | N=65 | N=400 |
| An ongoing initiative | 58.4 | 61.3 | 58.5 | 59.5 |
| Currently in final planning/about to go live | 21.6 | 14.0 | 27.7 | 19.8 |
| An initiative for 1-3 months' time | 10.8 | 10.0 | 6.1 | 9.7 |
| An initiative for 3-6 months' time | 4.3 | 9.3 | 3.1 | 6.0 |
| An initiative beyond 6 months' time | 3.3 | 3.4 | 3.1 | 3.2 |
| No plans to pursue a single source of truth | 1.6 | 2.0 | 1.5 | 1.8 |
|  | 100% | 100% | 100% | 100% |

Note: Chi-square difference test: 10.664 (df=10, N=400), not significant

**Table 5: Stage of Single Source of Truth Initiatives (Percentage of Firms in each Category)**

manageability. Data laggards appear to lack important IT capabilities that are necessary to create trust and confidence when data silos are being dismantled or when data is consolidated onto a shared platform. These technological IT enablers appear, therefore, to significantly influence the level of perceived value from a single source of truth.

For organizational enablers, respondents assessed the presence or absence of five unique organizational enablers, mirroring those seen in Table 1. The results in Figure 2 again show significant differences between each group with data laggards reporting the least number of enablers and data champions the most. On each item, we also find statistically significant differences between the three groups of organizations (*p*<0.01). These differences are especially evident in the case of the development of a culture around the use of data for decision making and the use of strategies for data collection. Quite simply, data champions seem to accept that data should be widely collected and used to inform decision making whereas the majority of data laggards appear devoid of either strategy.

Overall, when looking at both IT and organizational enablers, data champions with higher value from their efforts around a single source of truth report many more enablers. In contrast, data laggards report fewer enablers. This would seem to suggest that the pursuit of a single source of truth calls for organizations to expand their range of IT and organizational enablers by developing IT that is flexible, scalable, adaptable, and easier to manage and by fostering a supportive data culture and a willingness to use data. In the absence of a supportive data-driven culture, IT enablers are unlikely to be sufficient. Users need to feel empowered within a culture that promotes relevant and timely data.
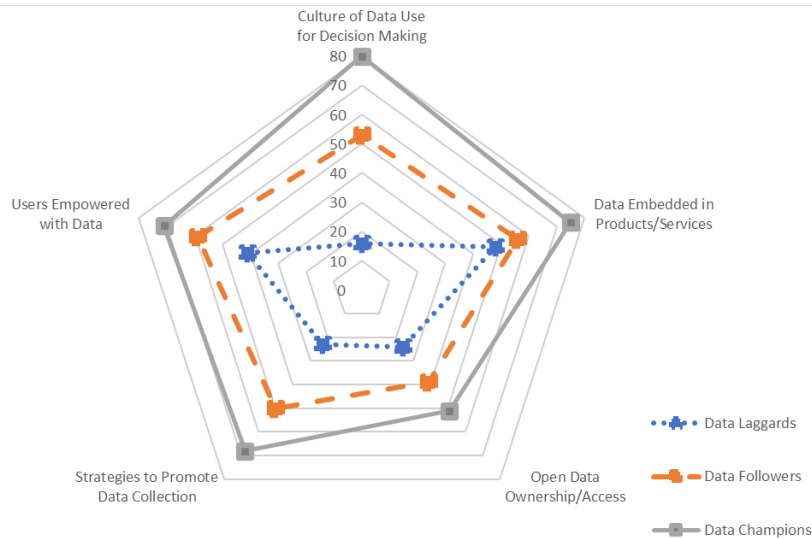
## 6. IT and Organizational Inhibitors of a Single Source of Truth

Inhibitors are the opposite of enablers in that they restrict or invalidate efforts to realize a single source of truth; the absence of an enabler does not imply the presence of an inhibitor or vice versa. For this reason, the presence of inhibitors can provide further insights beyond that given by the presence of enablers. As we did with our analysis of IT and organizational enablers, we also analyzed IT and organizational inhibitors. For IT inhibitors, we used seven items, modeled on the IT inhibitors from Table 1 to identify the presence of IT
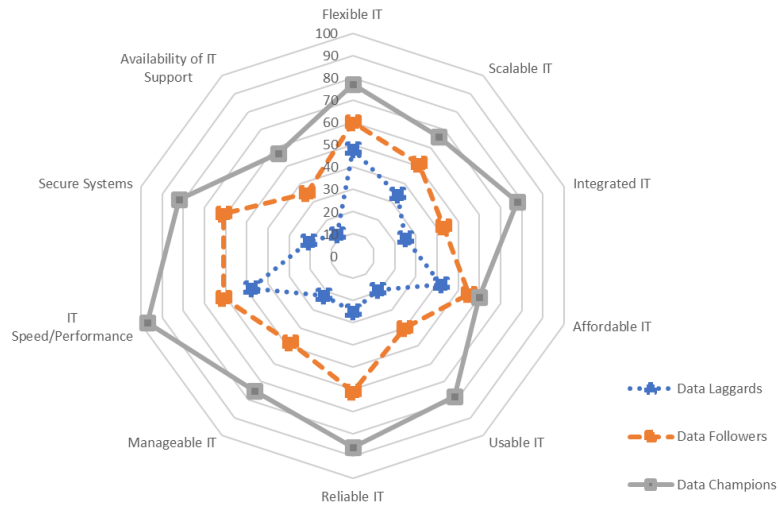
Note: A one-way analysis of variance on each item shows significant differences between the three types of organization (*p*<0.01). On average, data laggards report 2.96 IT enablers (out of 10) compared with 5.15 for data followers, and 7.57 for data champions.

**Figure 1. IT Enablers of a Single Source of Truth (Percentage of Firms in each Category)**



Note: A one-way analysis of variance on each item shows significant differences between the three types of organizations (*p*<0.01).

**Figure 2. Organizational Enablers of a Single Source of Truth (Percentage of Firms in each Category)**

inhibitors of a single source of truth. These seven items speak to the caliber of IT leadership, the multiplicity of data formats, the cost of pursuing a single source of truth, regulatory mandates that limit what an organization is legally permitted to do, the absence of technical IT skills, and the lack of an IT solution to remove data silos. We find statistically significant differences between the three groups (*p*<0.01) for four items (technical skills, excessive cost, regulatory restrictions, and the scale of data silos). The remaining three items (weak IT managerial skills, multiple data

formats, and lack of technology solutions) had non-significant differences. As shown in Figure 3, data champions are more likely to face more IT inhibitors than their peers, particularly in the area of multiple data formats and a lack of technical skills. Paradoxically, data laggards reported the fewest IT inhibitors.

Looking at organizational inhibitors of a single source of truth reveals a similar pattern to that discovered for IT inhibitors. In this case, respondents were asked to assess their agreement with a series of five items measured on a 4-point Likert scale. As shown in

Figure 4, we found statistically significant differences between all three groups. Paradoxically, while we expected that data laggards would point to organizational inhibitors as a key reason for their lack of value from a single source of truth and that data champions would be less likely to experience such inhibitors, our results suggest the complete opposite. Data laggards report they are *not* being adversely impacted by conflicts over data ownership nor do they see the lack of a data strategy, issues with accessing data across business units' boundaries nor structural problems that discourage data sharing as impediments to a single source of truth. In contrast, data champions acknowledge these as obstacles they must face and yet they succeed despite these challenges. Seeing this result, we began to question whether data laggards were being true to themselves: do they recognize the scale of their challenges and what they need to do to resolve that?

## 7. What You Don't Know Could Hurt You

To help shed light on these counterintuitive findings, we conducted a number of interviews with IT executives in three Global 500 organizations operating in financial services, healthcare, and logistics with current and ongoing single source of truth projects. The healthcare IT executive noted that shifting U.S. healthcare regulations (notably around insurance reimbursements) has forced medical facilities to fundamentally alter their data practices. Specifically, state governments within the U.S. have established reimbursement levels that force hospitals to better understand the health status of residents in their state. Their pursuit of a single source of truth was shaped by their need to know more about the health of their citizens and whether a change in medical practices would allow for sufficient insurance reimbursement. The executive argued that movement of patients between networks (as people move to other states, are transferred to other in-state facilities or change doctors) added complexity to forming a single source of truth. The executive said that his function knew what steps to take to create a single source of truth but, "*as soon as we bat down one obstacle, another one pops up and it's rarely technology – it's people, it's culture, it's bad habits*". Similar views were offered by an IT executive at a global logistics organization. Although their pursuit of a single source of truth was triggered by a merger with a global competitor, the executive noted that the things that enable a single source of truth are usually known. The executive noted that there is no ambiguity around IT enablers and the need for appropriate data governance rules but that it is the, "*unknown unknowns that can really slow things down*". One example of this involved data ownership issues that arose when a single source of truth initiative began. As the executive noted: "*we didn't even think [data ownership] was going to be an issue until it became an issue. We never saw it coming. It can be the smallest thing. It can really stop a project in its tracks.*" When asked what would have fixed this issue, the executive argued that they needed to look beyond IT to creating an open culture around data sharing, access, and transparency and to use this to minimize any desire that a business unit might have to withhold access to its data. Lastly, the global banking IT executive we interviewed spoke about more efficient data flows (triggered in part by new market regulation),
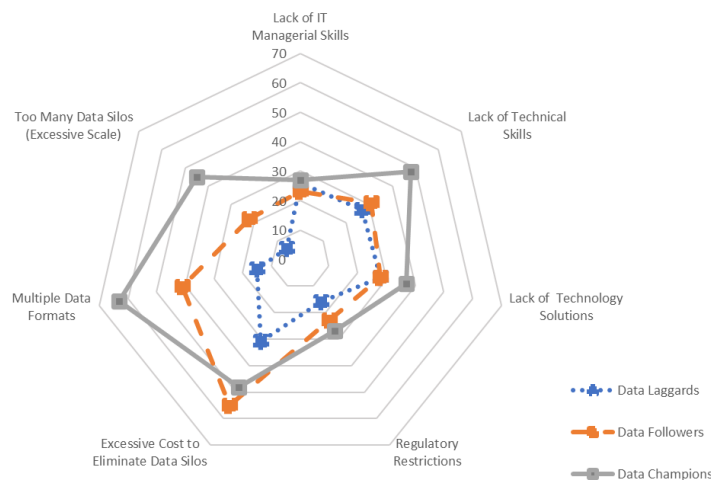


Note: An analysis of variance found significant differences between the three groups ($p<0.01$) for four items (limited technical skills, excessive cost, regulatory restrictions, and too many data silos). The remaining three items had non-significant differences.

**Figure 3. IT Inhibitors of a Single Source of Truth (Percentage of Firms in each Cluster)**
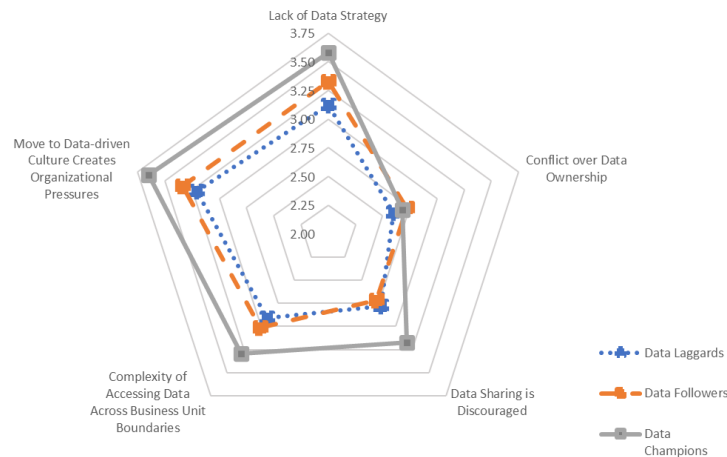
Note: An ANOVA on each item shows significant differences between the three groups ($p<0.01$).

**Figure 4. Organizational Inhibitors of a Single Source of Truth (Item Averages)**

ineffective legacy systems, sector consolidation, and innovation with open banking (in the E.U. and Asia-Pacific) as a reason why banks need to accelerate efforts around a single source of truth. The executive noted that IT has allowed banks to build a customer hub rather than resorting to a single database to hold every piece of data. Data can flow into this hub from different parts of the business allowing each business unit to see what others are doing with the same customer. In their case, they needed to devise new global data governance rules to disrupt the mentality that business units own their data, can use it however they want, and can decline to share it with other business units even when there is an obvious benefit to the organization as a whole.

Applying these insights to data laggards suggests that the implied lack of IT and organizational inhibitors does not mean that these inhibitors do not exist or that they have somehow been resolved and are no longer an obstacle. Rather, it is likely that data laggards have yet to recognize these inhibitors or have simply failed to grasp their significance. Inasmuch as data laggards may have ignored key enablers of a single source of truth such as investing in IT resources to enable data sharing or trying to develop a culture that is welcoming of data sharing, the reality is that data laggards cannot turn on a dime. Meanwhile, data champions have been able to balance enablers and inhibitors: they recognize that inhibitors are real and likely need to combat them by doubling down on enablers. As the healthcare IT executive indicated, "*it can sometimes be two steps forward, one step back but you have to keep moving. There's too much at stake to allow the naysayers to kill the project.*" He later added, "*locking up your data is natural. Nobody is going to willingly share data just because I said so. Building a data-driven culture takes constant work – you can't just flip a switch or send out an announcement and suddenly everyone is sharing their data.*" Research on information transparency

confirms that to truly compete with data, organizations must be transparent in how data is captured and used (Granados & Gupta, 2013). It is equally important to create trust, particularly around access to customer data as business units may be fearful that client-relationships they have spent a long time developing could be eroded. While sharing data between business units may be in everyone's best interests, organizations must find a way to incentivize data sharing among recalcitrant users.

## 8. Five Recommendations to Deliver on A Single Source of Truth

Why should organizations be concerned with a single source of truth and what can be done to move them closer to that objective? The once-ridiculed claim that "IT Doesn't Matter" was roundly debunked by arguments that while hardware, software, and telecoms can be duplicated, data is sufficiently valuable, rare, inimitable, and non-substitutable as to be a source of enduring advantage (Carr, 2004; Tallon et al., 2014). A single source of truth does not mean that data governance will be relaxed and that data will flow freely. As our three interviewees noted, it can be difficult for IT to lead a single source of truth initiative without business executive sponsorship as this will foment mistrust of IT and create fears that local business unit autonomy is under attack from the IT function. But when a single source of truth initiative has senior business executive backing and is seen as an organization-wide initiative, business unit leaders are more likely to cooperate with IT. There must also be some sense of quid-pro-quo so that if business units perceive that they are surrendering control of their data, there is at least some knowledge of how it might benefit them. Based on our survey findings and interviews, we offer the following suggestions for how organizations

can escape the moniker of data laggard with little value from a single source of truth and limited understanding of how they ended up in this situation.

## 1) Data Governance is not IT Governance

A data strategy without some form of top-down or hierarchical data governance is likely to fail. Data governance pertains to the collection, retention, use, and disposal of data at multiple levels in the organization. Governance means understanding changes in the value of data and how it can be managed over time. Governance means managing a portfolio of diverse data assets. Governing data is different from governing other IT assets considering the economic risk that is associated with data loss. A single source of truth initiative might benefit end users and the organization as a whole but it comes with risks. Someone – likely at multiple levels – will need to acknowledge and mitigate against these risks (Tallon & Scannell, 2007).

## 2) Organizational Factors Matter

Growing use of corporate IT platforms and the use of standardized IT components might create an impression that the path to a single source of truth is through IT investment. Our data and interviews suggest otherwise. Flexible, adaptable, and scalable IT resources with standard data formats facilitating data sharing are necessary but not sufficient. IT is both an enabler and an inhibitor. Even if IT is an enabler, the potential for organizational inhibitors remains. Similarly, if organizational enablers are present, the possibility of encountering IT inhibitors is very real. Our interviews indicate that IT and business executives are needed to craft a vision for how data will be used and to help foster a culture of data sharing and data-driven decision making. Organizational inhibitors are the most difficult and time consuming to resolve and require a joint, ongoing effort from IT and business leadership. Organizational inhibitors might remain hidden from view, or their severity may not be fully known until a single source of truth project is underway.

## 3) The Need for Transparency and Data Literacy

The notion of data transparency runs counter to what most privacy advocates would preach and yet a single source of truth means that, subject to reasonable access rights, data can be openly shared within an organization. That might sound like a nightmare scenario for corporate counsel, but the point is to make data available for use and for data to be trusted. Transparency also removes data ownership barriers that business units may erect in the belief that they own their data and that others have no right to view or access it. Building trust among users and data custodians is essential for users to feel confident that data is valid and timely and for application owners to believe that they are not losing out by sharing data. These ideas point to a growing need for data literacy as a way to educate users across the organization on the value of data, how value may depend on what others do with your data, and the risks associated with data loss. Everyone has a role to play in shaping and executing an organization's data strategy. Creating a culture around data sharing should not be confined to the boardroom or the upper echelons of management; it must be accepted and lived by all. Data governance can impose top-down directives on how data should be used but data literacy is needed to instill knowledge of the value of data in users' minds.

## 4) The Problem Can Get Worse Before It Gets Better

Respondents to our survey reported that the volume of data growth is increasing at such a pace that it is likely to increase decision making complexity in some instances. So, the challenge of achieving a single source of truth is likely to compound as the volume of data increases. Here is where IT enablers may be able to play a role. Not all data are equally useful. Data follows a lifecycle pattern that identifies changes in its value over time: rising at first as the data is used and then falling later as the data reaches the end of its useful economic life. Respondents reported that costs are an inhibitor of a single source of truth but that costs are directly tied to data volumes. As such, efforts to reduce cost could be impacted by deciding what data to keep on expensive infrastructure and what can be deleted or moved to cheaper infrastructure. If business units are permitted to manage their own data silos, the challenge of merging ever-larger data silos is likely to grow. It is one thing to pursue a single source of truth by integrating data when data silos are few in number and hold little data. It is quite another when data silos are many in number and hold vast amounts of data. We also recognize that in the interests of local business unit autonomy, some organizations may decide to retain data silos rather than compel certain critical business units to surrender control of their data. In such situations, fewer data silos may actually be worse for firm performance.

## 5) For Some Users, Data is Personal

Our interviews indicated that there is a lot at stake in single source of truth initiatives: time, resource commitments, and reputational risk for both the organization and the individuals directing the effort. There is no explicit requirement for a single source of truth project to be organization-wide. The healthcare IT executive we interviewed spoke of the need for "quick and visible wins with little risk" and the need to include critical and non-critical data in their efforts. If given the option, business units may opt to *hand over* less critical data, but a single source of payroll or procurement data is unlikely to garner the same returns as sharing customer data or market insights. Putting IT in charge of a single source of truth initiative may lessen its impact if it is seen by business units as an IT initiative rather than a business initiative. The healthcare IT

executive spoke of the need for business executives to go "all in" as a single source of truth initiative could, in time, touch all parts of the organization and to make the project completely transparent as data is increasingly seen by users in personal terms. Users perceive it as handing over access to *their* data, further reinforcing the need for education around data literacy and the need that rewards from a single source of truth initiative be shared equitably with those who fear a loss of control or autonomy but whose cooperation is critical.

## 9. Conclusion

The trend towards evidence-based decision-making places great importance on organizational data and yet many organizations continue to struggle with vast volumes of data. As applications have proliferated so too has the volume of data and the attendant growth in the number of distributed data silos. Over 98% of the organizations in our survey of 400 firms have an active or pending single source of truth project as a way to reverse this pressing data challenge. Evidence that these single source of truth initiatives are paying off is mixed. Some organizations see significant value and when they do, they report evidence of both technical and organizational enablers in the form of flexible and adaptable IT infrastructure and a culture that is open to data sharing. These same firms also report high levels of inhibitors. They readily acknowledge both IT and organizational barriers. Meanwhile, organizations who report little value from a single source of truth have fewer IT and organizational enablers to help them on their journey yet they also report having fewer inhibitors. It almost feels like they have failed to grasp the magnitude of the IT and organizational barriers facing them. They fail to see IT and organizational inhibitors that are likely hiding *in plain sight*. These data laggards represent 46% of our survey respondents. This includes small and large firms across multiple industries. Data champions have had noticeable success with single source of truth endeavors but they are clear in their responses that they are cognizant of both enablers and inhibitors and know what each means.

When it comes to a single source of truth, what you don't know can hurt you and data laggards could discover this to their detriment. As each of our interviewees remarked, there are hidden minefields in single source of truth projects.

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