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5th Annual

Supply Chain Data Quality & Governance Study

Introduction

The current global supply chain crisis has revealed critical issues involving the global distribution of goods and services. One of the drivers for these issues is focused around the lack of access to reliable “data”.

To be of use, supply chain data must be of good quality and trustworthy. The inability to integrate data from multiple sources and the limited ability to interpret/analyze data in real time are a common set of problems facing many organizations.

Historically organizations have been assessed based on their people, processes and technology. Today organizations are assessed based on their people, processes, technology and “data”.

This year’s study – the 5th Annual – delves deeper into some of these areas and provides a current analysis, and in some cases, comparison for several of these critical data issues.

Data analysis, historically viewed as a means of assessing an organization's current performance compared to historical performance, is now used as a means of better predicting the future. This is a significant change in how data is being used and therefore places a new level of challenges such as criticality, timeliness, completeness, relevance and confidence regarding the data.

Progress is being made in the utilization of data in the supply chain function as demonstrated by this year's report and previous survey results. The issue facing every organization is that the progress that has been achieved is facing headwinds from new challenges thrown up due to the pandemic. This year's survey revealed significant limitations organizations face to meet the ever increasing demand to do more with data.

Survey results reflect a 65% perceived improvement in data quality from two years ago. While this is significant, it took two years of effort and a global supply chain crisis to make this level of change.

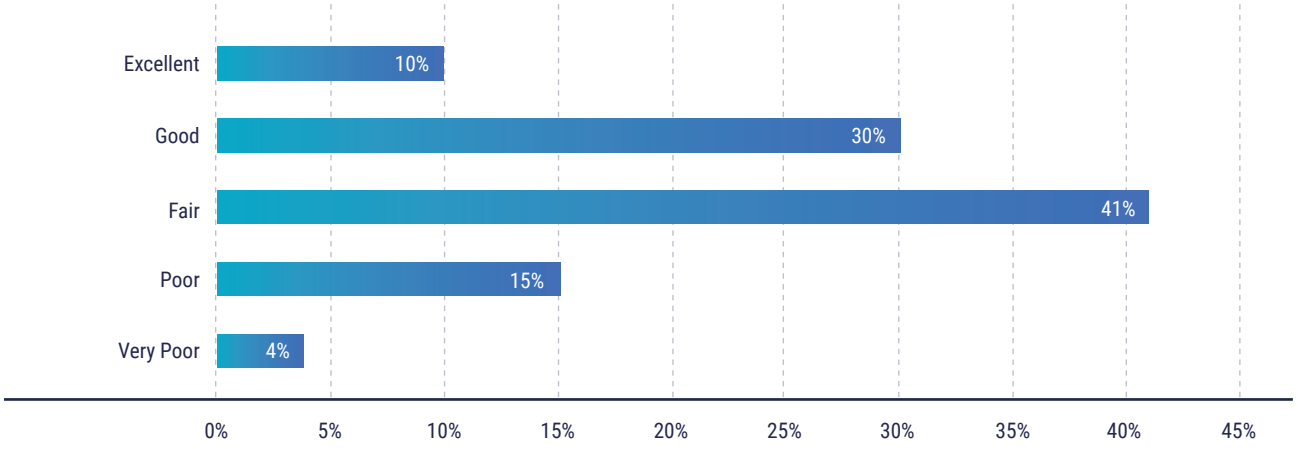
Throughout this report, references may be made to the 2020 Annual Supply Chain Data Quality and Governance Study. The complete 2020 Annual Supply Chain Data Quality and Governance Study can be found here.

Data Quality

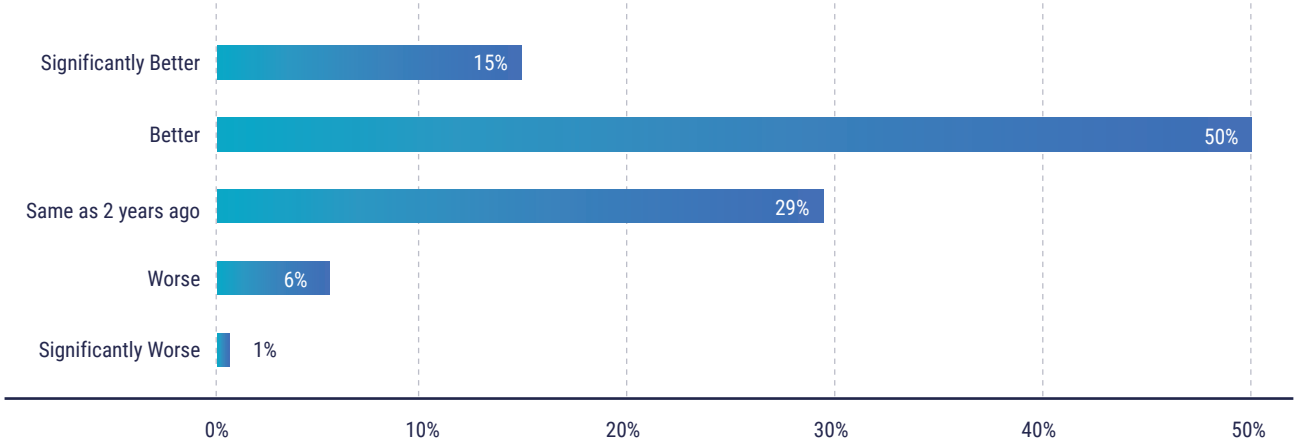
Data quality is an ever present challenge to every organization. Without data quality there is no trust in the data and therefore data is not utilized in the decision making processes of the organization. This year's study shows that only 10% of the responders feel that their data is excellent and 30% feel their data is good for a combined total of 40%.

This means that 60% of the responders feel their data can be improved upon. Until a higher level of confidence occurs in data quality, its use will be limited in the decision making process. Other recent results from a study of procurement and supply chain executives suggest that data quality is a major pain point that stands in the way of progress being made on control towers and supply chain visibility. Robust data is foundational to deriving effective analytics for supply chain decision making.

Overall, how would you rate the quality of your supply chain organization's data?



How would you compare the change in quality of your supply chain organization's data between today and 2 years ago?

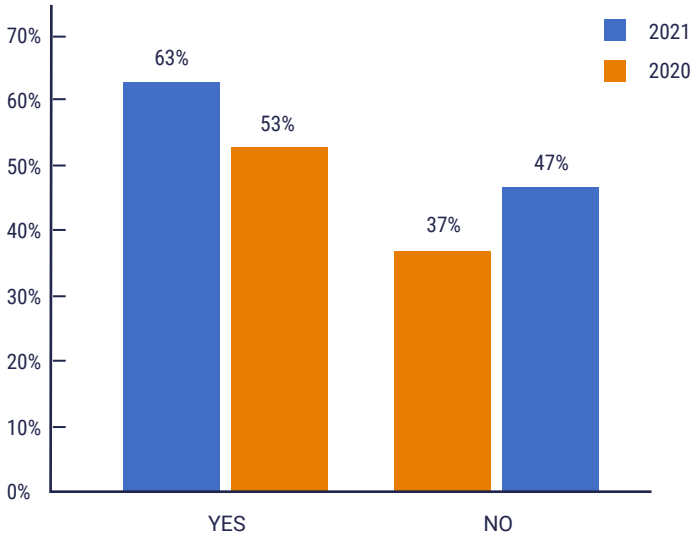


Data governance is a critical activity that must be addressed in order to establish data quality and data confidence. This year's study shows a 10% increase in dedicated data governance functions. In 2021, we observed an increase in awareness for organizations to have a dedicated data governance function. Organizations are recognizing that it is nearly impossible to produce good analytics and predictive data models without a strong data governance framework.

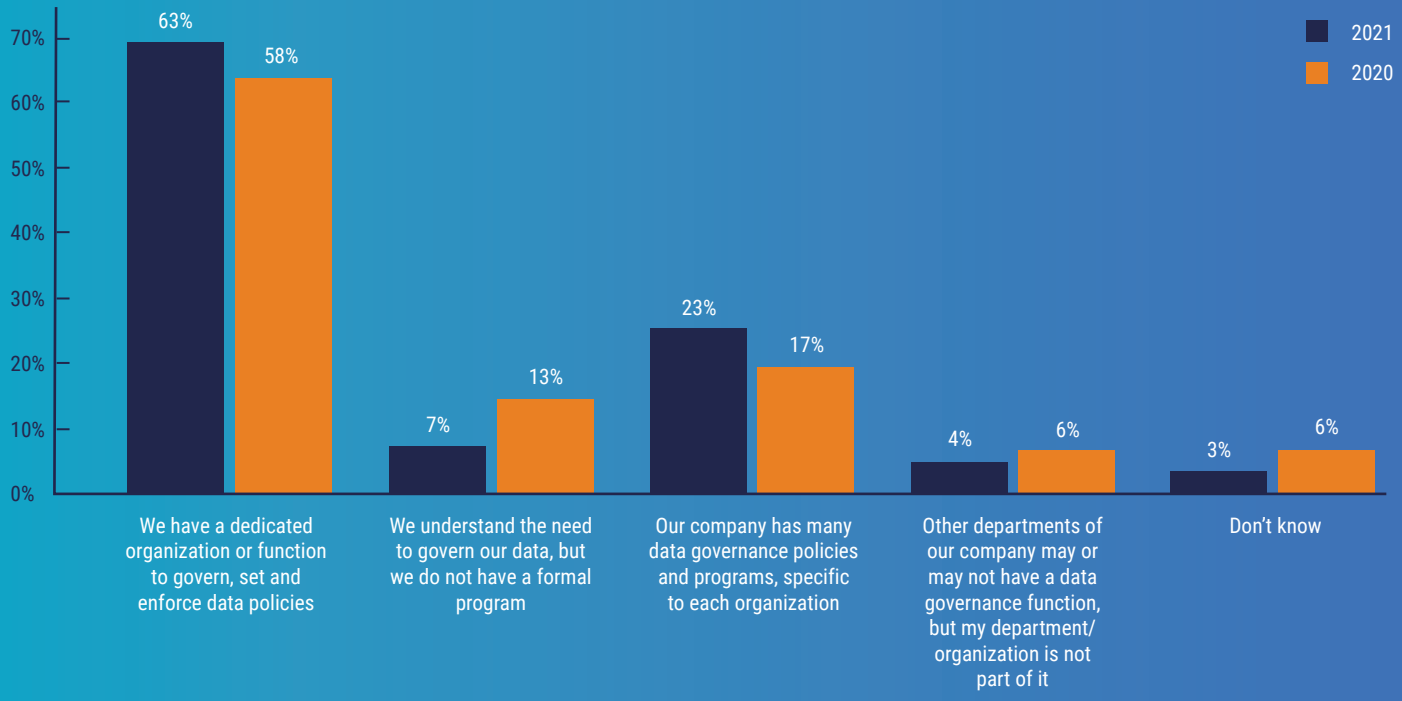
Issues such as data ownership, data usage/ application, data validation, data audits, etc are typically addressed by the data governance committee.

Does your company have a dedicated data governance function?

(e.g., Center of Excellence, Steering Committee)

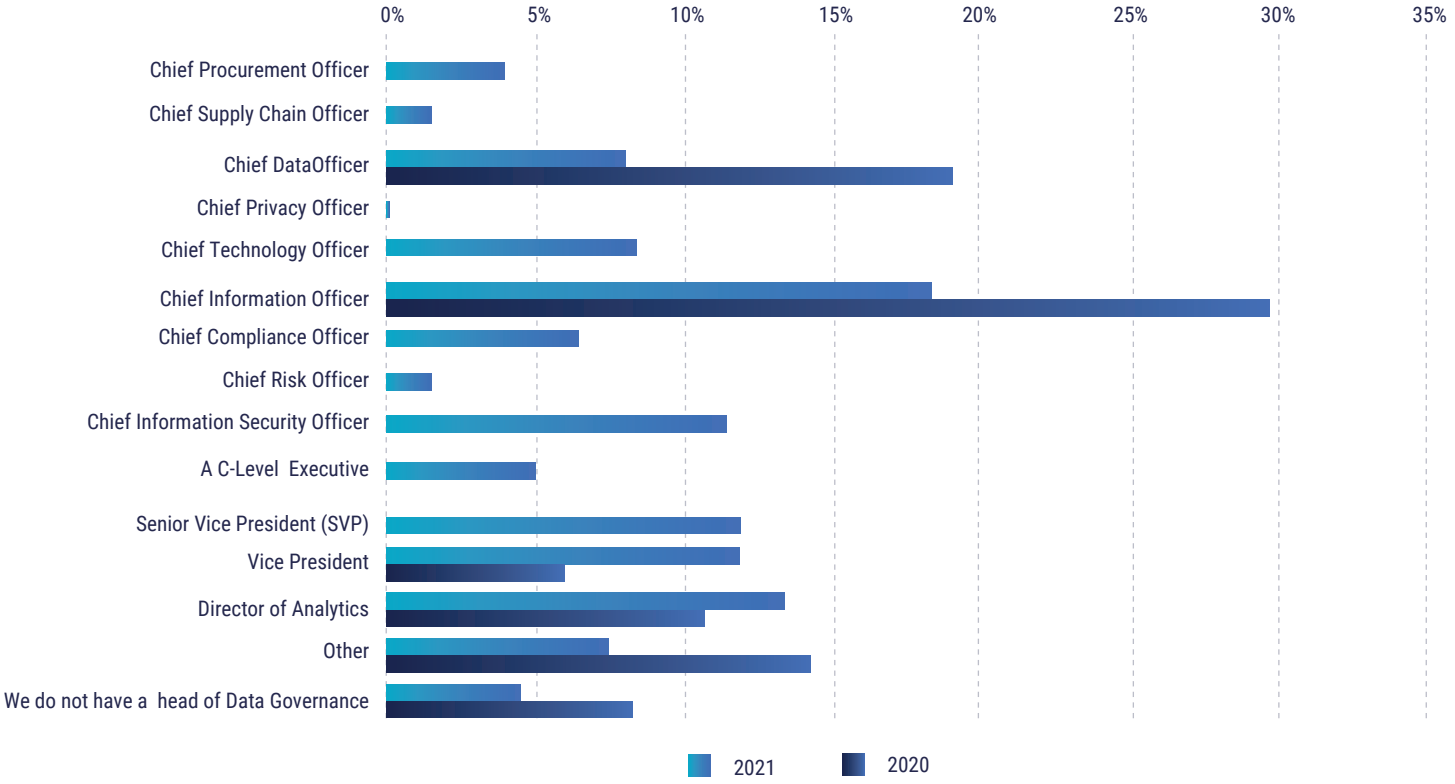


At a very high level, what steps are taken by your company to manage/govern data?



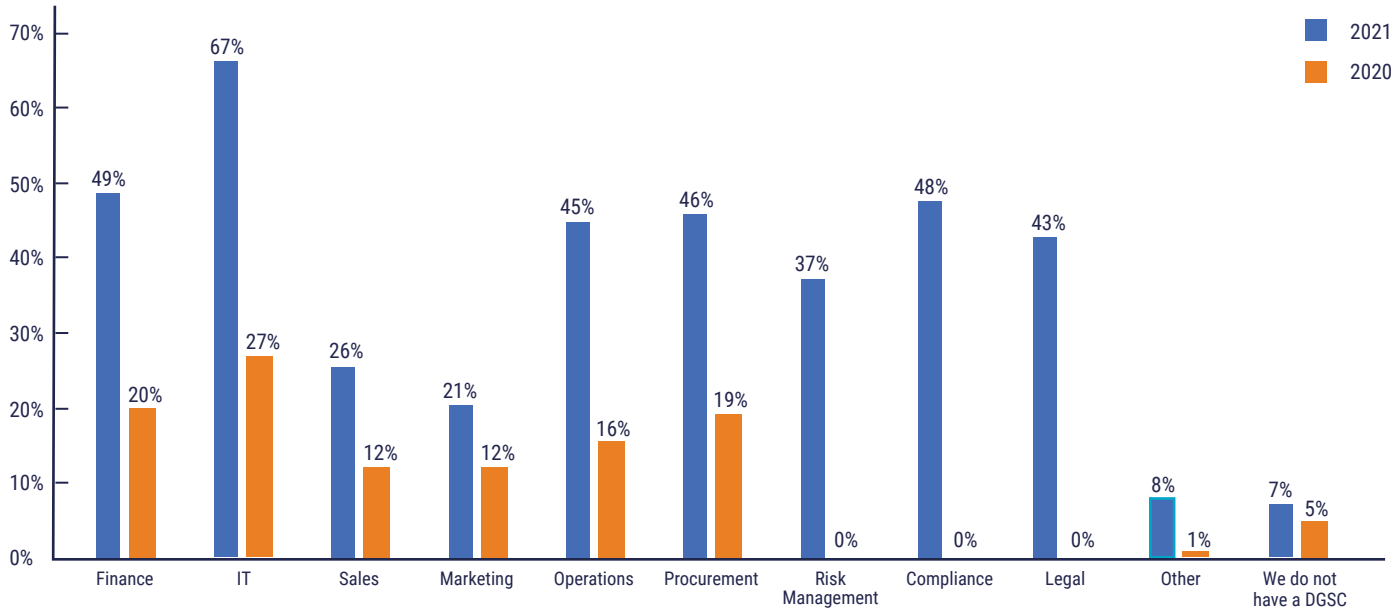
Many executives are aware of the need for data governance, as the majority responded that they have data governance either at the company level or organizational level. Results are indicative of increased recognition that data governance is a full time job and requires people with specialized skills to govern a company's data. There is still scope for improvement in educating companies on managing and governing data literacy as we see that there has not been a significant change in the year 2021 from the year 2020. Responses on a high level have been consistent with the previous year.

Which of the following titles/roles best describe the head of your Data Governance Organization?



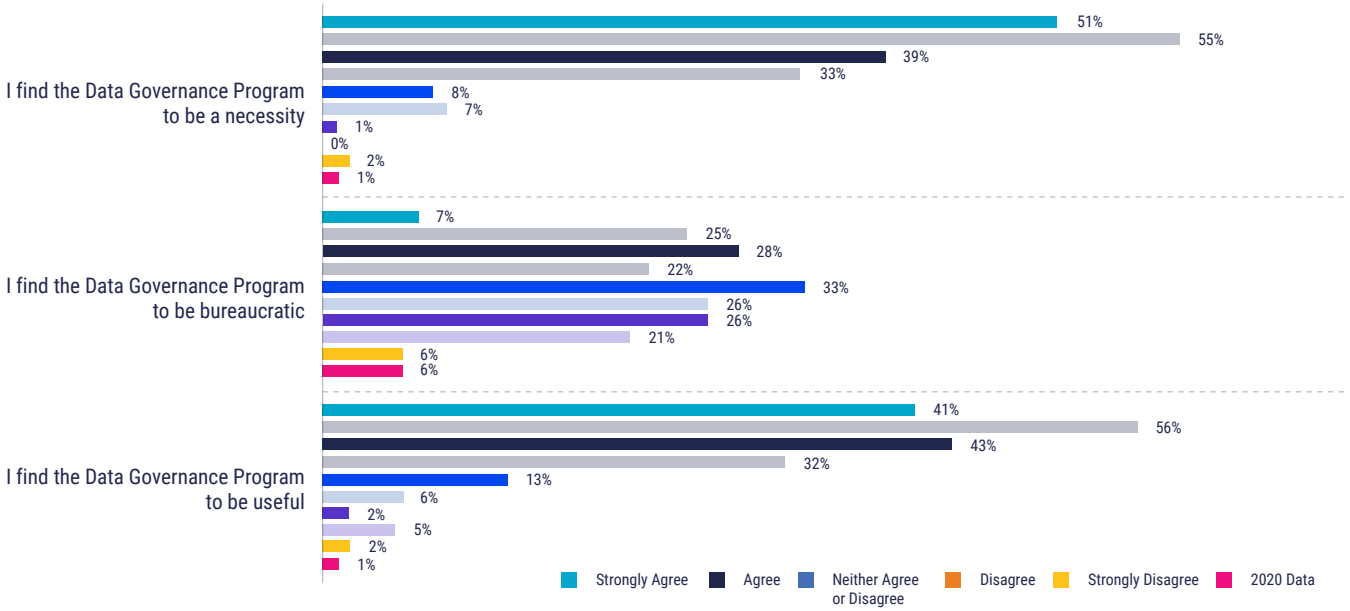
More roles and positions were created in the year 2021 to establish a clear segregation of duties and for better administrative control. Common attitudes around the need for data governance is growing as companies come to realize that data governance plays a crucial role in development of business models. An interesting observation is that there is an introduction/increase of the Chief Information Security Officer (CISO) role in the year 2021, and at the same time we can see Chief Data Officer (CDO) roles decreasing which could be interpreted as movement of the CDO role into the CISO role, highlighting an increased focus on data governance and security as an important resource. We see an increase in the number of people as Director of Analytics and other senior roles are being identified around Procurement, Supply Chain, Risk & Compliance which were not available in the year 2020.

What organizations within your company are part of your Data Governance Steering Committee?



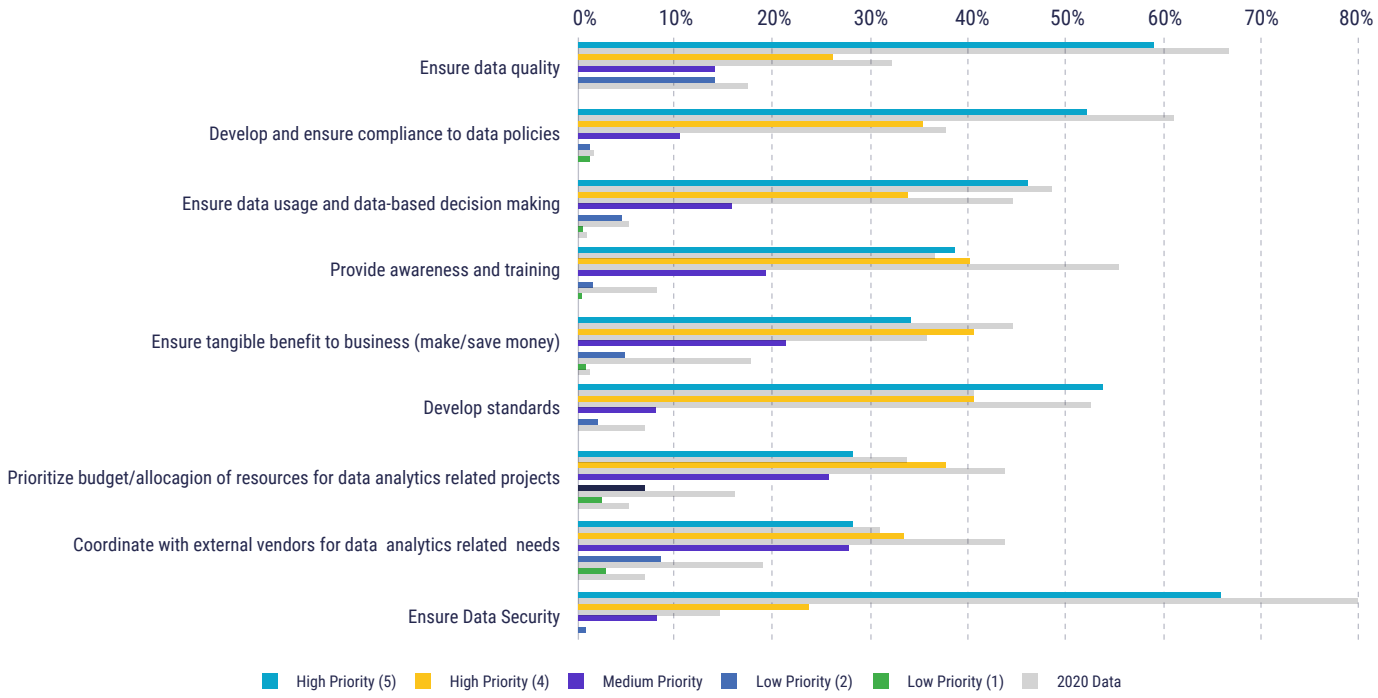
The responsibility to steer data governance resides primarily with IT, followed closely by Finance, as seen from the survey results. In the year 2020, Risk Management, Compliance and Legal teams had no presence in the Data Governance Steering Committee but they seem to have been one of the major contributors in the year 2021. There is a remarkable market increase in level of engagement in data governance across the organizations.

Please indicate your disagreement or agreement with the following statements



The numbers have been consistent from the previous year except when the respondents were asked if they find the data governance to be bureaucratic. In 2020, a high number of respondents felt the system to be bureaucratic and this could be due to reactive implementation of Data Governance policies which might have changed to a more proactive implementation in 2021. People no longer see data governance as a bureaucratic process but more as a necessity. We also note that a good number of respondents opted to stay neutral when asked about bureaucracy and this can be further explored.

What do you think should be the priorities of your Data Analytics organization/Center of Excellence?

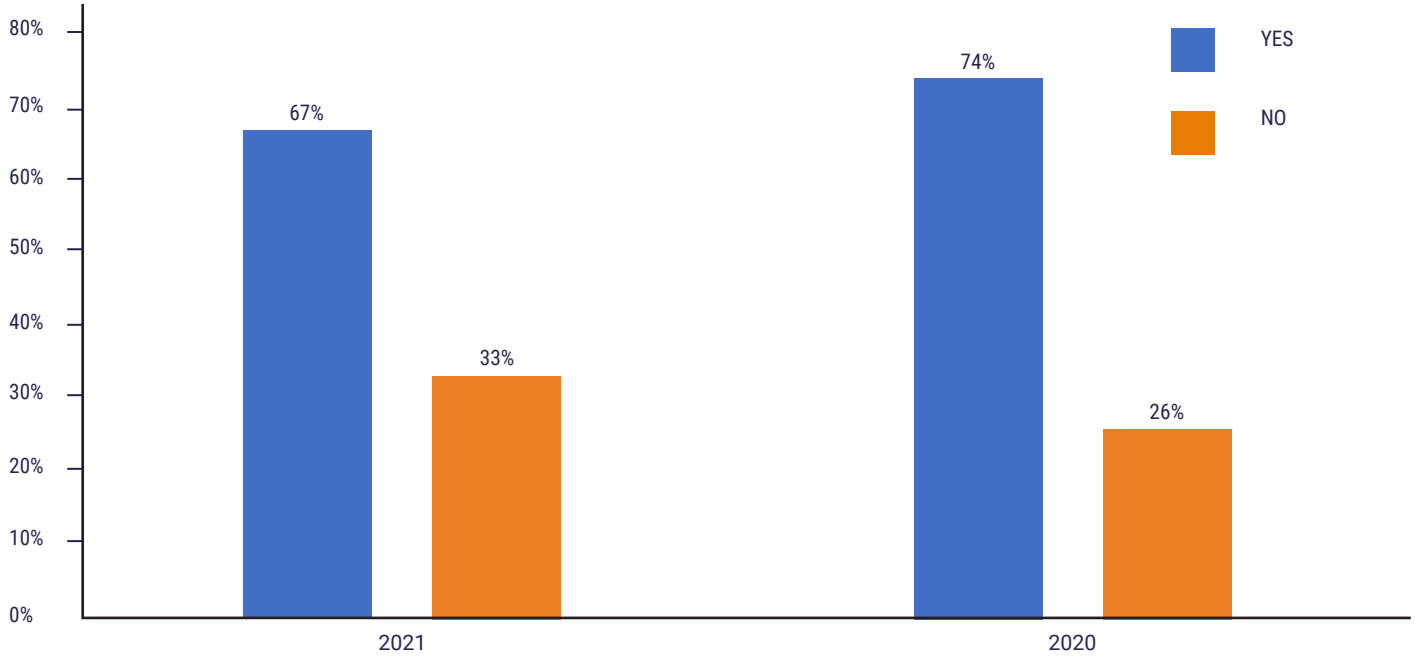


Ensuring Data Security rightly remains to be the top priority for Data Analytics Organizations/CoE, followed by Ensuring Data Quality. The companies seem to prioritize Developing Standards more this year as compared to the previous year.

Data Literacy

All members of any organization must have some level of data literacy in order to interpret and utilize data in their day to day interactions and performance of their jobs. This year's study reflects an increased awareness in most organizations as to the critical need for data literacy in their organizations.

Should all staff members in the organization be able to handle and analyze data?

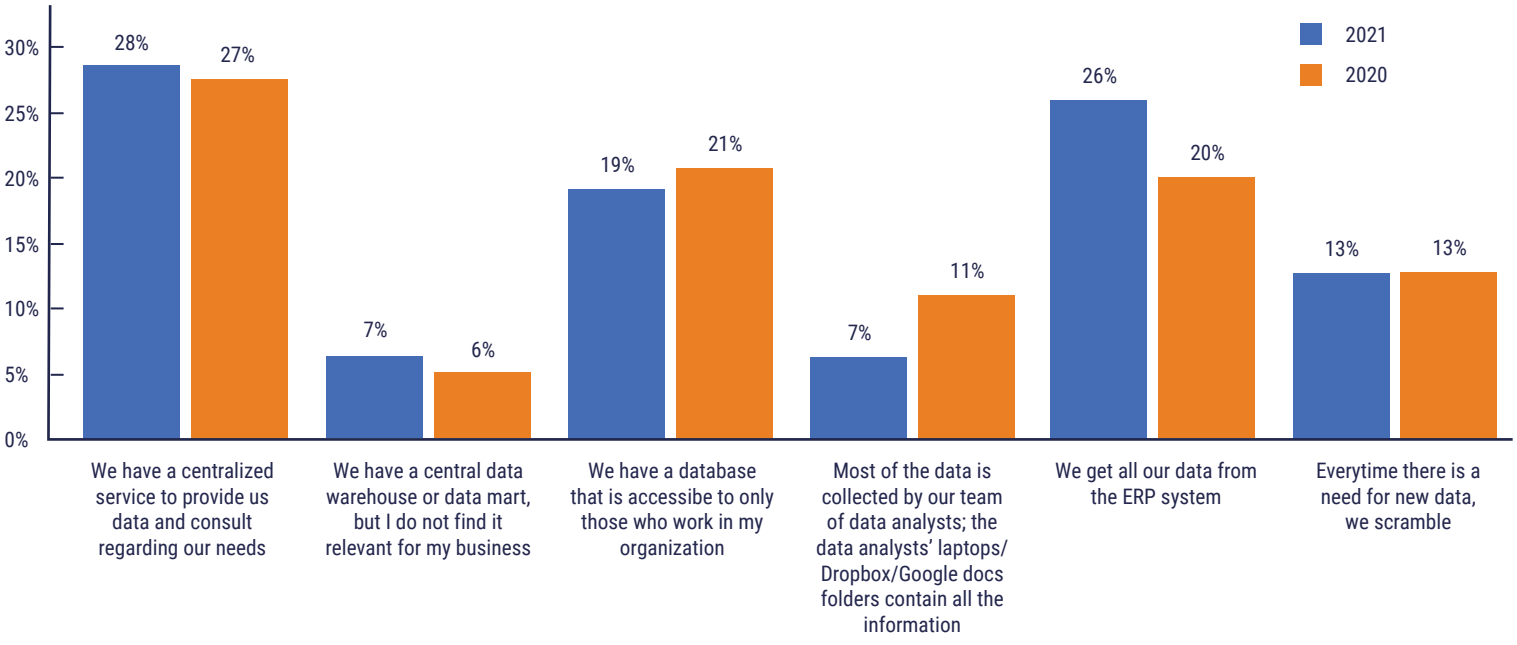


Responses on whether staff members in the organization should be given access to handle and analyse data seem to be consistent for the years 2021 and 2020. Respondents are more inclined towards giving the access to data as it empowers the staff to draw insights. However, there is a reduction noticed in the year 2021 as compared to 2020. While we encourage people to be able to manage data, there is also a movement towards having more of a standardized approach using business intelligence/KPIs/metrics, and less of independent handling of data and information.

One of the ongoing challenges to utilizing data is the need for managers to establish “trust” in the data. Most organizations collect large amounts of data. This data is rarely used as the only source of decision making. When used, it is often used as a supplement to the decision and/or just a reference to the decision.

Organizations typically have both internal and external data sources. Usually the internal data is what is called structured data because it resides in table format in either databases or spreadsheets and is numerical. External data is predominantly unstructured and consists of both numeric and non numeric data from both trusted and untrusted data sources.

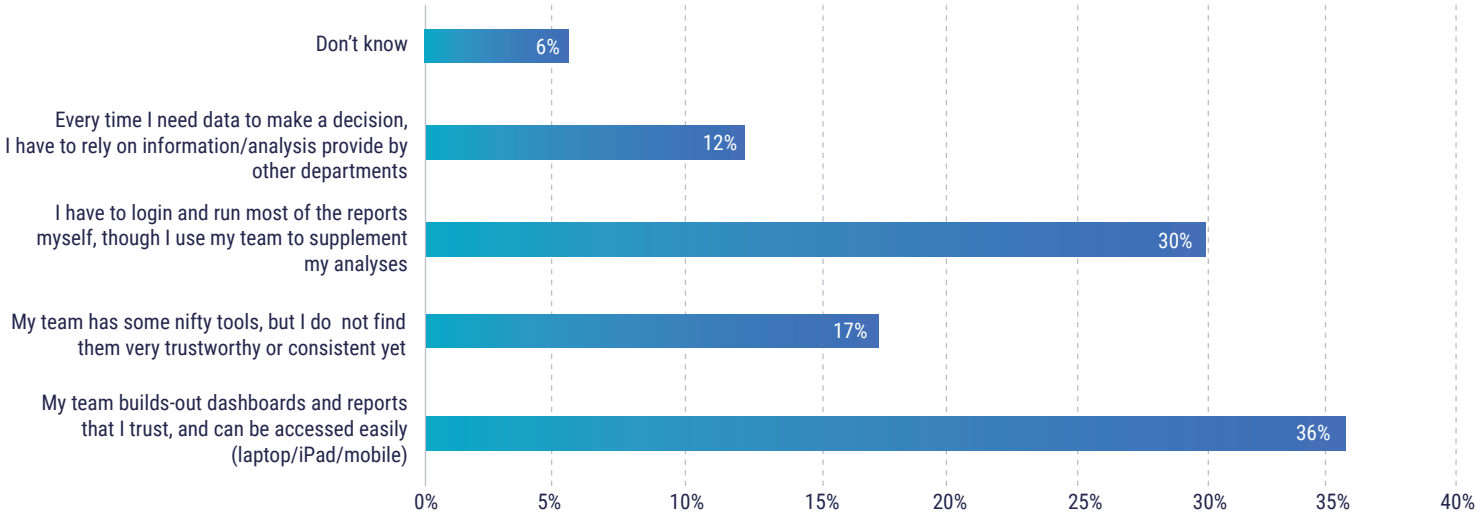
Which of the following is most accurate regarding your internal data?



Data Consumption

Data gets consumed in many ways based on its intended use. One growing use is to use data to feed dashboards which in most cases present a visualization of the data for easier consumption. This is supported by this year's survey based on the following question.

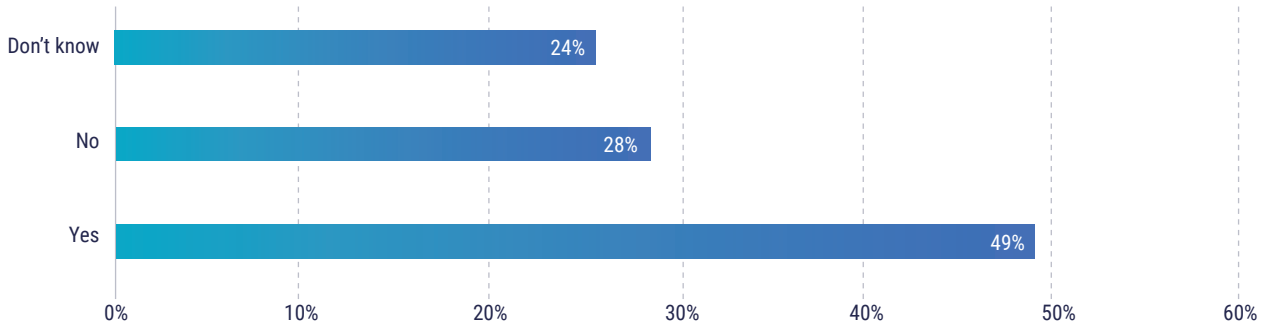
Which of the following is most accurate regarding how you consume or make sense of your data?



The increased use of dashboards is placing increased pressure to assure the data feeding these dashboards is accurate, complete, timely and relevant to the information summaries presented by these dashboards.

Data audits are critical to assure the data being consumed by the organization is relevant, accurate, complete, trustworthy, etc. Data audits should be an ongoing activity and not just an annual effort.

Does your organization conduct periodic data quality audits?



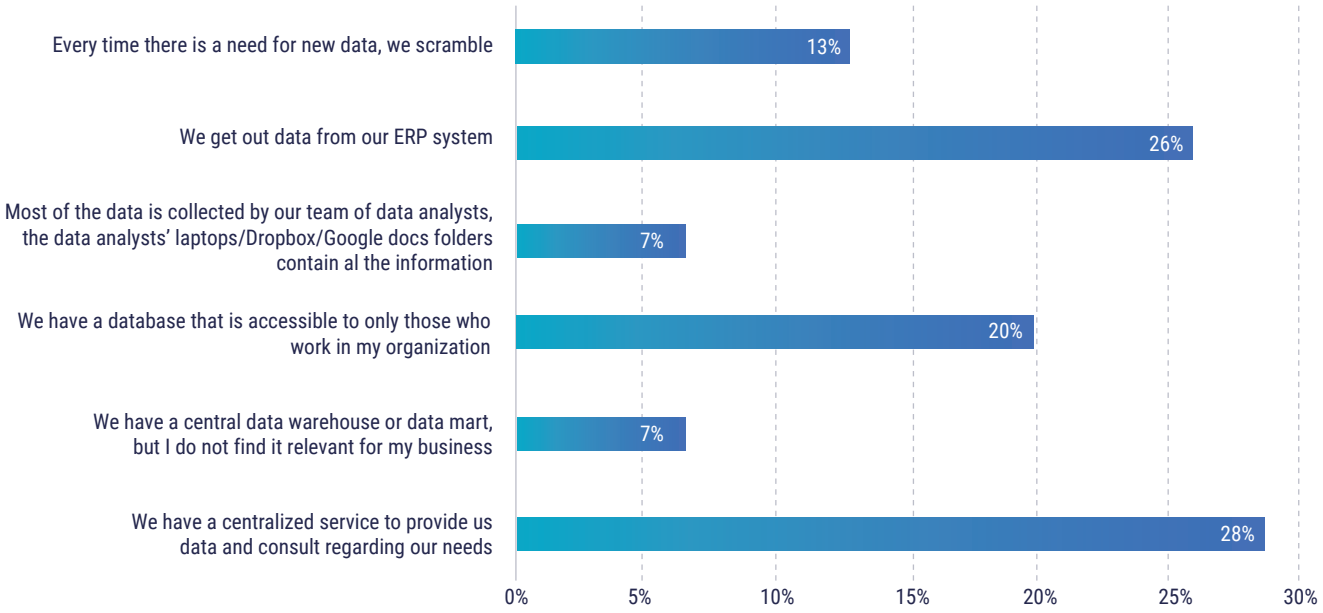
Data audits are time consuming but must be performed in order to ensure financial accountability, process effectiveness, customer satisfaction and optimum organizational predictions. As organizations move to automated data driven decision making (ADDDM) data health is absolutely critical.

Here is a link to Data Audit Guidelines provided by the International Association for Data Quality, Governance, and Analytics. This guideline can act as a framework for your organization's data audits.

Internal & External Data

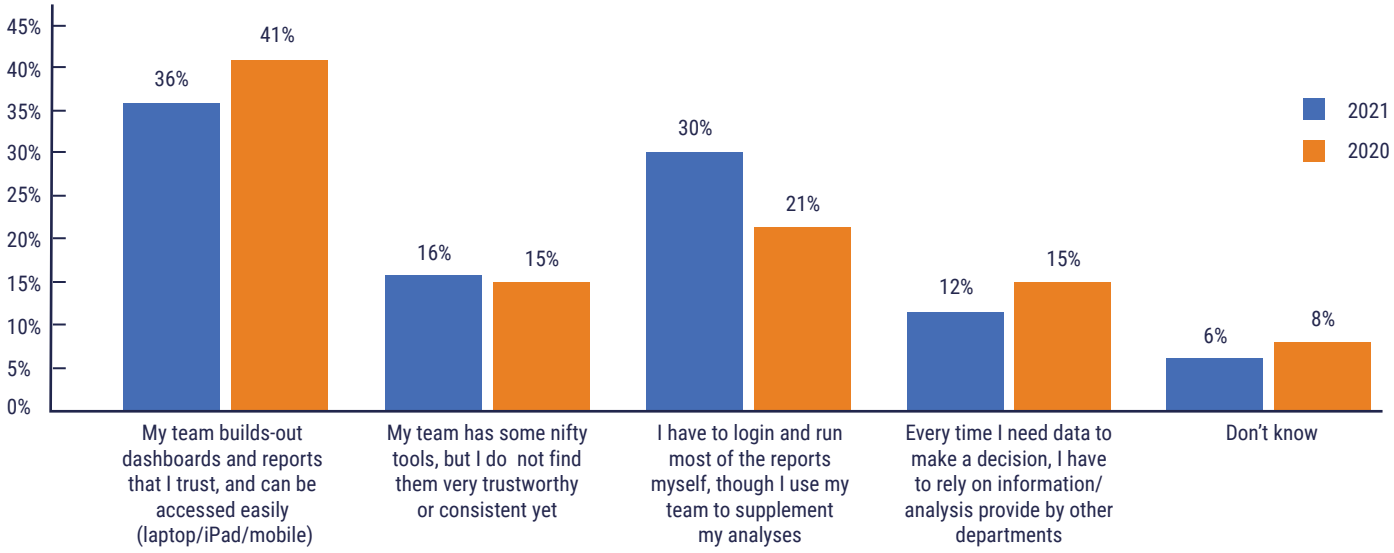
In the case of internal data management, numbers show that the majority of the data comes from companies' ERP systems and most of these companies have a dedicated centralized system that helps them in providing data/insights and consultation as per business requirements.

Which of the following is true regarding your internal data?

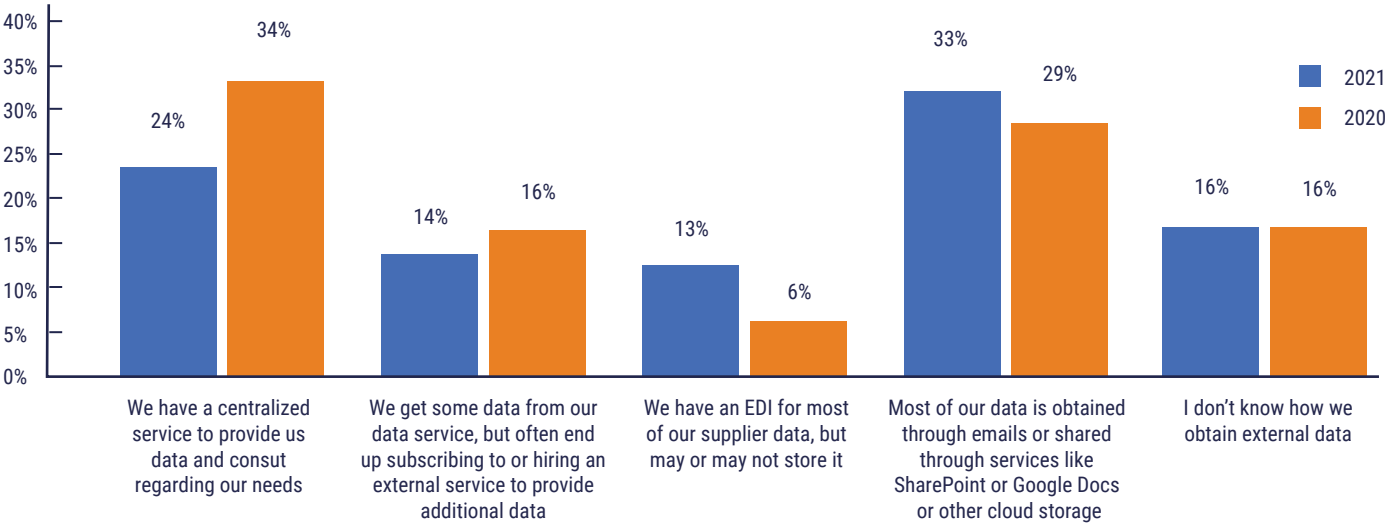


As far as external data of companies are concerned, the usage of EDI (Electronic Data Interchange) has grown in the year 2021 when compared to 2020. Data sharing using emails and cloud services like Sharepoint/ Google Docs show consistent patterns in both years. Like internal data, external data too is majorly handled by centralized services within the company.

Which of the following is most accurate regarding how you consume or make sense of your data?



Which of the following is most accurate regarding regarding your external data? (including supplier data)

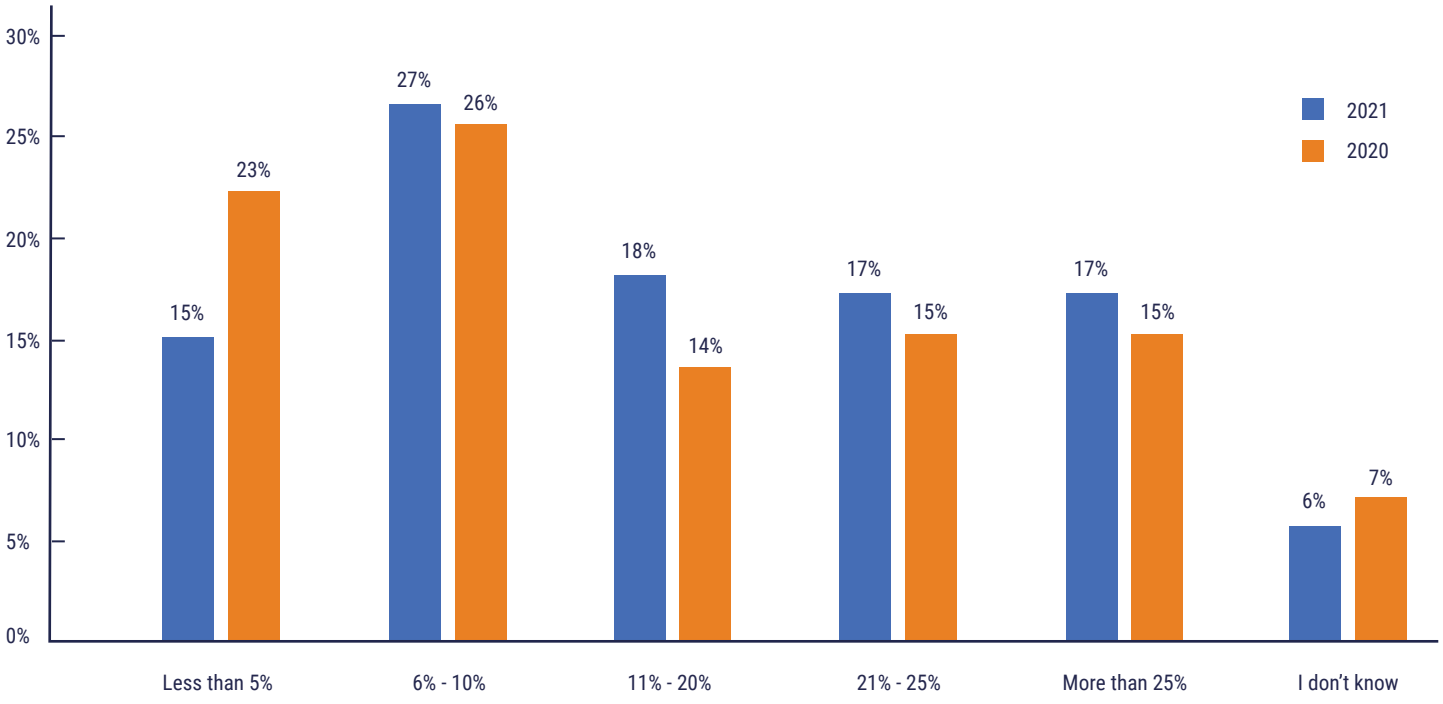


Consistent with last year's results, dashboard/reports generation by teams is the major contributor in helping decision makers consume and interpret data. Even if there is an option to login and generate reports, the team plays a major role in supplementing analyses. There is still a good portion of respondents who are unaware of how they consume or make sense of data.

Cleaning and organizing data whether for normal consumption or for use in training artificial intelligence (AI) or machine learning (ML) is a very time consuming and expensive process. Cleaning and organizing internal data is usually easier and less time consuming compared to external data. Easier is a relative term when discussing data cleansing and organizing data. Unclean or improperly organized/classified data can be disastrous when applied to training in AI and/or ML efforts.

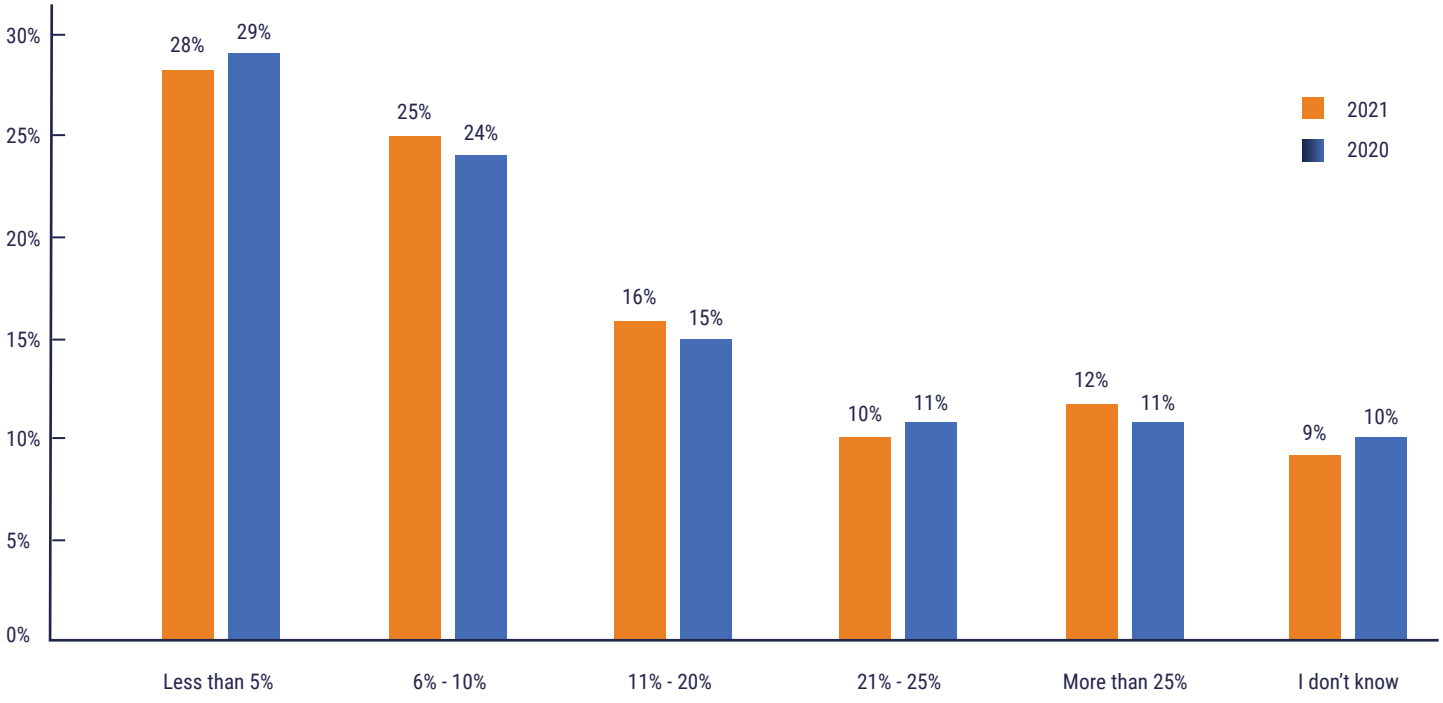
Just locating and gaining access to data is also a major challenge to midsize and large organizations which might be composed of multiple divisions, geographically dispersed organizations and different senior leadership and regulatory data constraints.

What percentage of time is spent every day by your supply management organization's employees trying to locate the data they need to perform their jobs?



The time taken by supply management organizations in trying to locate the data needed to perform their jobs has slightly increased from last year. This can mean that the availability of data in 2021 could be more challenging as compared to last year, as 80% of the respondents in the current year are spending > 5% of their time in locating data.

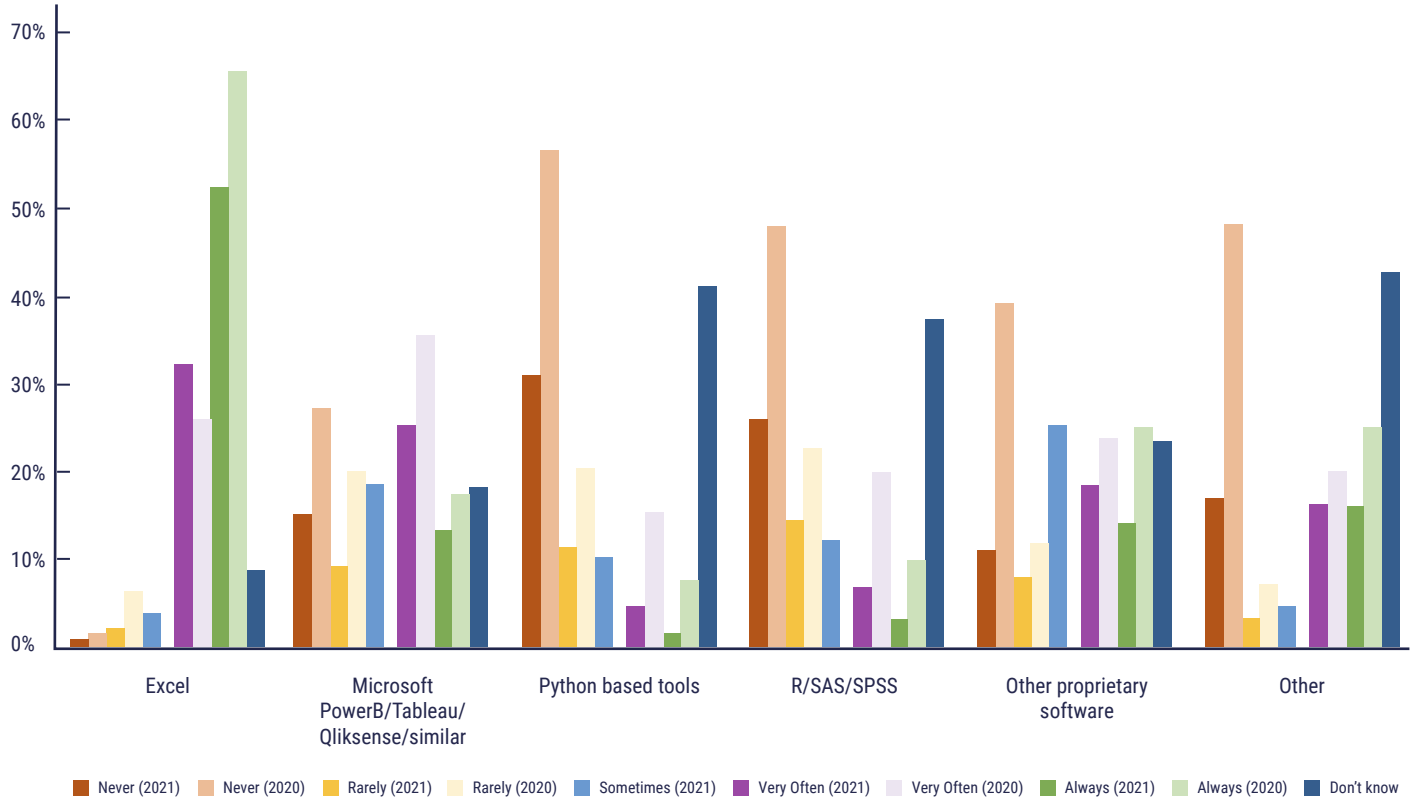
What percentage of time is spent every day by your supply management organization's employees cleaning data so it can be used?



The data is consistent. for the year 2021 as compared to 2020. It is observed that more than 50% of the respondents spend less than 10% of their time in cleaning data for usage.

The tool set used by most organizations to clean and organize data are typically comprised of Excel, Power BI/ Tableau, Python, R/SAS/SPSS, Proprietary Software and so on.

How frequently are the following tools used in your organization?

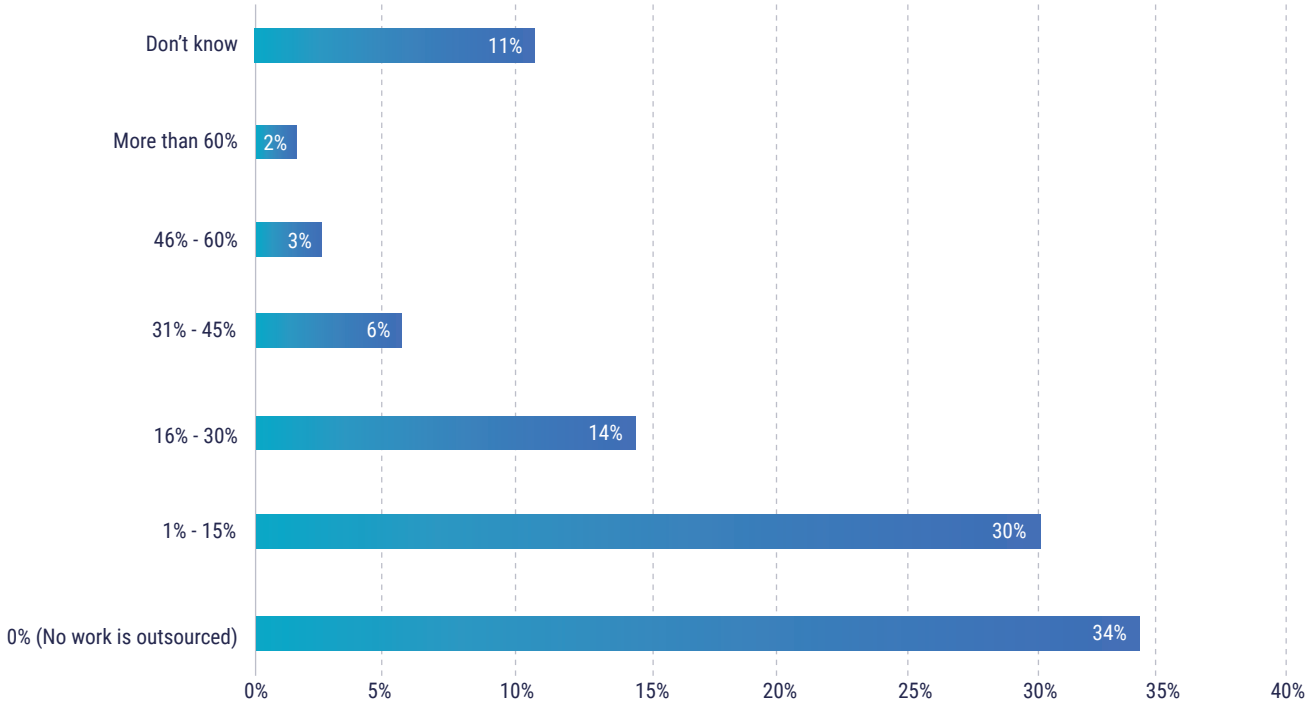


As seen from the survey results, Excel tops the list of the tools used by organizations for data and analytics as more than 50% of the respondents answered they always use Excel even when there is the presence of visualization tools like Power BI, Tableau and programming tools such as Python, R, SAS, etc. Python-based or R/SAS tools are the least favorites as we see there is a large percentage of companies that never make use of these tools. This shows a need for creating awareness and competency in organizations around various analytical tools available in the market.

Data Analytic Outsourcing

Organizations are beginning to explore the outsourcing of data cleaning and organizing as these tasks are a significant drain on the scarce resources of data analysts and data scientists. This area of data analytic outsourcing is expected to grow as organizations continue to try to mine information from their vast databases in real time.

What percentage of your data analytics-related work do you think is outsourced?



This year's study is a reconfirmation of the unsatisfied demand for greater access and utilization of data in the supply chain function. Year-over-year incremental progress continues to be made but its rate of acceleration continues to fall short of organizational and marketplace needs.

Suggested Actions for Moving Forward:

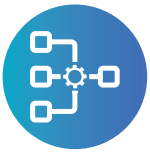
Set clear and quantifiable goals for all supply chain digital initiatives

Conduct data literacy training for all levels in the organization

Require everyone at all levels in the organization to speak with data

Conduct a data audit to understand where you are against your data needs

Don't focus on technology - Use your existing technology and understand its benefits before acquiring newer technology



Work with your suppliers to let them know the type of data, level of detail and frequency of the data you need from them that will be of mutual benefit to your organizations

The supply chain crisis has placed an unprecedented visibility and pressure on the supply chain function to make drastic changes to satisfy demand. The use of data is a critical component to improving the current supply chain crisis.

Recognition to Study Participants

We would like to recognize the participation by ISM and CIPS and their associated members for participating in this year's study.

Dr. Rob Handfield

Dr. Rob Handfield is the Bank of America University Distinguished Professor of Supply Chain Management at North Carolina State University and the Executive Director of the Supply Chain Resource Cooperative. He also serves as Faculty Lead for the Manufacturing Analytics group within the International Institute of Analytics and is on the Faculty for Operations Research Curriculum at NC State University. Prior to this role, Dr. Handfield served as Associate Professor and Research Associate with the Global Procurement and Supply Chain Benchmarking Initiative at Michigan State University from 1992- 1999. He received his Ph.D. in management from the University of North Carolina at Chapel Hill. Dr. Handfield has consulted with more than 25 Fortune 500 organizations, and his work has been cited in over 24,000 publications according to Google Scholar. Dr. Handfield can be reached at rbhandfi@ncsu.edu.

Joseph Yacura

Mr. Joseph Yacura has served in several senior executive management positions at IBM, Pacific Bell, American Express, InterContinental Hotels Group, Bank of America, Information Services Group and most recently Fannie Mae. Mr. Yacura has more than 35 years of executive supply chain experience and serves on various academic and professional advisory boards. Mr. Yacura earned his MBA in Finance and an MS in Accounting from Binghamton University, as well as an MQM in Quality Management from Loyola University. He also graduated from the Senior Executive Program at Stanford University and has published more than 50 articles on the subjects of supply chain management, data quality and artificial intelligence. Mr. Yacura is the founder of the International Association for Data Quality, Governance and Analytics (IADQGA) is also on the board of directors for the California Council for Excellence. Mr. Yacura can be reached at jyacura@iadqga.com. IADQGA can be reached at www.iadqga.com.

Balaji Soundararajan, PhD

Mr. Balaji Soundararajan is a Ph.D. student of Operations Research at North Carolina State University. His research areas include risk prediction methods, data applications, and standardization of data techniques and processes. Before pursuing his doctoral degree, Mr. Balaji worked in multiple sourcing and consulting roles focused on machine learning applications, supply chain data and data quality. He has led engagements with Fortune 500 clients, including Walmart, AT&T, and Lenovo and Family Dollar. Mr. Balaji's experience spans apparel, retail, banking and technology sectors in supply chain and consulting roles. His earlier associations include Tata Consultancy Services, Apptio and Mu Sigma, and he has a total of more than 12 years of analytics and supply chain experience. Mr. Balaji has an MBA in supply chain management from North Carolina State University and an undergraduate degree in Electronics and Communication Engineering from Anna University. He is a member of APICS – Carolinas Virginia Chapter. Mr. Balaji can be reached at bisounda@ncsu.edu.

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Meritor	Rapidly accelerated new product introductions

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Crédit Agricole	80M Euro in savings
Piramal	19% average annual savings over 4 years

Digitizing Processes

CACI	Virtually 100% paperless P2P & 30% reduction in operating costs
maxim healthcare services	P2P live in 8 weeks

Improving Data Quality & Transparency

Cengage	99.6% of spend accurately classified
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Improving Sustainability

Groupe ADP	CSR score increased from 41 to 73

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