



# UNLOCKING THE VALUE OF DATA

DATA & ANALYTICS MATURITY OF FRENCH ORGANISATIONS

STRATEGY AND INFORMATION GOVERNANCE CHAIR MARCH 2022

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# FOREWORD



# "DATA, A NEW STRATEGIC ASSET AND X FACTOR"

Vincenzo Vinzi Dean and President, ESSEC Business School

The time for digital maturity has come. No company can keep out of this fundamental shift any longer. Instead, businesses should now ask themselves: how can we radically and sustainably transform our managers' practices? What tools should we provide them to best harness the value of the data harvested?

Analysing the performance of French companies and organisations, the Data and Analytics Maturity research conducted by ESSEC Professor Isabelle Comyn-Wattiau in partnership with digital transformation company Tata consultancy Services can be used by any business to gauge its Digital Maturity level and obtain inspiring benchmarking insights into the best practices of digital leaders.

The facts are beyond dispute: within two decades, the GAFAM and BATX companies have come to monopolise most of the new uses related to social networking, e-commerce, search technologies, etc.

Faced with the rapid and large-scale business diversification of these mega-platforms, former giants turned out to have feet of clay as they failed to infuse a digital culture within their leadership and to build Data Factories to automate flows and unlock new sources of value.

ESSEC intends to make a difference, relying on the research and studies conducted by its professors in collaboration with industry players.

At the intersection of academic knowledge and customer feedback, this research combines the best of theoretical knowledge and practical approaches to provide enriched visions, analyses, and models.

The initiative was driven by the need to change the way people think within organisations, as data has evolved from a technical matter into a strategic asset and an X factor!

ESSEC thus promotes a hybrid approach where business choices are based on data, algorithms, and mathematical models as well as on human experience, intuition, and imagination. Indeed, while today data plays a prominent role in the conduct of business activities, it is and will forever remain tied to the purposes defined by managers trained in these new "digital humanities."

In conclusion, I would like to sincerely thank Professor Isabelle Comyn-Wattiau and Tata consultancy Services, whose unwavering commitment and rigour made it possible to produce such a high-quality research report.

I wish you an excellent reading and a successful adoption of the key drivers of digital maturity.



**Dinanath Kholkar** VP and Global Head, Analytics and Insights TCS

In a post-pandemic Next Normal, organizations must embrace digital transformation to stay relevant to their customers and drive growth at same time. Data being the DNA that guides this digital transformation, it has become a board-level agenda and a priority for CXOs.

Organizations need to step beyond the enterprise and harness data from their ecosystem that includes their partners, suppliers, customers as well as open data to glean meaningful, actionable insights and foresights. Furthermore, their focus needs to shift from having abundant data centrally to democratizing data and enabling accelerated business outcomes for all stakeholders. This will power transformative organizations, unleashing the true potential of data thus enabling faster decision-making, enhancing customer experience and unearthing new revenue opportunities.

To get a better perspective on data maturity in French organisations, we partnered with ESSEC Business School in commissioning a research. The key objective was to better understand and explain the correlation between business effectiveness with data and analytics maturity. This report is the manifestation of that effort.

Our study analysed the potential of an organisation's digital intelligence based on their analytics program and initiatives as compared to industry leaders. It revealed the ability of the enterprises to devise ways in improving their data and analytics maturity. For instance, the three most popular measures were to improve data literacy, evangelise datacentricity and develop a holistic strategy and roadmap.

I hope you find this study useful and valuable in the context of your business. TCS Datom<sup>™</sup> framework can propel you towards building a future-ready, insights-driven organization.



**Rammohan Gourneni** TCS France Country Manager

Business leaders of purpose-driven organizations are leading digital transformation initiatives with a clear focus on data. They are taking up more strategic objectives to solve business challenges, unearth smarter and more sustainable ways to operate, and deliver measurable outcomes.

Organizations need to embrace a more robust approach to the data ecosystem to achieve better business outcomes. Assessing the maturity of the organization is the first essential step towards a corporate data strategy that makes it possible to realize the value of data.

The decision makers across all levels of an organization need to be provided with consistent and accurate data, while understand the innate characteristics of data including volume, veracity, and velocity. This will help them innovate their business models, enhance customer engagement, accelerate business outcomes, and drive the organization towards sustainability.

As a partner of growth and transformation of companies, we wanted to take the pulse of French organisations. We partnered with ESSEC Business School's Information Strategy and Governance Chair by sponsoring this research based on the TCS DATOM framework. This makes it possible to assess the data maturity of companies and asset them to put in place the necessary foundations for their decision makers to reach their business objectives.

The report showcases that the French companies are cognizant of the importance of mastering data. As a result, many French organizations are investing in predictive analysis, artificial intelligence, and data governance solutions. While there are many other French enterprises that have not reached the degree of maturity as their counterparts to extract all the wealth from it. We believe that the time is no longer for experimentation and piecemeal initiatives but for generating tangible value through a global approach to the data ecosystem.





#### **EXECUTIVE SUMMARY**

Data strategy plays a key role in business performance. Implementing such a strategy provides organisations with a distinct competitive edge and enables them to create more value. Today, as enterprise digitalization focuses on process performance, data and analytics maturity is key for organisations to be able to harness both their data and their analytical power.

The ESSEC Strategy and Information Governance Chair conducted a study in France in conjunction with Tata consultancy Services (TCS), using the TCS Datom framework as the underlying methodological tool. 105 companies and organisations, ranging from the smallest businesses to large multinational corporations, agreed to participate in a survey designed to measure how they perceived their own data maturity and their challenges in this area.

The study revealed that more than half of the companies surveyed feel their data isn't adequately shared across their organisation. Moreover, their ability to leverage this data to adapt their processes, products and services, better manage risk, etc., and thereby improve their business performance is highly variable. For 80% of them, data & analytics maturity is clearly the issue. The less mature an organisation is in this area, the lower its performance. The survey focuses on the four organisational, technological, human and financial pillars of the data strategy, highlighting progress areas.

When asked about what could be improved, participants pointed to the need to build data competencies across the whole organisation and to instil a robust Data culture and mindset. According to the respondents, and without contradicting the results of comparable surveys carried out in the Netherlands and in the rest of the world, French companies have already embarked on this data & analytics continuous improvement journey to achieve a real competitive advantage.



# INTRODUCTION

In this era of digital organisation and pervasive data, companies and organisations are investing heavily in data analytics capabilities which hold the promise of high revenues, going beyond proven statistical techniques to leverage sophisticated solutions such as predictive analytics, artificial intelligence, machine learning, etc. However, these technologies can be effective only if the data used is of sufficient quality, which requires a robust data governance relying on a policy framework and structure as well as on people and processes. The data & analytics maturity of organisations therefore reflects both their data analysis and their data management capabilities.

#### METHODOLOGICAL APPROACH

Tata consultancy Services (TCS) has been assessing the data & analytics maturity of enterprises for many years and has carried out several studies in different countries allowing for a large-scale comparison. In response to TCS's wish to better understand of the French market, the ESSEC Strategy and Information Governance Chair conducted a study using the TCS Datom framework. 105 companies were surveyed through an online guestionnaire. The respondents included business leaders. CIOs. CDOs and functional directors of companies of all sizes, from all industries. Following the survey, several interviews were conducted with subject matter experts to shed light on the quantitative results and their points of view were then compared during a workshop. The findings of both the survey and the interviews were used in the drafting of this white paper.

One hundred and five organisations participated in the survey, and five CXOs (Chief Information Officers, Chief Data Officers, Chief Digital Officers, etc.) answered our questions: What is your current business performance level? How did data and analytics contribute to this outcome? Which levers were used?

Among the survey participants, only a small majority have already completed a maturity assessment, which means this is still a limited practice, and more than half rated their maturity level as low or medium, with a limited data sharing capacity within their organisation. However, regarding the types of data used, the shift already took place as most respondents have started to analyse external data in addition to their verified internal data.

There is a clear correlation between data and analytics maturity and business performance: the higher the former, the better the latter.

More than a third of the companies surveyed own a datalake and about as much have an active datawarehouse. However, almost half of the organisations have not yet defined any data and analytics competency levels.

This comprehensive assessment, enlightened by the views of several experts, can be used by organisations to define a roadmap on how to move forward. Beyond the implementation of improvement processes, investment in people is paramount.

In a nutshell, although companies invest heavily in data and analytics, they have yet to harness its full potential.



# TAKING ACTION TO UNLOCK VALUE

The study described here summarizes how French companies perceive their ability to analyse data to improve their decisionmaking and thus their business performance. For decades, organisations have been using data in their operational and decision-making information systems to support all their business processes. This data is a valuable tool to amplify the cognitive process of decision-makers. Increasing the data and analytics maturity of organisations paves the way towards unlocking the real value of data.

Most companies have built dedicated analytics platforms (datalakes, active datawarehouses, etc.) and expanded at the same time the types of data analysed to include external data, open data, etc., often embracing the cloud for this purpose. Data governance and automation, on the other hand, remain weak links in the chain of data and analytics processes (Figure 1).





#### THE PILLARS OF DATA & ANALYTICS

Different tools can be combined to achieve higher levels of data and analytics expertise and maturity. In particular, the progress of any organisation in that regard relies on five adoption pillars. Data governance constitutes the first pillar, encompassing data management, data guality, master data management, etc. The second pillar is the ability to automate all decision-making processes. The third pillar relates to the types of data used by the organisation for analytics purposes, which can either be limited to verified internal data or extend to external (open or closed, verified or unverified) data. The fourth pillar relates to the type of platforms put in place by the organisation. Finally, the last but not least pillar is the use of cloud technologies, both for accessing data and for sharing the analytical applications and tools.

#### Analytics platforms.

Data sharing often involves setting up a platform that can accommodate any type of data. If nearly 50% of companies have at least one datalake or one active datawarehouse, almost 30% however only use their traditional (legacy or make-shift) information system to extract data for reporting purposes.

#### Types of data used.

The good news is that only 10% of the organisations surveyed exclusively integrate verified internal data. All others enrich this data by using less verified (both internal and external) data or even open data. More specifically, nearly 28% analyse unverified external data, and 32% leverage open data. In the energy and utilities sector and within French central and local government bodies especially, analytics is never limited to the sole study of verified internal data. As for open data, it is massively used (and produced) in the public sector. As companies are being encouraged to transition to more responsible models, leveraging platforms that deliver extra-financial data is a good way for them to gauge themselves (on environmental impacts, social practices, and governance aspects).

#### Cloud adoption.

While this may no doubt conceal a great deal of diversity, the respondents can be guite evenly split into two cloud adoption categories i.e., very low users and the rest. Intensive users nevertheless represent nearly 25% of the sample. If some linearity is found when crossing this assessment with the maturity scores, this apparent correlation does not however necessarily amount to causality.

#### Data management.

Data management is a common weakness of the organisations surveyed: only 9% rate themselves 8 out of 10 in this area. Yet without a well-structured data governance and proper data guality controls, organisations cannot benefit fully from their analytics capabilities. It should be noted that insurance companies stand out in this area, with an average score of 6 out of 10. In contrast, financial firms are characterized by a relatively low average score (3.5 out of 10). In all other sectors represented in the sample, discrepancies are too significant to identify any industry-specific trend.

#### Analytical process automation.

More than 60% of the companies surveyed report a low or very low rate of analytics automation across their entire data supply chain. Less than 10% have automated more than 75% of their processes. Few differences are found between industries, with the sole exception of the new technology sector where 30% (4 out of 13) companies have reached 75% of automation or more. Therefore, out of the five pillars, analytical process automation is the one that lags behind, but also the one that has the highest potential for progression.

To conclude, French organisations have started to embrace data analytics by leveraging some ingredients of its adoption. However, it should be underlined that these five pillars refer more to technological and organisational dimensions, without considering the human and strategic aspects required to achieve a higher data & analytics maturity level.

### TYPES OF DATA

Different datasets may be used for enterprise analytics. The typology used for this survey is the following:

#### 1) Verified internal data

Data contained in the organisation's operational information systems, which may come for instance from an ERP or from a system dedicated to a specific function.

#### 2) Unverified internal data

Data whose quality is not verified via an application or process.

#### 3) Verified external data

Data which may come for instance from a supplier's information system.

#### 4) Unverified external data

Data purchased from organisations or acquired through a survey for example, whose quality is not guaranteed by a structure.

#### 5) Open data

Although open data is external data, it is treated here as a separate category.

Internal data thus corresponds to data captured by the organisation or generated by one of its internal information system components. External data, on the other hand, may be management data such as the sales reported in a partner network, universal data like weather data, survey data, etc.





Henri Pidault Group CIO at SNCF Managing director of e.SNCF

The Société nationale des chemins de fer français (SNCF), which became a public limited company on January 1st, 2020, consists of a parent company which provides strategic and financial leadership for the SNCF group, plus five large subsidiaries. In 2016, SNCF adapted its organisation to the digital age by merging its Digital department and information systems within a new department called e.SNCF, headed up since September 2019 by Henri Pidault.

Henri Pidault considers that data has no intrinsic value. What is valuable, in his view, is the use we make of it. "Within a group," he said "the one who sells data disrupts the exchange momentum. We made a paradigm shift two years ago, by saying: 'Data has no value. The value lies in what you do with it.' But the use of data is subject to regulatory and legal constraints, arising from the GDPR, of course, and competition law, but also from the new EU directives currently being drafted on the protection of industrial data."

"The data is open to all within the group," he added "but may be subject to legal usage restrictions. These are two fundamental principles which must be addressed as part of data governance."

# **"THERE HAS BEEN A PARADIGM SHIFT: DATA** HAS NO VALUE; THE VALUE LIES IN WHAT YOU DO WITH IT."

For the Managing Director of e.SNCF, storing data isn't costly in itself, but the staff that manages such data is. The goal is therefore to facilitate date sharing rather than optimize storage. As part of its governance, the SNCF has set up a Chief Data Officer committee called the "Collège des CDO". Each public limited company (SA) in the group has a CDO who keeps an inventory of all data available within his or her company and ensures its governance and quality.

"There is the data shared within or outside the group, subject to a data agreement," Henri Pidault explained "and then there is the open data shared as part of the group's public service obligations, such as transport timetables which are freely consumed by the various travel organisations and the whole ecosystem."

For Henri Pidault, what also matters besides value is the sensitivity of data. The person who receives the data must have the same confidentiality obligations as the person who shared it.

On the subject of skills development, Henri Pidault mentioned the creation of a digital training course intended for the company's top management and senior executives, covering data-related challenges.





# DATA & ANALYTICS MATURITY

Many companies have adopted maturity models because these tools help them understand how to implement and acquire new capabilities in their organisational context. The objective of these models is twofold: they can be used in a descriptive manner to assess an organisation's maturity level, or in a prescriptive manner to recommend measures designed to achieve a higher maturity level. Maturity models belong to the continuous improvement toolset. The purpose of this white paper is to broadly describe how French companies position themselves in the field of data & analytics and help them tap the value that can be derived from analytics.

French companies are unevenly distributed across the five maturity levels defined in the TCS Datom model. Indeed, 55% of respondents consider they fall into the "siloed" or "simplified" maturity level categories, with no or limited data exchanges between their entities to support decision-making, while 7% of respondents rated themselves "at the top" of automated analytics, considering both the breadth of data used and the level of sharing within their organisation.

Out of these 7%, 4% are from the new technology and information technology sector and 3% have a turnover exceeding one billion.

#### **TCS Datom model**

The data & analytics maturity assessment of respondents is based on the TCS Datom framework which defines 5 maturity levels:

- Siloed: No data sharing between business units. Siloed analytics (whether predictive, descriptive, etc.) limited to some functional areas or certain types of data.
- Simplified: Some data sharing across the organisation.
- Scaled: Effective data sharing and use of analytics across the organisation.
- **Synergysed:** Incorporation of data from internal sources or business partners, combined with data from the wider
- Self-optimized: Automated use of analytics across the organisation, leveraging internal data and data from an increasingly wide ecosystem.

The outcome corresponds to our respondents' own perception of the maturity level reached by their company, which primarily reflects the level of data sharing happening across their organisation for decision-making purposes. The term "analytics" must be understood in a broad sense and includes all data analysis tools, from the simplest reports to advanced predictive analytics techniques, etc.

#### Figure 2: Data & analytics maturity levels of French organisations



The French organisations surveyed achieve an average maturity score of 2.53 (where 1 is siloed and 5 is selfoptimized). By contrast, a comparable study conducted a few months earlier by Tilburg University in the Netherlands showed an average maturity of 1.82 (for 62 companies), and a survey conducted at international level by TCS had resulted in an average score of 1.67 (for 103 companies). However, the relatively good average obtained by French companies should be put into perspective in the light of three observations. First, it is a self-assessment based on the respondent's own perception, which can bias the result. Moreover, the last few months provided businesses with the opportunity to gain maturity as the pandemic forced them to speed up their digital transformation, which could account for the better results of this more recent study. Finally, as the survey required a very good understanding of data-related challenges and issues, the persons who fully completed the questionnaire are probably from more mature organisations, which is another bias. Nevertheless, the interviews conducted to supplement our survey confirmed the assumption that companies are becoming increasingly mature in data and analytics. Our respondents also pointed out how difficult it may be to assign an overall rating to a company that may have many entities with very different maturity levels. As outlined by some experts, this heterogeneity may even be consciously accepted or deliberately chosen based on the relative value that the data can generate.

Drilling down to each maturity level, no significant difference can be found in the "siloed" category between the three surveys, with nearly 20% of companies remaining at a very low maturity level, which would tend to suggest that there are still places where data sharing is not the rule. By contrast, our study shows higher percentages in the "synergysed" and



"self-optimized" categories, which accounts for the higher overall maturity score and means companies incorporate more data and better organize the sharing of that data.





## Maturity assessment experience

Regardless of their subject matter (process, technology, skill, etc.), maturity models are widely used in organisations as part of the continuous improvement process, even if they are sometimes referred to as black boxes. Numerous models are available to assess an organisation's data or digitalization maturity. We evaluated to which extent our respondents have built experience in this area. Have they already partially or comprehensively assessed their data maturity or their maturity in a closely related field, such as digital?

#### Figure 4: Maturity assessment experience



Yes - You have already conducted an enterprise-wide assessment.

Yes - You have conducted an assessment for a specific activity / function.

Planned - You plan on conducting an assessment within the next 6 months.

No - You have never conducted any maturity assessment.

Maturity models enjoy great popularity among organisations. Not only do they help identify key benchmarks for assessing maturity in a technology, process, or skill area, but they are also a way to chart a path forward and adopt new capabilities. 52% of the companies surveyed have already performed a digital or data maturity assessment (37% - enterprise-wide; 15% - for a specific activity or function) while 45% have never done so. Carrying out such an assessment, even in a related field like digital, is important as it indicates the organisation's ability to take a step back and gauge its maturity against various dimensions. Most maturity models recommend in addition a set of actions to be taken in order to move up to the next level of the maturity scale.

The public sector gets the worst score in this area since most (9 out of 14) respondents in this sector have never conducted a maturity assessment. By contrast, such assessment is a common practice in the information technology sector (12 "yes" out of 20 respondents). Now if we look at the respondents' size, conducting this type of assessment is rather the prerogative of large or very large structures.

## Maturity assessment dimensions

#### Processes, people, technologies

TCS Datom measures the organisation's data & analytics maturity against five key dimensions, the first three being the cornerstones of any information system approach, namely:

- the Business processes supported by the information systems (Process and governance dimension),

- the People involved in these processes (Human resources dimension),

- the Technologies leveraged (Technology dimension).

TCS Datom also includes an additional Data dimension, encompassing data management and governance processes (i.e. data quality, metadata management, master data management, etc.) and finally, a Security and Confidentiality dimension.



The dimension preferred by respondents to assess the data & analytics maturity of their organisation was data governance (selected by 46% of the respondents), while human resources was the least mentioned (27%).

### Figure 5: Data & analytics maturity assessment dimensions



## Types of data used

Data can be classified in many different ways. There is no consensus in that regard. For example, data can be structured, semi-structured, or unstructured. It can be quantitative or qualitative, transactional or analytical. It can be internal or external to the organisation. Finally, but not exhaustively, it may have been verified through an internal or external process or remain unverified.

Data & analytics maturity does not only reflect the organisation's ability to share data across its entities, but it also relates to its ability to embrace a greater number of internal or external, structured or unstructured, verified or unverified data sources.

As shown in the chart below, 92% of respondents use verified internal data for analytics purposes, while only 28% use unverified external data. It should be noted that organisations seem keener to use verified external data (61%) than internal data whose guality has not been checked via an application or process (39%). A possible explanation may be the easier accessibility of verified data, or the greater trust placed in such data. Finally, 32% of respondents said they use open data for their analyses.

#### Figure 6: Utilisation rate of the different types of data to support decision-making



For example, 83% of low-maturity (siloed) organisations use verified internal data, while only 28% of them use open data. Almost all companies (92%), regardless of their maturity level, use verified internal data to support their decision-making process. In contrast, very few of them use unverified external data (28%), except in the highest maturity (self-optimized) category where 71% of companies analyse this type of data. Open data are used by 32% of the respondents, self-optimized organisations accounting here again for the highest percentage.

Self-optimized companies are the ones that integrate the greatest variety of data types. The ability to integrate verified external data appears to be a linear function of maturity, which is not true for other data types (Table 1).

#### Table 1: Data & analytics maturity vs. types of data

Maturity	Verified internal data	Unverified internal data	Verified external data	Unverified external data	Open data
1- Siloed	83%	56%	39%	28%	28%
2-Simplified	92%	39%	58%	25%	36%
3- Scaled	100%	33%	71%	17%	33%
4- Synergised	87%	27%	67%	20%	27%
5-Self-optimized	100%	43%	86%	71%	43%
Grand Total	92%	39%	61%	26%	33%

#### Table 2 Turnover vs. types of data

Turnover (in €)	Verified internal data	Unverified internal data	Verified external data	Unverified external data	Open data	Number of respondents
1 billion or more	100%	34%	75%	28%	53%	34
250 to 999 million	100%	38%	69%	23%	15%	13
100 to 249 million	94%	50%	38%	19%	31%	16
25 to 99 million	73%	64%	55%	18%	9%	12
10 to 24 million	50%	25%	50%	50%	50%	5
Less than 10 million	92%	29%	58%	29%	25%	25
Grand Total	92%	39%	61%	26%	33%	105

Now, if we look at the relationship between the types of data used and the companies' turnover (Table 2), verified internal data is here again the most analysed by all respondents. However, unverified external data is among the least used regardless of the business size. The use of open data remains low. Therefore, unlike maturity, turnover does not seem to impact the type of data used.

To conclude, the concept of Data maturity encompasses many aspects, ranging from human resources to the organisational structure, the nature of data and the automation of data management processes, etc. For this reason and due to other factors, such as the company's industry, history, size or culture, very different data & analytics maturity levels are found according to the organisations surveyed.

This raises the question of the potential correlation between this maturity and the companies' business performance, which is the subject of our next sections.





# "COMPANIES SHOULD BE **BOLDER WHEN IT COMES TO USING EXTERNAL DATA.**"

**Dominique Pardo** Chief Information Officer TotalEnergies, Exploration & Production

TotalEnergies is a French multinational founded in 1924 that produces and markets energies on a global scale: oil and biofuels, natural gas and green gases, renewables and electricity. It is one the world's seven "supermajor" oil companies. With a strong global footprint spanning over 130 countries, the company employs 105,000 employees and generated revenues of nearly 180 billion euros in 2019. Dominique Pardo is the CIO of TotalEnergies' Exploration Production segment.

Dominique Pardo said he was surprised that companies do not invest more in external data: "Of course, it depends on the company's industry, DNA and history," he said, "But I think external data is an important source of wealth. Companies that overlook such data are taking an inward-looking approach, focusing on what they know, what is safe. A mindset shift is needed in that regard. As an energy company, the firm I work for uses a lot of public data, more specifically subsoil data. Most of the time, the raw data does not belong to us, it belongs to the countries in which we operate. In the energy sector and at TotalEnergies, it is so to speak in our DNA and in our culture to leverage sources from outside."

"Everybody is talking about transformation," he added. "The world that is coming will not be the world as we knew it. The energy transition must take place. The digital transition must take place. Transformation must take place on all fronts. In my opinion, this can only be achieved by looking at what is going on beyond our walls. Your study very clearly shows that even companies with a well-structured data strategy primarily process their own data. In the end, they do not recognize much the value of external data. I doubt they know how to make full use of their data. "

"We use external data for wind and solar power as well as oil and gas," the CIO of TotalEnergies Exploration and Production continued. "We have offshore platforms, we use weather data, tide data. We make simulations based on public electricity data. This data has value. Why? Because it fuels scientific studies that are based on this data. The findings of these studies are valued. This is not new. In the Exploration & Production business, we have always worked with data. "

Dominique Pardo recalled that in data management too, organisations must adopt a goal-driven approach: "I see three major goals for businesses: produce better, manage better, sell better. Producing better will require the contribution of the company's entire production chain. Managing better means having a better control of, and optimizing a number of company resources, such as financial resources and investments, it means knowing where you put your money. Selling better requires first and foremost to conduct a market analysis. In what order? The first logical step lies in the company's history. For example, there is no business with no accounting capabilities, with no management skills. Every firm has an installed base of analytical tools for management purposes. If its analytics is no longer suited to the current decision-making context, the company must benchmark its capabilities against those of similar businesses and embark on a transformation journey. External data is worth harnessing to support management decisionmaking. Secondly, the priority should be to consolidate the weakest link. If the company faces strong competition in its markets, if it needs to gain additional market shares to reduce the impact of its fixed costs, it should logically focus its attention on customer data. But if the major problem lies in the supply chain, it should exploit data which can

help better manage its production facilities. Admittedly, current market offerings focus more on management and customer data than on industrial production data. Yet, the growing momentum around the energy transition is likely to accelerate the transformation of production facilities. All production lines will have to be decarbonized. Coming back to TotalEnergies more specifically, Dominique Pardo added: "For several years now, we have implemented a data classification methodology which is applied across the enterprise. All our entities and subsidiaries must comply with corporate data management policies and guidelines. A data management repository has been established for each business, governing data retention, security, and several other data-related topics. This enabled us, at least in some places, to conduct maturity assessments, on B2C and B2B customer data for instance. We are now starting to focus our efforts on industrial data i.e., the data used to manage production facilities."

Dominique Pardo recognizes the importance of sharing data: "I agree that we need to share data. But this does not necessarily mean implementing a global platform where all can be shared. Some data does not have to be reconciled. Sometimes, data needs to be shared within the branch only, not at enterprise level. One maturity criterion that was not addressed in the survey is the use of standard data formats. A company that uses standard models can share its data with the outside world. This is another dimension that could be taken into consideration when assessing an organisation's maturity."

Asked about the competency aspects, Dominique Pardo added: "When it comes to human skills, caution is advised. I sometimes hear that there is a lack of data scientists. But then again, to do what? One thing is certain: in order to work properly, you need quality data. Then you need to be able to expose this data in the right format. You also need algorithmic skills to exploit it. I don't know if companies should hire data scientists. Generally, they should start by identifying, within their organisation, employees who have knowledge of their data. These skills can be supplemented with IT solutions if required. Organisations should follow a three-phase guestioning: 1) What is my goal? 2) What solutions do I need to achieve this goal? 3) How should I organise myself to do so? Do I need new skills or do I need to change the culture and the way people work? Again, the weak link needs to be identified: does it lie in the skills? In the technical solution? In the organisational structure?"

"For us," Dominique Pardo concluded, "the major upcoming data challenges will lie in analysing our customers' consumption. In order to provide an adequate supply of green electricity, we will need to gain better insights into our customers' usage behaviours and optimise resource consumption. Harnessing data is the key to achieving the goal of carbon neutrality by 2050. This is a major issue which must be addressed on the customer's end, as we said, as well as in our production facilities: we produce oil and gas so carbon neutrality will be quite a challenge. Finally, data produces data, which means data must be rationalized. A distinction must be made between fast-evolving data such as customer data, and longer-lasting data such as geological data."





# BUSINESS PERFORMANCE

Performance is a complex concept used in various contexts. For example, financial performance means profit maximisation. Subjective and relative, performance is always linked to value. Covering several dimensions, it is often defined in relationship with the concepts of consistency and relevance. For the purpose of this study, we did not assess the companies' financial performance, but their business performance, which has four drivers: product or service customisation and business model transformation, which together indicate the company's ability to adapt to its market, ecosystem leveraging and risk acceptance. In this white paper, respondents rated their own performance on these four drivers.

Respondents were asked to rate both their organisation's performance on each of the four dimensions and the contribution of data and analytics to that performance.

#### **BUSINESS PERFORMANCE BEHAVIOURS**

In this study, digital companies' performance is measured through their level of adoption of four key behaviours:

- Mass customise the company's products or services.

- Change business model to respond to customer requests, market conditions or competitive threats.

- Leverage the wider ecosystem (partners within and outside the supply chain) to develop new value propositions.

- Accept risks by freeing itself from rigid planning and overcoming operational barriers with an agile strategic approach.

### Product and service customisation

### Figure 7. Organisation's performance on product or service customisation



Half of the respondents consider their company has a good capacity to customise its product and service offering (rating above 6 out of 10 although the average is only 5.3). Customisation can, in some industries, go as far as individualising a product or service.

### Business model adaptation

#### Figure 8. Organisation's performance on business model adaptation



Similarly, half of the respondents consider their business model can change in response to customer requests, market conditions or competitive threats (rating between 5 and 10 out of 10 with an average of 5.4.)

### Wider ecosystem leveraging

Figure 9. Organisation's performance on ecosystem leveraging



Similarly, half of the respondents consider they leverage their wider ecosystem, suppliers and partners across their value chain (rating between 6 and 10 out of 10 with an average of 5.3).

## **Risk acceptance**

The average is slightly lower on risk acceptance, at 5 out of 10, but, as for the other three performance drivers, half of the respondents gave themselves a rating above this average. It should be noted that agility was mentioned in the question as a sign of their ability to free themselves from rigid activity planning.

#### Figure 10. Organisation's performance on risks acceptances





Interestingly, results are very similar on the four dimensions. Half of the respondents have a positive outlook on their company's business performance, regardless of its size or industry.

Industry-wise performance analysis split the sample into two groups: government and manufacturing on one side, with an average below 4 out of 10 on all dimensions, and all other industries on the other side, with an average above 5 out of 10 on all dimensions.

Turnover-wise performance analysis provided homogeneous results, except a slightly lower average for companies with a turnover between €25 and 99 million.

The outcome of this performance self-assessment showed a fairly high degree of homogeneity among the studied companies and organisations. However, it might be biased since, as mentioned above, our respondents, who are interested and involved in the main topic of this survey, work for companies in which data plays a significant role, at least in their eyes. In the next section, we will determine whether data maturity contributes to business performance or not.





**Christophe Bonnefoux** Global Chief Data Officer **BNP** Paribas Asset Management

BNP Paribas Asset Management (BNPP AM) is the investment management arm of BNP Paribas, managing €502 billion in assets (30/09/2021) for individual, corporate and institutional clients worldwide.

"BNPP AM has its digital, data and IT maturity regularly assessed by an external agency," Christophe Bonnefoux explained, "which provides us with a factual assessment of our company's progress, confirmed by numerous internal interviews. However, in this approach, the benchmark sample is not the most representative. It can lead to a lack of precision in the results, which are not weighted based on the available and allocated means. We highlight these shortcomings when we communicate these results, so our Executive Committee can take the necessary step back and be careful in its analysis. Our ambition is to be a tech-savvy asset manager."

"Tech (including data) is one of the major challenges for an asset manager who invests in the sustainable economy," Christophe Bonnefoux added. "Our clients invest in tech and data, so we must achieve the level they expect. For example, they increasingly APIfy their information systems and use multi-cloud services, therefore, they want us to provide easier access to data and reports, and ask us more and more about our choice of operational model (centralised, hybrid, decentralised) in terms of data governance, guality, protection, etc. Our competitors and clients are aware of the quality of our reporting, and our data, because it is regularly evaluated and published by external agencies. Our clients, and their advisors, take these assessments into account when they select the asset manager to whom they will entrust their money."

"9 business use cases have been industrialised and are currently in production thanks to BNPP AM's Data Hub platform," Christophe Bonnefoux explained. "For example, our sales have one-click access to businesscritical data only one day after it was produced (against 35 days before). To develop teams' self-BI skills, the platform gathers 5,000+ defined, governed and guality-

**"TODAY AND EVEN MORE SO** TOMORROW. WITH THE INCREASING USE **OF CLOUD SERVICES, BUSINESS USERS** HAVE EASIER ACCESS TO KEY COMPANY DATA AND CAN FINALLY UNLOCK ITS FULL POTENTIAL: THE SILO LOGIC DUE TO APPLICATION ARCHITECTURES WILL NO LONGER BE AN OBSTACLE."

> controlled key data. The target is to implement the Data Hub platform organisation-wide, as the demand is high: nearly 20 business use cases are in the pipeline."

"To remove obstacles, we need to convince sponsors and obtain the necessary investments over the long term, and thus acquire the key skills," Christophe Bonnefoux continued. "Python Developer, Data Engineer, Data Architect, Product Owner, etc., these are fascinating jobs. The data, IT and digital sectors are clearly unable to fully meet the demand."

"In terms of operational data governance," Christophe Bonnefoux added, "20% of BNPP AM employees have an individual goal that relates to data governance, protection and guality. BNPP AM has a clear edge over the market: the concepts have been simplified and gamified through a social game called INDATAJONES, which has won 6 external awards. These investments have greatly facilitated the business teams' acculturation and assimilation of this new vocabulary. To assess these goals, we published a guide that defines the five desired behaviours (master the functional scope, play a role in decentralised governance and data quality, have completed the data training, make propositions). Managers can observe these behaviours, their impacts and their sustainability."

"Eventually," Christophe Bonnefoux added, "to increase the impact of the company's key data governance and protect employees from operational misuses, we may include certain principles in an amendment to employment contracts, such as compliance with ethical rules relating to artificial intelligence, sensitive data usage, 'shadow golden sources' non-creation or decommissioning, incorrect data entry, etc."

"When I joined the company," Christophe Bonnefoux explained, "I proposed to invest in an Enterprise Information Model, i.e. a data asset that would simplify the information system, better prepare it for cloud migration and improve our knowledge of BNPP AM's data, thereby changing the standards for accessing data. The challenge is to phase out the application architecture logic to move towards a data



and service-oriented architecture. In the future, we'll no longer manage applications, we'll manage data. Tomorrow, applications as we see them today will disappear, replaced by data services that will allow access to useful company data."

"This is why we initiated a "tech" (IT | data | digital) transformation journey that will continue over the next few years, so that BNPP AM's information system becomes data and service-oriented. Obviously, the prerequisites are technological, but the key success factor lies above all in changing the mindset of IT and business teams when it comes to data. Progress is already visible and very promising," Christophe Bonnefoux concluded.





# DATA MATURITY AND BUSINESS PERFORMANCE

The main purpose of the survey, subject of this section, is to study the relationship that may exist between an organisation's data and analytics maturity and its performance from different perspectives: company segmentation, identification of the function that characterises the relationship, analysis of the perceived causality between data maturity and business performance and focus on financial performance.

### Distribution of companies by maturity and performance

We cross-referenced companies' perceived data and analytics maturity with their business performance. First, respondents were asked to assess the data and analytics' contribution to the four business performance drivers (mass customisation, business model adaptation, wider ecosystem leveraging and risk acceptance). We then calculated their business performance score by adding the four performance ratings, each multiplied by the contribution of the data to that performance. Thus, the more a company implements all four strategies using data and analytics, the higher the score. Finally, companies' industry-wise comparative maturity score was obtained by comparing the companies' maturity to the average maturity within the same industry. This allowed us to map companies on four quadrants, with the business performance score on the vertical axis and the industrywise comparative maturity score on the horizontal axis.

#### BUSINESS PERFORMANCE SCORE AND INDUSTRY-WISE COMPARATIVE MATURITY SCORE

The **Business Performance Score** positions an organisation in comparison to other organisations based on their business performance. It is equal to the sum of the organisation's four business performance ratings weighted by the contribution of the data to that performance. These four ratings and their weighing being defined on a scale from zero to ten, the weighted sum ranges from zero to four hundred. Companies are mapped according to their performance relative to the average performance of the sample, which is arbitrarily set at 50%.

The *Industry-wise Comparative Maturity Score* positions an organisation in comparison to other organisations within its industry based on their data maturity. The average score for each industry is set at 50%. The extreme maturity values, namely 1 and 5, are arbitrarily positioned at the 10% and 90% ratios. Companies are thus mapped at a proportional distance from the average of their industry, between 10 and 90%.

#### Figure 12. Segmentation by industry





The comparison between the French and Dutch samples calls for caution due to their limited size in each industry. Nevertheless, it shows that, in the government and the energy and utilities industries, well represented in the two samples, organisation distribution is similar. However, in the energy industry and related services (waste, etc.), Dutch companies are either data driven or data centric, whereas, in the slightly larger French sample, all four categories were found, data-centric and data-driven organisations still being more numerous.

We cross-referenced these four categories with the companies' turnover (or budget): the largest companies are the most data-centric, but some of the smallest organisations (below €10 million) also fall into this category, in particular those whose business is data.

Launching projects that enable the company to become data centric or even data driven requires that the data be ready, standardised and accessible. Data preparation is an activity that is not sufficiently valued. Only clean data is provided during computer science trainings, therefore learners are not aware data needs to be prepared before deriving value from it. In some companies, data freshness dictates business performance. Investing in data proves essential to improve this performance.

Figure 11. Company segmentation according to their business performance and data maturity scores



The top right quadrant groups data-centric organisations, which have an above-average business performance and an above-industry-average data maturity. The bottom left quadrant groups emerging organisations, which have a belowaverage business performance and a below-industry-average data maturity. The bottom right guadrant groups data-driven organisations, which have an above-industry average data maturity but below-average performance. Finally, the top left quadrant groups performance-driven organisations, which have an above-average business performance but a belowindustry-average data maturity.

We crossed-referenced these four categories with the industry. Some industries being under-represented in the sample, caution must be exercised in the analysis. But the well-represented IT industry shows a large number of data-centric companies compared to government or life sciences industries, for example. In addition, these companies integrate into their processes data that they manage for their clients.







#### Figure 13. Segmentation by company size



Comparing our maturity by company size results with the Dutch sample, we noted the latter focused more on very large companies, whereas the French sample was more evenly distributed across all company sizes, thus including a large number of small companies. Companies with a turnover between €25 million and 99 million are either emerging or businessperformance-driven in the French sample whereas the Dutch sample includes all four categories. For companies with a turnover between €100 and 249 million, the two samples are comparable in size but the four categories are homogeneously represented in the French one whereas there are no business-performance-driven companies in the Dutch one. Finally, there are around fifteen companies having a turnover above €1 billion falling into the data-centric category in the French sample, but very few in the Dutch sample.

### Link between maturity and performance

We compared the companies' performance, as defined above, with their maturity level, obtained by adding the four ratings (sum ranging from 0 to 40). The figure below, that shows the average performance of companies having the same maturity level, demonstrates there is a clear direct relationship between the two: the higher the data and analytics maturity level, the higher the business performance.

#### Figure 14. Representation of the function Business Performance = f(Data & Analytics Maturity)



### Data contribution to performance

At least half of our respondents have a positive outlook on all four dimensions of their business performance: products and services customisation, business model adaptation, ecosystem leveraging and risk acceptance. This performance is at least partly attributable to the use of data and analytics. For the first dimension, if a quarter of the respondents consider they largely use this tool (rating from 6 to 10 out of 10), another guarter gives themselves a rating below 2 out of 10. Overall, the average is low at 3.9 out of 10 and half of the respondents give themselves a rating below 4 out of 10.

#### Figure 15. Data contribution to the ability to customise products and services

Use of analytics to ensure mass customisation





#### Figure 17. Data contribution to wider ecosystem leveraging



Ability to analyse risks? Ability to have the data to do so? Ability to rely on this data to be bold? For most companies, analytics is clearly not the way to improve risk acceptance, as 75% of them rate themselves below 6 out of 10.

#### Figure 18. Data contribution to risk acceptance

Use of analytics to accept risks







## Ability to leverage data and analytics

#### In terms of business strategy

When asked about the potential for further progress in digital maturity, three quarters of the respondents consider that paying greater attention to data and analytics would indeed be a step in the right direction. Our respondents believe in the link between better use of data for decision making and increased digital maturity. The response average is 6.9 out of 10, with a quarter of the respondents giving themselves a rating above 9 out of 10.

#### Figure 19. Data contribution to digital maturity

#### Greater focus on data & analytics would contribute to digital maturity





Luc Barnaud Chief Data Officer Groupe BPCE

#### In terms of turnover

Similar responses have been given on the ability of data and analytics to improve the company's bottom line. The response average is 6.6 out of 10, with a quarter of the respondents giving themselves a rating above 8 out of 10.

#### Figure 20. Data contribution to turnover improvement



#### In terms of net result

Finally, the same response has been given for the potential contribution to the company's net result through a better use of analytics.

#### Figure 21. Data contribution to net result

#### Greater focus on analytics would contribute to net result increase



Overall, the study confirms a positive relationship between the surveyed organisations' data and analytical maturity and their business performance exists. The four quadrants resulting from segmentation, and the linearity between maturity and average performance, show where emerging companies should invest to achieve better performance. Data contribution to performance improvement reveals strong disparities that each company must interpret to act accordingly. Finally, the various questions on the data contribution to financial performance allow to measure the potential progress.

Groupe BPCE is the world's second largest cooperative banking institution (source: World Cooperative Monitor – 2021 report), and the second largest bank in France. With 100,000 employees, its serves 36 million customers. It is composed of two major banking and insurance networks (Banques Populaires and Caisses d'Epargne) and provides global asset management, insurance, corporate banking and payments services.

Luc Barnaud is Groupe BPCE's Chief Data Officer. "BPCE is a cooperative group consisting of 14 Banques Populaires and 15 Caisses d'Epargne, all full-function regional banks, who have decided to pool data, digital and innovation," he explained. "Grouping these three activities together is quite unusual, quite rare. It is the result of our past experience, specifically our digital acceleration for online banking. We did not create a digital bank alongside the traditional bank; instead we tried to embark all the banking businesses on the digital transformation journey (this is what we call the 'digital inside' strategy) and, from a technological point of view, to complete our 'core banking' IT systems with new digital bricks enabling us to revamp the online banking experience."

"Revamping our mobile application, which is a major indicator of the success of our digital transformation, has taught us agility," Luc Barnaud added, "as well as the concept of technological foundation modularisation: our digital services rely on the integration of technological components that we manage in industrial product mode to ensure the quality of the service provided to the millions of customers who use our digital spaces. It is very powerful. Today, we are in the process of applying this modularity, this system architecture to data."

"In our large organisations, circulating and cross-referencing data is complex," Luc Barnaud added. "Acculturation is required to make people understand the value that can be found in data, always starting from the uses and business "EVEN TODAY, A LOT OF THE VALUE PROVIDED BY DATA STILL LIES IN THE REAL TIME MANAGEMENT OF THE COMPANY."

challenges. But we must also reassure all stakeholders that when we cross-reference data, we do so for known and compliant purposes. Finally, while the data coming from our transactional systems remains a very rich asset, we do leverage other data sources such as our digital spaces or external data that are very useful, to understand the challenges of the energy transition for example. So in short, useful data, enriched sources and ethical processing."

"Some companies are focusing their efforts on the 'new' data world, which is very data-science oriented," Luc Barnaud explained. "We are trying to take a holistic approach of the data cycle: from its acquisition to its transformation into information/knowledge, and then its use through use cases, relying on a shared technological base and a network of experts. The ambition of our data roadmap is therefore both to generate new uses around data science and artificial intelligence, and to better operate, rationalise and modernise the management systems of our processes and our company overall. We believe that a lot of value can still be unlocked from these company management uses. This means working on the fundamentals, i.e. data quality, enrichment, accessibility and analysis (analysis can go as far as prediction with machine learning, but it is not always necessary), in the service of an enriched customer knowledge to customise the relationship and advice."

"We are working on a number of cross-functional use cases, such as the detection of life events to better support our customers, the fight against fraud and the automatic processing of documents using artificial intelligence," Luc Barnaud added. "These use cases are designed to be deployed industrially to serve our millions of customers and thus have a significant impact on their satisfaction and that of our advisors."

"Another fundamental challenge", Luc Barnaud added, "is to successfully deploy and democratise uses across all group's banks, for the benefit of their customers. To do so, we rely on a network of Data Managers, one per branch, led by a team of Data Partners. What is the role of this collective? To propose a complete service offering to branches, including data training, new tool (data visualisation, data preparation, etc.) deployment support, sharing of use cases developed within the Group, data quality improvement actions, etc."

"A word on innovation and open banking. The challenge is to mobilise a wider ecosystem: work with merchants and fintechs to develop new services and increase the distribution of our products. We have a win-win approach,

with complementary expertise that generates added value for our customers. To ease the interconnection between our systems and those of external partners, we need a modular system and digital journeys. Again, we can benefit from the work done as part of our digital transformation. The proximity of digital, data and innovation expertise is a real strength that we intend to build on!" Luc Barnaud concluded.



# PILLARS OF THE DATA STRATEGY

Data and analytics maturity can improve business performance. For that, the companies' data strategy needs to be built on value-driving pillars. This concept is very much present in all the data strategy approaches proposed by the experts. In this section, we will analyse the French companies on the four organizational, technological, human and financial pillars.

## Organizational pillar

In this survey, the organizational dimension was studied in detail. For example, companies were asked about their strategy of outsourcing of data-related services, the process automation level, agility adoption, data ownership, data management, digital transformation tools, and data monetization. The various results are given in the below chart.



Of their spending on services, 25% of respondents said less than 10% are allocated to outsourcing, but 12% said more than 75% are allocated to outsourcing. More generally, the chart shows an even distribution that reflects outsourcing services related to the management of the entire data lifecycle for analytics is common practice.

Cross-referencing these companies' performance with outsourcing does not reveal any significant correlation or trend. Simply put, the level of outsourcing does not seem to be a key factor in their business performance.

#### FOUR PILLARS

Just like the information system strategy, the data strategy is based on four dimensions or pillars: organizational, technological, human and financial. The organizational dimension reflects the company's rationale in terms of business processes, structures and roles while the technological dimension includes the choices of IT solutions made by the company. The human dimension integrates the skills of both users and IT specialists. Finally, the financial dimension includes financial information that characterizes the information system, such as the level of expenditure or the budget structure.

Below 10%

Between 10% and 24%

Between 25% and 49%

Between 50% and 74%

75% and above





Similarly, but at a slightly lower level, automation of data management processes (capture, processing, provision, etc.) is under way. However, 33% of respondents feel that less than 10% of these processes are automated while 10% of them estimate the number of automated processes to be more than 75%. The question is, is automation always relevant?

Today, agility is recognized as an ability to more easily transform the way an organization works. While being used more often in IT projects, agility has penetrated all the processes and even outside the scope of their computerisation. The survey revealed that 16% of the companies surveyed have not adopted the agile methodology in their organization. On the other hand, for 13% of them, agility is the basis of all processes. 70% of respondents said they have adopted this methodology in their organization but only partially. If we cross-reference agile adoption with organization size, it can be noted that the deployment of agile across the entire organization is the prerogative of small companies. It appears that the partial adoption of agility, restricted to limited processes, such as software development projects, is not related to the size of the company.

Data ownership also falls under the organizational pillar. It is part of the larger practice of allocation of roles and responsibilities between the IT departments, business divisions and sometimes even third-party directorates, such as the data department. The last decades have seen various trends in French companies and organizations, often related to choices of centralization or, on the contrary, of decentralization of information systems and associated roles. Five categories were proposed in our research to characterize these organizational choices. The results are remarkably balanced amongst the five options. In 22% of cases, the data belongs to the IT application owner, leading to a decentralization on the business side. The same proportion of respondents consider that the data belongs to the owner of the entity, leading to a certain degree of business centralization. In 20% of cases, it is the Chief Information Officer (CIO) who owns the data. In 20% of cases, the analytics is centralized at the data department level. Finally, for 18% of respondents, centralization is at the level of the business department, which owns the data, while the infrastructure is under the control of the IT Department.

It should be noted that in some companies, the concept of data ownership tends to be marginalized in the sense that the data becomes the property of a duo (business, IT). However, for highly critical data, the business owner must master the entire lifecycle of that data. Data governance must be ensured by both the consumer and the producer, the latter being in charge of gualifying the data. As for external data, it is the person who integrates it into the company's information system who is responsible for its qualification.



Figure 25. Data ownership

As defined by the DAMA-DMBoK framework, data management is the development, implementation and supervision of plans, policies, programs and practices that provide, monitor and improve the value of data and information throughout their life cycle. All of these elements relate to the entire company data, regardless of its level of interest (whether operational, tactical, or strategic). The data for analytics is thus at the forefront.

#### Figure 24. Agility adoption level



- Data is owned by the IT application owner
- Data is owned by the business owner
- Chief Information Officer is the custodian of all enterprise data, including procured data
- Chief Data Officer owns the enterprise data analytics
- Business owns the data and IT owns the data infrastructure



#### Figure 26. Data management

#### Data management Average Median Min Q1 Q3 Max 4.7 5 0 3 7 9

There are many processes involved in data management, quality and governance. Respondents are not satisfied with the levels achieved by these processes. They gave themselves an average rating of 4.7 out of 10 with a median of 5. The respondent, regardless of its role (provision, consumption, governance or quality) is not satisfied with the situation.

What are the essential steps to move toward a digital organization that best harnesses the value of this data for decision-making? Are there any logical steps that an organization follows? TCS answers to this question by defining a path from agility adoption to process automation, through organization-wise analytics implementation via the use of cloud and artificial intelligence.

#### FOUR "TECHNOLOGY" IMPERATIVES THAT MAKE THE TRANSFORMATION OF THE ORGANIZATION POSSIBLE ACCORDING TO TCS

Analytics maturity drives digital maturity and business performance. Organizations need to embrace the 4 "technology" imperatives of agility, automation, artificial intelligence and cloud to drive strategies that lead to exemplary performance.

In accordance with TCS's vision, respondents had to position their organization at one of the three stages of digital transformation. A small majority (51%) consider that only agility is used to improve their business performance. 22% say they use cloud and artificial intelligence to deploy analytics at the global enterprise level and 27% use process automation.



Figure 27. Enterprise transformation tools



Potential growth margins include data, analytics, and algorithms monetization. For most companies, this is a business model change that is yet to be made, unless it is outright unfeasible. Only a quarter of the companies have rated the development of this monetization to more than 4 out of 10. The various interviews conducted have revealed that this concept of monetization can be interpreted in various ways: some restrict this concept to the internal chargeback of data provision services and do not consider selling the corresponding information as such or associated with a product or service. Note that more than half of the participants mentioned monetization of the data that is completely inexistent in their organization.

#### Figure 28. Data monetization

Data, analytics and algorithms monetization



The companies that are most inclined to monetize data are in the information technology and telecommunications and, to a lesser extent, insurance industries. On the other hand, the French central and local government bodies do not practice monetization. The same is true for construction and real estate companies. In contrast, the company-size-wise analysis exhibits no trend.

## Technological pillar

The technical dimension relates to the hardware and software infrastructures used to implement data handling processes through analytics. Respondents could define all the platforms set up for these processes as well as the use of the cloud.

On the subject of platforms, 34% of companies surveyed own a datalake. 51% have set up an enterprise data warehouse. 57% use legacy information systems for analytics as well and 31% have set up an active data warehouse including real-time or assimilated data. Finally, 28% of them have one or more data marts. Of course, some companies are equipped with several of these platforms.

The largest companies (with turnover exceeding €1 billion) are the best equipped in terms of analytics platform. They have set up data lakes, active and non-active enterprise data warehouses. By contrast, the smaller companies (less than €1-million turnover) are less equipped, but still integrate all types of platforms.

#### Figure 29. Platforms



Respondents also identified the use of cloud for data and decision-making processes. A zero rating outlines the option of processing the entire data on site, while a 10 rating denotes the exclusive choice of the cloud to host analytics data and applications. The mean and median are close (4.8 and 5), with the overall result being a wide disparity in these choices. When cross-referencing this choice of cloud with the size of the business, it seems clear that the smallest companies make the most use of the cloud for analytics. The larger the organization, the less cloud-based it is. When analysing the sectors, we found that the new technologies, high-tech and telecommunications use cloud extensively for analytics. In contrast, the government, construction or transport industries does not seem to adopt these solutions.

#### Figure 30. Use of cloud



## Human pillar

Analytics is a set of means made available to the employees of the company. If the platforms are effective, and the organization is adapted, it is left to the users to adopt or not these means for their analysis needs. Without going into the complex issue of resistance to change, there are nonetheless conditions to be met to facilitate this adoption. The analytics maturity of an organization requires that the data, analytics and algorithms sharing be effective for all employees in the organization. This is called democratization.

25% of respondents feel that democratization is not at all in place (below 2 out of 10) while another quarter rated the democratization effort at 7 out of 10.

#### Figure 31. Democratization of analytics





What is not mentioned in the previous question are the reasons that hinder this democratization. Among these, we decided to assess the effort of the organization to define the skill levels needed to access, process and use the data. 43% of respondents reported that no competency level has been defined in this regard. 27% of respondents said there are training programs to fulfil certain data-related roles. For 14% of them, these programs are defined with career paths for all data-related roles. Finally, only 12% have put in place induction programs for all employees across the organization.



## Financial pillar

The last dimension to be taken into consideration in the analysis of the data strategy pillars is the financial dimension that covers three important aspects: i) the financial effort made by the company for the establishment of all human, organizational and technological means, ii) the breakdown of this effort within a budget, iii) the investment planned for the coming years.

The IT budget/turnover ratio is proving to be a very widespread metric for information system management. Almost a third of respondents are not aware of this ratio. 23% of the companies in the sample spend more than 10% on IT and digital transformation, which is not surprising in the world of information services, such as banking and insurance. On the contrary, 17% do not exceed 2%, which is generally the case of manufacturing companies.

#### Figure 33. Share of annual turnover dedicated to IT and digital transformation



#### Figure 34. Annual expenditure on data and analytics (in millions of euros)



40% of companies spend less than €500 K on data and analytics, while 15% spend more than €5 million.

Figure 35. Budget structure



In the previous budget, it is interesting to note that 48% consist of human resources and/or external services. Only 20% relate to hardware-related expenses. Finally, 32% of the budget is dedicated to software.

Companies were asked about the amount of investment foreseen to improve their data and analytics maturity. These investments are characterised according to five dimensions: technology, processes and governance, human resources, security and data. One-fifth does not know what the situation is for 2021 (though this year is well under way at the time of the survey). 10% plan to invest €10 million or more during this year. 16% have no planned investment, which is very surprising. This is the same trend for subsequent years, with an increasing number of respondents not being able to make a forecast.

#### Figure 36. Data & analytics investments in 2021

### What is your projected investment in 2021 (in millions of euros) to become an analytics-driven organization?



What is most surprising is the significant percentage, 16%, of companies who did not plan any investment in 2021. It should be noted that nearly 30% of the companies have planned an investment of more than €1 million.

Services (costs of human resources or external services provided by vendors)

Software

Hardware



### What is your projected investment in 2022 (in millions of euros) to become an analytics-driven organization?



10% of companies have not planned any investment for 2022. However, investments can still be decided upon later this year for 2022. The proportion of companies that plan to invest more than €1 million in 2022 is comparable to that of 2021.

#### Figure 38. Data & analytics investments in 2023

### What is your projected investment in 2023 (in millions of euros) to become an analytics-driven organization?



Not surprisingly, the more we try to extrapolate investments, the less our respondents are able to assess what the amounts will be. For example, 30% of them do not know what the investment level will be in 2023.

#### Figure 39. Data & analytics investments in 2024



Uncertainty about the level of investment for 2024 is, of course, increasing,

Of the five areas in which companies may invest:

- Technology is the most mentioned (by 63% to 70% of respondents), without knowing what the projected budget is.
- Human resources is the least reported (between 42 and 55%).
- Security is mentioned by 48 to 56% of respondents.
- Data is mentioned more and more often from 2021 to 2024.

#### Figure 40. Distribution of Data & analytics investments in 2021

#### Where do you plan to invest in 2021? (multiple choices)







### Where do you plan to invest in 2022? (multiple choices)



#### Figure 43. Distribution of Data & analytics investments in 2024

#### Where do you plan to invest in 2024? (multiple choices)



As per the study, the organizational pillar still needs to be improved, especially by automating the data management and analytics processes and by deploying agility. A variety of solutions is revealed in the technology pillar, reflecting the evolution of business intelligence from traditional information systems to active data warehouses. The use of the cloud is very variable but preferred by small businesses. As underlined by the study, developing skills and implementing training programs improve the democratization of data and analytics. There is room for improvement in this pillar. Finally, significant uncertainties about future financial investments weigh on the financial pillar.

#### Figure 42. Distribution of Data & analytics investments in 2023







### 024 iple choices)



# "WHEN YOU BUILD A DATA PROJECT, YOU NEED TO HAVE THE RIGHT ROADMAP, DEFINE THE GOAL YOU WANT TO ACHIEVE. IDENTIFY THE VALUE FOR THE COMPANY. IT IS THIS PART OF THE BUSINESS SUPPORT THAT IS THE MOST IMPORTANT."

**Romain Nio** Head of Data Center of Excellence Groupe Pernod-Ricard

Pernod-Ricard, world second-largest wine and spirits seller, is a French company with consolidated sales of almost €9 billion in 2020. The Group has more than 240 premium brands distributed in over 160 markets. Romain Nio heads the Data Centre of Excellence. He describes data maturity as the fulfilment of five criteria: i) ability to develop data technology, platforms and products; ii) internal skills to address data challenges; iii) business skills; iv) ability to raise awareness and convince top management, v) ability to share data.

"When you build a data project," Romain Nio added, "you need to have the right roadmap, define the objective you want to achieve, identify the value for the company, it is this part of the business support that is the most important. Over and above that, there is also the sponsorship from the top management. The latter must be familiar with data and be able to support large-scale data projects. This is what we did a year and a half ago: we launched a huge data transformation project in the group. We recruited about a hundred people in a year to do this. It was a complete transformation, consisting of three data programs, with a total budget of around €80 million a year."

"It required a huge investment from top management," Romain Nio added, "and the willingness to step outside the fictitious boundaries of data sensitivity or privacy. Our top management often says that there are no sensitive data in the group and, apart from a few exceptions, we can share everything and that is what will enable us tomorrow to make decisions based on that. Of course, all privacy laws and regulations must be followed, but you must not use these pretexts to continue working in silos. Having the right platforms and a top management that sponsors this openness to data is essential. For example, if I want to analyse the impact of weather on the sales, knowing where the data are could save me precious time. The value adds of the business expert are not in collecting data, but in mixing sources that already exist and to make a business analysis on the data that exists already."

"It was in this context that we launched our 'data portal'." Romain Nio explained, "we are a very "entrepreneurial" company. Although we were told that we should buy an off-the-shelf tool rather than trying to make one, they let us continue with the R&D and develop this data portal. Currently, it is used by about 3,000 employees per month who consume the 800 data sources available. So, we 'broke' the silo architecture, where 10 different tools were used in 80 different markets! Each source has a technical owner and a business owner. The source is briefly described: category, country, subsidiary, etc. The purpose of this portal is to abstract all the technical complexity of our services, data lakes, etc. In a matter of seconds, a person can access the data through a very simple and invisible permission system. The portal abstracts the technical complexity and merges all these services into one. We have worked with UX and UI, so we have portal that is both user-friendly and good-looking. We have a beautiful image, we worked on the navigation path. At first, it was a bit of a chicken-and-egg situation, we had this portal which was nice but rather empty. We managed to convince several data teams to host their project data on this platform. Eventually, we had one or two major projects that were hosted on the data portal. Now quite often, business teams ask data project owners to host their data on the portal."

"This data platform is a bit like master data management projects, it is difficult to show the direct return on investment and, in this way, difficult to obtain the sponsorship and the budgets for development. It's so much easier to launch your project in a silo, with a sponsorship, budget, schedule, process," Romain Nio added. "But then it becomes very difficult to scale up. Getting cross-functional budgets for foundations that feed other projects is much more complicated. Our team supports and accelerates all data projects."

Romain Nio focusses on the near future: "Our ambition now is to partner with different companies but with complementary skills to share financial efforts, leverage their skills and improve our image internally. Several successful Proof-of-Concepts have already been executed in other companies. In the long run, we will share not only a technical platform but also data among partners."

Romain Nio added: "Another way forward would be to integrate 'open data' into the portal, which is easily accessible to provide it to our teams. This free, available and updated data source is kind of the sinews of war."

"My team is composed of technical experts," he added "but we know how to explain what we do. We know how to showcase the value. We are also able to leave a cloud that is too technical, ranked number one for its technology, to move to a cloud that meets 100% of our needs but is a little less mature."

On the subject of skills, "Recruitment comes first before skills," he said. "We recruited fifty people to work on data. This was the real key to unlocking the situation. We've managed to find good data scientist profiles. For data steward, it is more complicated. As a result, our definition of data steward is not yet effective. We also have difficulty recruiting expert profiles to develop our data platforms. Finally, it's also difficult to recruit data architects who would really have an overall vision to articulate all the bricks together."

"The automation of data processes is well underway: we have 150 pipelines in production. We've moved out of POC mode by industrializing many processes. My advice for other companies is to get strong sponsorship from top management so that they can recruit competent teams to manage these subjects. Once you have the team, it's easier. The other important issue is change management: data is a real disruption. The business has to understand what it means to be data-driven. How are we going to use this data? What impact will it have on the business? That's 70% of the job," Romain Nio concluded.







# AREAS FOR **IMPROVEMENT**

The surveyed companies consider data and analytics as a business capability. The development of a data and analytics strategy brings added value, thus providing a competitive edge. The survey achieved many positive results and revealed the ability of our respondents to devise ways to improve their data and analytics maturity (Figure 44). The three most popular measures are, in order:

- Improve data literacy, cited by 68 respondents (across all organization sizes),
- Develop a global strategy and roadmap for data and analytics, favoured by 64 respondents (irrespective of the size of the company),
- Instil data culture (60 respondents across all organization sizes).

Increased funding, regulatory and ethical concerns are a distant second. By grouping the various measures based on proximity, four key areas for improvement have been identified. The first area concerns top management, which must capitalize on this performance lever if it is has not already been done (on average, each item in this area was selected by 39 respondents). The second aspect relates to the human and cultural dimension of analytics (on average, each item was selected by 40 respondents). The third area is much more dedicated to the financial and organizational investment in innovation through analytics (on average, 38 respondents). Finally, the fourth area reflects the monetization aspect of data and analytics (average of 22). This fourth area is therefore way behind the others in the progress recommendations issued by our respondents.

It should be underlined that data monetization can be achieved by means of an internal chargeback.

Finally, it is worth noting that none of the items is exclusive to any company category (emerging, datadriven, data-centric or performance-driven).

It is interesting to note that the six actions given below are especially recommended by our respondents with a minimal maturity (siloed or simplified):

- Include the subject of analytics in the Board's agenda,
- Gain buy-in and leadership to drive data programs from the top management,
- Focus on developing digital and analytical skills,
- Enhance change management skills,
- Establish robust processes and governance,
- Increase financial resources.

These recommendations are less common in more mature companies, not because they are less relevant but because they have already been implemented. This is why, the advice to be given to less advanced organizations is summarized mainly in the three most popular measures already mentioned above.

#### Figure 44. Actions to be implemented

#### SPONSORED BY THE BOARD

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Develop a global strategy a	nd roadmap for analytics across the organisation
	Take a holistic approach to data management
Inclu	de the subject of analytics in the Board's agenda
Gain buy-in and leadership to	o drive data programs from the top management
A-DRIVEN CULTURE	Instil data culture and mindset
	Focus on developing digital and analytical skills
	Improve data literacy
	Enhance change management skills
	Improve internal communication
	Improve compliance with regulatory constraints
	Address ethical concerns

Promote innovation and transformation Establish robust processes and governance Increase financial resource

Leverage the external ecosystem

#### DATA MONETIZATION

**NVESTMENT IN ANALYTICS** 

Leverage universal data (external data from the political, economic world,etc.) Implement data monetisation Adopt free trade in the data market

The much-hailed data literacy is not just about enhancing the general data skill level. Business teams must be free from data quality concerns so that they can do their jobs in the best possible way. However, in order to provide them with the guality data they need, the data guality improvement team need to better understand the needs of the business teams.

Data management is a continuous improvement process. In order to make progress in the long run, companies must adopt data management by design, which requires that all project initiators ensure that their project complies with the data governance policy.

With respect to the development of a global roadmap, it is advisable to start with an area where people already know how to manage data. This is the value of the example.



A comparison with the results derived from

- the Dutch survey shows similarities:
- Developing a comprehensive strategy and roadmap for analytics across the organization is favoured in both cases, emerging as the second most important improvement action.
- Creating a data-driven mindset and culture is in the top three actions in both France and the Netherlands.
- Finally, adoption of free trade in the data market was the least mentioned in both surveys. It seems that this free trade is not seen as a component of progress.

However, this comparison reveals some notable differences:

- Improving the internal data skill level was the primary measure according to the respondents in France, whereas it is only in sixth place in the Netherlands.
- Data monetization, still taboo in France, fared better in the Netherlands.
- Regulatory constraints and ethical concerns are more often mentioned in France than in the Netherlands.

These differences do not necessarily reflect a different culture or economy but may be the result of a rapid



# CONCLUSION

Data, artificial intelligence, analytics, machine learning, management indicators, there's no end of words to describe the abundance of ideas, studies and opportunities for companies and organizations. Without seeking to classify the solutions, concepts or priorities, this report has attempted to look at the data maturity level of French companies for better decision-making purposes.

In this survey conducted with 105 French companies of all sizes and industries, several salient results stand out. More than half of the companies feel they are unable to share or can only partially share the data of their various entities for analysis purposes. This is not fundamentally different from surveys conducted in other countries.

What interests us most is how this maturity boost the performance of organizations, and particularly their ability to adapt to their context, be it opportunities or risks. Companies are evenly distributed between mediocre, average, good, or very good performances on the four dimensions (product and service customisation, business model adaptation, wider ecosystem leveraging, risk acceptance).

By comparing the companies' performance with the average performance of the sample and by relating their data and analytics maturity to the average of companies in their sector, four categories of companies were identified: 42 emerging companies or organizations have achieved neither the average maturity of their industry nor the average performance. 11 data-driven organizations have an above-average maturity, but their performance was disappointing. 33 data-centric companies combine above-average performance with better-than-industry data and analytics maturity. Finally, 19 companies have

an above-average performance without their data and analytics maturity placing them positively in their industry. On the other hand, the performance of companies is an increasing function of their data and analytics maturity. This result, if confirmed, is likely to prove the good use of companies' investment in this area. It is one of the key elements in determining a strategy to achieve better performance. As the study shows, investment is not meant to be understood just in financial terms, but also in human, organizational and technological terms.

These success factors involve many aspects. On the organizational level, adopting agility, automating processes, improving data management and governance are just a few of the steps to be taken. With regard to technology, however, there are no noteworthy conclusions at this stage. On the human level, there is clear room for improvement: defining appropriate skill levels and setting up training programs to achieve them are actions that many organizations have not yet undertaken. This progress requires investments to be reflected in budgets in the years to come.

In the recommendations made by the respondents, it is the acculturation dimension that stands out the most, both in terms of skills and mindset. But this culture must also be the culture of the board, which is responsible for deciding on a global roadmap for the organization's rise in data and analytical maturity.

Beyond the data and analytics maturity and the resulting performance, data value is an additional study approach that should bring a richer understanding of the perspectives offered.





# **APPENDICES**

## Description of the sample

105 French companies and organizations responded to our survey conducted in September 2021.

The majority of respondents belong to the IT Department. 24% can be described as being part of a digital, data or analytical entity.

### Respondent's role in the organization



61% of respondents are senior executives, directors or vice-presidents. 26% are managers or senior managers.



**Industries** 



All industries are represented, with the IT sector in first place, which manages data for itself or for its clients. The French central and local government bodies is very well represented in the sample (13%).

### Annual turnover or budget (in millions of euros) of the organisation



The size of the company is defined by its turnover (or its budget for government bodies). 24% are structures with a budget below €10 million. 32%, on the other hand, have a budget exceeding €1 billion.





# EDITORIAL TEAM





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