



THE EUROPEAN DATA MARKET STUDY 2024-2026

CNECT/LUX/2023/OP/0043

D2.1 FIRST REPORT ON FACTS AND FIGURES

March, 2025

Author(s)	IDC: Carla La Croce; Giorgio Micheletti; Nevena Raczko, Leonardo Freitas, Vanda Soeiro Lisbon Council: Cristina Moise; David Osimo; Tran Minh Carsa: Marco Graziadio; Pär Weström
Deliverable	D2.1 First Report on Facts and Figures
Date of delivery	19.12.2024
Version	1.0
Addressee officer	Katalin IMREI Policy Officer European Commission, DG CONNECT Unit G1 — Data Policy and Innovation MERP 04/B002, L-2920 Luxembourg katalin.imrei@ec.europa.eu
Contract ref.	LC-02498443

1 Contents

TABLE OF TABLES	6
TABLE OF FIGURES	9
ESSENTIAL GLOSSARY – THE KEY INDICATORS	11
1 EXECUTIVE SUMMARY.....	13
1.1 A NOVEL METHODOLOGICAL APPROACH.....	14
1.2 THE DATA ECONOMY AS A CATALYST TO THE EU SINGLE MARKET AND EU COMPETITIVENESS	15
1.3 MEASURING DATA PROFESSIONALS	16
1.4 MEASURING DATA COMPANIES	17
1.5 MEASURING DATA COMPANIES' REVENUES.....	18
1.6 MEASURING THE DATA MARKET	19
1.7 MEASURING THE DATA ECONOMY.....	21
1.8 MEASURING THE DATA PROFESSIONALS SKILLS GAP.....	25
1.9 MEASURING DATA FLOWS	27
1.10 MEASURING DATA MATURITY	29
1.11 THE DATA ECONOMY BEYOND THE EU – THE INTERNATIONAL DIMENSION	30
2 INTRODUCTION	33
2.1 OBJECTIVES.....	34
2.2 OVERVIEW OF INDICATORS.....	35
2.3 STRUCTURE OF THE REPORT	42
3 EUROPEAN DATA MARKET MONITORING TOOL: 2024–2026.....	44
3.1 A NOVEL METHODOLOGICAL APPROACH	44
3.2 FORECAST SCENARIOS METHODOLOGY.....	49
3.3 THE DATA MARKET AND THE DATA ECONOMY AS CATALYSTS OF THE SINGLE MARKET AND EUROPE'S COMPETITIVENESS	58
4 DATA PROFESSIONALS.....	61
4.1 DEFINITION	61
4.2 MEASURING DATA PROFESSIONALS	61
4.3 DATA PROFESSIONALS FORECASTS 2025 AND 2030.....	70
4.4 KEY FINDINGS.....	74
5 DATA COMPANIES	76
5.1 DEFINITION	76
5.2 MEASURING DATA COMPANIES	76
5.3 MEASURING DATA SUPPLIER COMPANIES	77
5.4 MEASURING DATA USER COMPANIES	82
5.5 FORECASTING DATA COMPANIES.....	88
5.6 KEY FINDINGS.....	99
6 DATA COMPANIES' REVENUES	101
6.1 DEFINITION	101
6.2 MEASURING DATA COMPANIES' REVENUES	101
6.3 DATA COMPANIES' REVENUES BY COUNTRY	102
6.4 SHARES OF ALL COMPANIES' REVENUES BY COUNTRY	104
6.5 DATA COMPANIES' REVENUES BY COMPANY SIZE	105
6.6 DATA COMPANIES REVENUE FORECAST	106
6.7 KEY FINDINGS.....	110
7 THE DATA MARKET	112
7.1 DEFINITION	112

7.2	MEASURING THE DATA MARKET	112
7.3	MEASURING THE VALUE OF DATA	113
7.4	DATA MARKET BY COUNTRY.....	115
7.5	DATA MARKET BY INDUSTRY	117
7.6	DATA MONETISATION	119
7.7	FORECASTING THE DATA MARKET	124
7.8	KEY FINDINGS.....	130
8	THE DATA ECONOMY.....	131
8.1	MEASURING THE DATA ECONOMY: DEFINITIONS.....	131
8.2	MEASURING THE DATA ECONOMY.....	133
8.3	FORECASTING THE DATA ECONOMY IN 2030.....	137
8.4	DATA ECONOMY BY INDUSTRY	141
8.5	DATA ECONOMY BY COUNTRY	142
8.6	KEY FINDINGS.....	144
9	DATA PROFESSIONALS SKILLS GAP	146
9.1	DEFINITIONS	146
9.2	MEASURING THE DATA PROFESSIONALS SKILLS GAP.....	146
9.3	DATA PROFESSIONALS SKILLS GAP	149
9.4	KEY FINDINGS.....	154
10	DATA FLOWS	156
10.1	DEFINITION AND SCOPE	156
10.2	MEASURING DATA FLOWS	157
10.3	DATA FLOWS BY COUNTRY.....	158
10.4	FORECASTING THE DATA FLOWS IN 2025, 2030 SCENARIOS.....	160
10.5	KEY FINDINGS.....	162
11	DATA MATURITY	163
11.1	DEFINITION AND SCOPE	163
11.2	DATA SOURCES AND METHODOLOGY.....	163
11.3	DATA MATURITY BY COUNTRY.....	165
11.4	DATA MATURITY BY INDUSTRY.....	168
11.5	KEY FINDINGS.....	170
12	THE INTERNATIONAL DIMENSION OF THE DATA ECONOMY.....	171
12.1	MEASURING THE DATA ECONOMY BEYOND THE EU.....	171
12.2	THE US	172
12.3	CHINA.....	175
12.4	BRAZIL	178
12.5	JAPAN	181
12.6	ISRAEL.....	184
12.7	COMPARING THE INTERNATIONALS TO THE EU27	187
12.8	KEY FINDINGS.....	197
13	CONCLUSIONS	199
13.1	DATA PROFESSIONALS.....	202
13.2	DATA COMPANIES.....	204
13.3	DATA SUPPLIER COMPANIES.....	205
13.4	DATA MARKET VALUE.....	206
13.5	DATA ECONOMY	207
13.6	DATA SKILLS GAP	208
13.7	DATA FLOWS.....	209
13.8	DATA MATURITY.....	211
13.9	DATA ECONOMY BEYOND THE EU: THE US, BRAZIL, JAPAN, CHINA AND ISRAEL.....	211

14	METHODOLOGICAL ANNEX	213
14.1	OVERVIEW	213
14.2	MEASURING DATA PROFESSIONALS	217
14.3	MEASURING DATA COMPANIES	220
14.4	MEASURING THE REVENUES OF DATA COMPANIES	222
14.5	MEASURING THE DATA MARKET	223
14.6	MEASURING THE DATA ECONOMY.....	224
14.7	MEASURING DATA PROFESSIONALS SKILLS GAP	232
14.8	MEASURING DATA FLOWS	234
14.9	MEASURING DATA MATURITY	236
15	ANNEX II- SURVEY	238

Table of Tables

Table 1 Data Professionals Forecast: 2025; 2030 Challenge, Baseline, and High Growth Scenarios (000's); and CAGRs (%).....	17
Table 2 Data Supplier Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%).....	18
Table 3 Data User Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%).....	18
Table 4 Data Companies Revenues Forecasts: 2025 (€M), Three 2030 Scenarios (€M), and Compound Growth (%).....	19
Table 5 Value and Growth of the Data Market: 2023-2024, 2025 Forecast Revenue (€ M) and 2024-2023 growth (%).....	20
Table 6 Data Market Monetization for the Member States 2023-2024, 2025 forecast (€ M) and 2024-2023 growth (%).....	20
Table 7 - Data Market Forecast: 2025 (€ '000s), Three 2030 Scenarios (€ '000s), and Compound Growth (%).....	21
Table 8 Data Economy, 2023–2025: Value (€M), Growth (%), and Impact on GDP (%).....	22
Table 9 Data Economy Value (€M); 2030 Challenge, Baseline, and High Growth Scenarios (€M); and Impact on GDP (%).....	24
Table 10 The Data Professionals Skills Demand and Gap for the EU by Member State: 2023, 2024 and 2025, and Three 2030 Scenarios (Thousands).....	26
Table 11 Data Flow by Member Stat: 2025 (PB/Year), Three 2030 Scenarios (PB/Year), and Compound Growth (%).....	28
Table 12 EU27 indicators 2023-2024 Overview.....	32
Table 13 D2. First Report on Facts and Figures – Full Set of Indicators.....	36
Table 14 Macroeconomic Data Forecast for Scenarios.....	52
Table 15 Macroeconomic Variables.....	52
Table 16 List of new EU legislative initiatives.....	55
Table 17 Data Professionals data sources.....	62
Table 18. Data Professionals – Summary Statistics, 2023–2024, 2025 Forecast, 2024-2023 Growth.....	62
Table 19 - Data Professionals by Country 2023, 2024, 2025 forecast, 2024-2023 growth.....	64
Table 20 - Data Professionals by industry 2023-2024, 2025 Forecast, growth 2024-2023.....	70
Table 21 - Data Professionals summary forecast, 2025, 2030 three scenarios (000's) and CAGR's (%).....	70
Table 22 - Data Professionals Forecast by country, 2025 and 2030 three scenarios (000's) and CAGR's (%).....	72
Table 23 - Indicator 2: Data Companies 2023-2024, 2025 forecast and 2024-2023 growth.....	77
Table 24 – Data Supplier Companies by country 2023-2024, 2025 forecast, and 2024-2023 growth.....	78
Table 25 - Data Supplier Companies by industry 2023-2024, 2025 Forecast and 2024-2023 growth.....	80
Table 26 - Data Supplier Companies 2023-2024, 2025 forecast and 2024-2023 growth.....	81
Table 27 - Data User Companies 2023-2024, 2025 forecast and 2024-2023 growth.....	83
Table 28 - Data User Companies by industry 2023-2024, 2025 forecast and 2024-2023 growth.....	86
Table 29 Data Supplier Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%).....	88
Table 30 - Data Supplier Companies forecast by country 2025 forecast and three scenarios 2030.....	90
Table 31 - Data Supplier Companies forecast by Industry 2025 forecast, and 2030 three scenarios.....	91
Table 32 - Data Supplier Companies forecast by company size band 2025 forecast and 2030 three scenarios.....	93
Table 33 - Data User Companies Forecast 2025 and 2030 three scenarios.....	94
Table 34 - Data User Companies by country 2025 forecast and 2030 three scenarios.....	95
Table 35 - Data User Companies by industry 2025 forecast and 2030 three scenarios.....	97
Table 36 - Data User Companies by Company Size Band 2025 forecast and 2030 three scenarios.....	98
Table 37. Main Data Sources for Data Companies' Revenues.....	101

Table 38 - Data Companies' Revenues (€M) and share (%) 2023-2024, 2025 forecast, 2024-2023 growth rate.....	101
Table 39 - Data Companies' Revenues (€M) by Country 2023-2024,2025 Forecast and 2024-2023 growth (%)......	103
Table 40 - Data Companies' Revenues (€M) by Company Size Band 2023-2024, 2025 Forecast and growth 2024-2023.....	105
Table 41 - Data Companies' Revenue Forecast 2025 and 2030 three scenarios (€M) and CAGR (%)	106
Table 42 - Data Companies Revenues forecast 2025 and 2030 three scenarios (€M) and CAGR (%)	108
Table 43 - Data Companies' Revenues, forecast by company size 2025 and 2030 three scenarios (000's) and CAGR (%).....	109
Table 44 - The Data Market - Main data sources.....	112
Table 45 - Value and Growth of the Data Market: 2023-2024, 2025 Forecast, Revenue (€ M) and 2024-2023 growth (%)......	113
Table 46 - Data Market Monetization for the Member States2023-2024, 2025 forecast (€ M) and 2024-2025 growth (%)......	115
Table 47 - European Data Market by Country 2023-2024, 2025 Forecast Revenue (€ M) and 2024-2023 growth (%)......	116
Table 48 - Data Market by Industry 2023-2024, 2025 Forecast and 2024-2023 growth (%)	118
Table 49 – Data Monetization by country 2023-2024, 2025 Forecast and 2024-2023 growth (%) ...	122
Table 50 – Data Market Forecast 2025, 2030 three scenarios (€M) and compound growth (%)	124
Table 51 – European Data Market forecast by country 2025 forecast, 2030 three scenarios and compound growth (%)	126
Table 52 – European Data Market by Industry 2025 forecast, 2030 three scenarios (€M) and CAGR (%)	128
Table 53. Data Economy Value and Growth, 2023-2025 and Impacts on GDP 2023-2025 (€, Million; %)	136
Table 54 Data Economy Value (€M); 2030 Challenge, Baseline, and High Growth Scenarios (€M); and Impact on GDP (%)	140
Table 55 Data Economy by Industry, 2023, 2024, 2025, Value (€M) and Distribution (%)	141
Table 56 Indicator 6 – Data Skills Gap.....	146
Table 57 The Data Professionals Skills Demand and Gap for the EU by Member State: 2023, 2024 and 2025 (forecast), and Three 2030 forecasting Scenarios (Thousands)	151
Table 58 The Data Professionals Skills Demand and Gap for the non-Member States(UK, Switzerland and the rest of EEA): 2023, 2024 and 2025, and Three 2030 Scenarios (Thousands).....	152
Table 59 Indicator 7 - volume of data flows	156
Table 60 Data Flows data sources.....	157
Table 61 Volume of Data Flows by MS 2023-2024, 2025 Forecast, 2024-2023 Growth.....	159
Table 62 Data Flow By MS Forecast 2025 and 2030 Scenarios	161
Table 63 Indicator 8 - Data Maturity.....	163
Table 64 Data Maturity Levels	164
Table 65 Data Maturity Weights.....	164
Table 66 Data Maturity data sources.....	165
Table 67 Data Maturity of data companies by MS 2023-2025	166
Table 68. Internationals – Main Data Sources.....	172
Table 69 - US Indicators 2023-2024 Overview.....	174
Table 70 - China indicators 2023-2024 Overview	176
Table 71 - Brazil Indicators 2023-2024 Overview	179
Table 72 - Japan Indicators 2023-2024 overview	182
Table 73 Israel Indicators 2023-2024 overview	185
Table 74 - EU27 indicators 2023-2024 Overview.....	188
Table 75 - Internationals: number of Data Professionals 2023-2024.....	190

Table 76 – Internationals: Data Professionals - share of Total employment 2023-2024	191
Table 77 - Internationals: Number of Data Supplier Companies 2023-2024, growth 2024-2023 (%).....	193
Table 78 - Internationals: value of the data market 2023-2024 and growth 2024-2023 (%).....	194
Table 79 - Internationals: Data economy - economic Impact (direct and backwards impacts) 2023-2024, growth 2023-2024 (%)	195
Table 80 - Internationals: Impact of the data economy on GDP 2024-2023 (Direct and indirect impacts)	196
Table 81 Indicator 1 – Data Professionals.....	218
Table 82 ISCO-08 Structure and Data Professionals	219
Table 83 Indicator 2.1: Number of data supplier companies	221
Table 84 Indicator 3: Revenues of data companies.....	222
Table 85 Data sources for Indicator 3 – Data Companies’ Revenues	223
Table 86 Indicator 4: Data Market Value	223
Table 87 Data sources for the Data Market indicator	224
Table 88 Indicator Data Economy	226
Table 89 Indicator 6- Data skills gap	232
Table 90 Indicator 7 - volume of data flows	235
Table 91 Data Flows data sources.....	235
Table 92 Indicator 8 - Data Maturity.....	236
Table 93 - Data Maturity data sources.....	237
Table 94 Survey features	239
Table 95 Sample Quotas Table	240
Table 96 Margin of Error by Country.	241
Table 97 Draft questionnaire (main sections).....	242

Table of Figures

Figure 1 EDM Indicators overview	13
Figure 2 EDM International Indicators Overview	14
Figure 3 Data Monetisation share of the European Data Market 2013-2030 (Three Scenarios) (%)... 21	
Figure 4 Data Economy by Impact Type, EU27 and EU27+UK, 2030 (%)..... 23	
Figure 5 The Data Professionals Skills Gap for the EU27:2023, 2024, 2025 forecast and the Baseline 2030 Scenarios ('000s)	26
Figure 6 The Data Professionals Skills Gap for the EU27: 2023, 2024, 2025 forecast and the Challenge 2030 Scenarios ('000s)	27
Figure 7 The Data Professionals Skills Gap for the EU27: 2023, 2024, 2025 forecast and the High Growth 2030 Scenarios ('000s)	27
Figure 8 Data Maturity by Member State, 2024	30
Figure 9 EDM Main Objectives.....	34
Figure 10 A Complex Methodology	46
Figure 11 Data Market Monitoring Tool	47
Figure 12 Scenarios Methodology Approach.....	50
Figure 13 Scenarios Group of Factors	51
Figure 14 IDC's EMEA Digital Regulations and Policies Radar, 2024	54
Figure 15 IT Predictions Global Mega Trends	56
Figure 16 Baseline Scenario Overview	57
Figure 17 High Growth Scenario Overview	58
Figure 18 Challenge Scenario Overview.....	58
Figure 19 Data Professionals by country 2024 and 2024-2023 growth.....	66
Figure 20 Data Professionals - share of employment by country 2024.....	67
Figure 21 - Average number of data professionals per user company by country 2023-2024	68
Figure 22 - Data Professionals by Industry 2024 and 2024-2023 growth EU27	69
Figure 23 Data Professionals by country 2025 forecast, 2030 three scenarios (000's).....	71
Figure 24 - Data Professionals forecast by Industry 2025 Forecast, 2030 three scenarios (000's)	73
Figure 25 – Data Supplier Companies by Country 2024, 2024-2023 growth	79
Figure 26 - Data Supplier companies by Industry 2024 and 2024-2023 growth	80
Figure 27 - Data Supplier companies share by industry 2024	81
Figure 28 - Data Supplier Companies by company size band 2023-2024.....	82
Figure 29 - Data User Companies by Country 2024 and growth 2024-2023	84
Figure 30 - Data User Companies' share of all companies by country 2024	85
Figure 31 - Data User Companies by Industry 2024, and growth 2024-2023.....	86
Figure 32 - Data user Companies share of total by Industry 2024	87
Figure 33 - Data User Companies by size band 2023-2024	87
Figure 34 - Data Supplier Companies Forecast 2025, and 2030, three scenarios.	92
Figure 35 - Data Supplier Companies Forecast by company size band 2025 forecast and 2030 three scenarios	93
Figure 36 - Data User Companies forecast by country, 2025, and 2030 three scenarios.....	96
Figure 37 - Data User Companies by Industry share of total: 2025, 2030 three scenarios	97
Figure 38 - Data User Companies forecast by Company Size Band 2025 Forecast, and 2030 three scenarios.	98
Figure 39 - Data revenues by Country 2023-2024, growth 2024-2023	104
Figure 40 - Data Companies' Revenue Share 2024 - All Companies A, C, E, G, H, J, K, M, N, P, Q.....	105
Figure 41 - Data Companies' Revenues by Company Size Band 2023-2024, 2025 Forecast	106
Figure 42 - Data Companies Revenue Forecast by Country 2025, 2030 three scenarios	109
Figure 43 - Data Companies Revenue Forecast by Size Band 2025 and 2030 - three scenarios	110
Figure 44 - European Data Market 2024 Revenue (€M) and 2024-2023 growth (%).....	117

Figure 45 - Data Market by Industry 2023-2024 and 2024-2023 Growth (%)	119
Figure 46 - Industry share of total growth 2023-2024 (%)	119
Figure 47 – Data Monetisation share of the European Data Market 2013-2030 (Three Scenarios) (%)	121
Figure 48 – Data Monetisation by Country 2024 (€M)	123
Figure 49 – Data Monetization by Industry 2023-2024 (€ M)	124
Figure 50 – European Data Market Forecast by Country 2025, 2030 three scenarios (€M)	127
Figure 51 – Contribution to overall growth by Country 2025-2030 – top 10 contributors	127
Figure 52 – European Data Market Forecast by Industry 2025 forecast, 2030 three scenarios (€M)	128
Figure 53 – Data Market Share of Total ICT Spending by Country 2023-2025 (%)	129
Figure 54 – Industry Contribution to overall growth 2025-2030 (%)	129
Figure 55 Relationship of Data Market, Data Revenues, Data Economy.....	132
Figure 56 Data Economy by Impact Type: EU27 + the UK, 2023 and 2024 (%)	137
Figure 57 Data Economy by Impact Type: EU27 and EU27 + the UK, 2030 (%).....	138
Figure 58 The Data Skills Demand-Supply Balance Model	148
Figure 59 Data Professionals Skills Gap for the EU by Member State: 2023, 2024, 2025 Forecasting, and 2030 Baseline Scenario	149
Figure 60 Data Professionals Skills Gap for the EU by Member State:2023, 2024, 2025 Forecasting, and 2030 Challenge Scenario.....	150
Figure 61 Data Professionals Skills Gap for the EU by Member State: 2023, 2024, 2025 Forecasting, and 2030 High Growth Scenario (%).....	150
Figure 62 Data Flows by Country 2024 (PetaBytes), 2024-2023 growth (%).....	160
Figure 63 Data Maturity by Member State 2024.....	167
Figure 64 Data Maturity by Selected Industries 2024	169
Figure 65 - US Annual Growth Rates 2024 - Key Metrics.....	174
Figure 66- Peoples Republic of China Annual Growth Rates 2024 - Key Metrics	176
Figure 67- Brazil Annual Growth Rates 2024 - Key Metrics	180
Figure 68- Japan Annual Growth Rates 2023 - Key Metrics.....	183
Figure 69 Israel Annual Growth Rates 2024 - Key Metrics	186
Figure 70- EU27 Annual Growth Rates 2024 - Key Metrics	188
Figure 71 - Internationals: Number of Data Professionals 2023-2024	190
Figure 72 - Internationals: Number of Data Supplier Companies 2023-2024	193
Figure 73 - Internationals Data Market Value 2023-2024 (€M)	194
Figure 74 - Internationals - Economic Impacts 2023-2024	196
Figure 75 - Internationals - Impact of the Data Economy (direct impacts only) on GDP 2023-2024 and 2023-2024 Growth (%).....	197
Figure 76 The data industry technology stack by type of stakeholder	220
Figure 77 The Data Economy: direct, indirect and induced impacts	225
Figure 78 The Data Skills Demand-Supply Balance Model	234
Figure 79 IDC End-User survey Quality Management Process	246

ESSENTIAL GLOSSARY – THE KEY INDICATORS

Data professionals¹ are workers who collect, store, manage, and/or analyse, interpret, and visualise data as their primary activity or as a relevant part of their activity. Data professionals must be proficient with the use of structured and unstructured data, should be able to work with a huge amount of data, and should be familiar with emerging database technologies. As of the 2021–2023 edition of the European Data Market study, the definition of data professionals was refined to differentiate the roles played by different data users: These are Data Technical Professionals, Data Business Professionals, and Data Consumers.

Data technical professionals are specialists in the collection, storage, management, modelling, and quality assurance of data, as well as the integration of various data sources, to ensure consistency, accuracy, and quality of data. A data technical professional can, given the question that needs to be answered, ensure that the data supply chain is provided and that it is accurate.

Data business professionals have as a primary or significant focus the task of performing predictive analysis, qualitative analysis, data modelling, data extraction, and data summaries with the purpose of creating new insights and knowledge from available data. They have thorough industry and/or process understanding and can put data analysis into context and relate to existing trends within the industry or line of business they are in. They typically leave collection, management, and quality of data to the data technical professional but, using analysis tools such as Excel, Tableau, and Power BI, are able to summarise large amounts of data and to visualise and present trends and insights to a wider audience of key stakeholders in the business in order to drive the strategic decision-making process in the organisation. Data scientists predominantly reside within the data business professional group.

Data consumers are product, process, human-resource, asset, or department employees and managers responsible for driving change or maintaining a position whereby decision making is heavily reliant on the supply of data and insights based on large amounts of data. They work directly with data only part of the time. They are decision makers or stakeholders in a decision process whereby the data and insights provided determine the quality of the decisions made. A data consumer guides the business based on the data and insights provided through the data supply chain.

Data companies are organisations that are directly involved in the production, delivery, and/or usage of data in the form of digital products, services, and technologies. They can be both data suppliers' and data users' organisations:

¹ The European Data Market Study (SMART 2013/0063) included an indicator measuring "Data Workers", which was based on a similar, but slightly more restrictive, definition. In the subsequent European Data Market Study Update (SMART2016/0063) we measured "Data Professionals" – that is, workers with a wider range of data-related roles. In this context, data professionals are not only data technicians, but also users who, based on sophisticated tools, take decisions about their business or activities after having analysed and interpreted the available data.

Data suppliers have as their main activity the production and delivery of digital data-related products, services, and technologies. They represent the supply side of the data market.

Data users are organisations that generate, exploit, collect, and analyse digital data intensively and use what they learn to improve the business. They represent the demand side of the data market.

Data companies' revenues correspond to the aggregated value of all the data-related products and services generated by Europe-based data suppliers, including exports outside the EU. This indicator measures the revenues of the data suppliers identified and classified by Indicator 2 (see the products and services specified in our definition of the data market). Data companies' revenues do not include data monetisation as part of the data market.

The **data market** is the marketplace where digital data is exchanged as “products” or “services” as a result of the elaboration of raw data. The data market captures the aggregate value of the demand of digital data without measuring the direct, indirect, or induced impacts of data in the economy as a whole. The value of the data market is not exactly equal to the aggregated revenues of European data companies because it includes imports (data products and services bought on the global digital market from suppliers not based in Europe) and excludes the exports of the European data companies. In this report, we add an estimate for the value of data monetisation to the data market indicator.

The **data economy** measures the overall impacts of the data market on the economy as a whole. It involves the generation, collection, storage, processing, distribution, analysis, elaboration, delivery, and exploitation of data enabled by digital technologies. The data economy captures a wider concept than the data market only, as it considers the value and wealth generated in the economy as a whole (not just across businesses) by the exploitation of data.

1 EXECUTIVE SUMMARY

This First Report on Facts & Figures (Deliverable D2.1 of the European Data Market Study 2024-2026) presents the results obtained through the first round of measurements of the European Data Market Monitoring Tool for the 2024 period, with a general forecast for 2025 and scenario-based forecasts for 2030 under three distinct scenarios. The tool was designed and developed under the previous European Data Market Study (SMART 2013/0063) and subsequently revised and extended in the Updates of the European Data Market Study (SMART 2016/0063 and SMART VIGIE 2020-0655).

This document focuses on the following set of indicators:

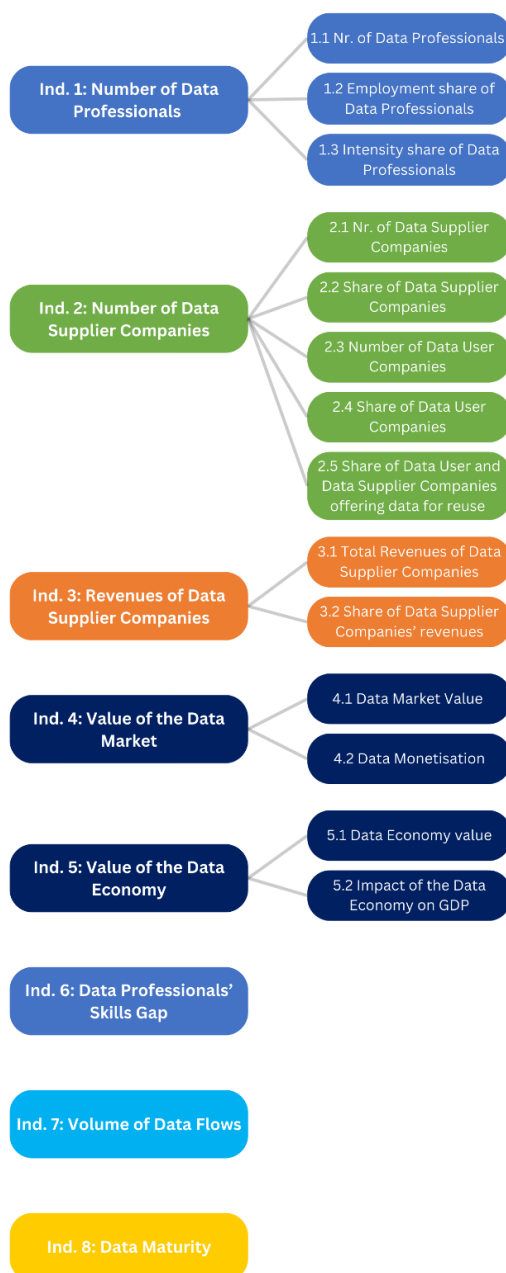


Figure 1 EDM Indicators overview

In line with the previous rounds of measurement, each indicator presents values at the level of the total EU and for each individual Member State, when available and applicable. When possible, industry-specific and company-size views are also offered with indicators provided by industry sector and company size bands.

The UK and Switzerland were measured separately, as was the rest of the EEA² (Norway, Iceland, and Lichtenstein) in an aggregated way.

This report embraces the Data Economy beyond the European Union and includes a specific section on five non-European countries, namely the United States, the People's Republic of China, Brazil, Japan and Israel. For each of these countries, this report presents the following selected indicators:

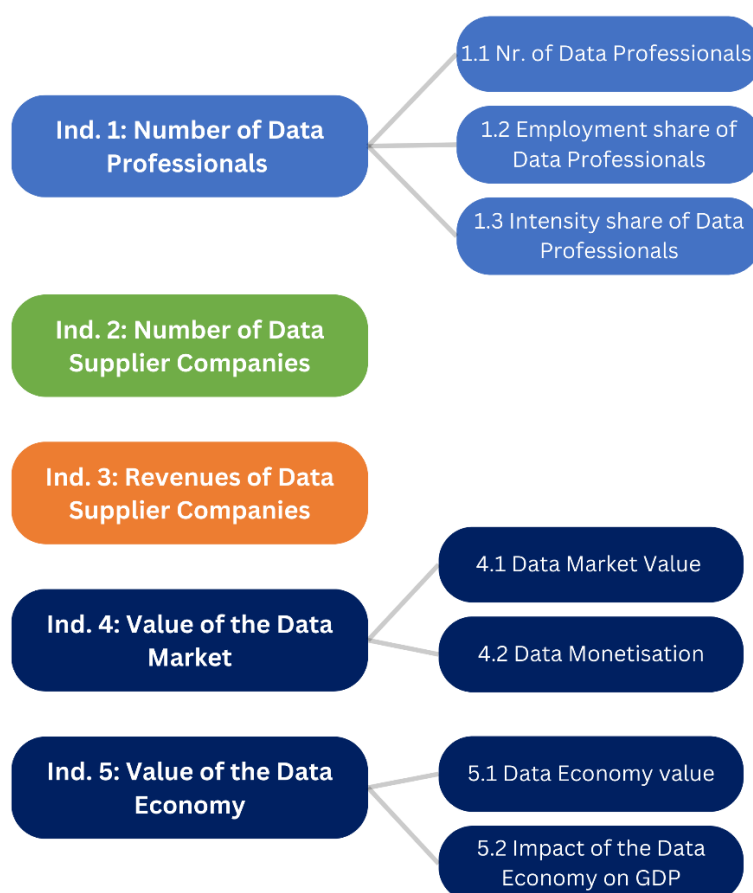


Figure 2 EDM International Indicators Overview

1.1 A novel methodological approach

The European Data Market (EDM) study employs a balanced mix of quantitative and qualitative methodologies, ensuring robust analysis to meet the study's objectives. While quantitative methods form the backbone of the study, qualitative approaches provide essential market insights and policy-relevant intelligence.

² In this study, under the rest of the EEA we mean Norway, Lichtenstein and Iceland.

Building on the previous EDM Monitoring Tool, the methodological approach introduces key enhancements to reflect evolving data market dynamics and address the European Commission's policy goals:

- **New Indicators:** Enhanced facts and figures under Objective A include two new indicators: EU data inflow/outflow and the maturity level of the data market.
- **Value of Data:** Improved measurement of data value through expanded desk research and additional IDC data sources, building on initial efforts in the 2021-2023 study.
- **Data Professionals:** Enhanced assessment of data professionals and the skills gap via a broader survey covering 18 geographies, including additional EU Member States (Austria, Estonia, Portugal) and Israel as a non-EU benchmark.
- **Descriptive Stories:** An expanded scope for Objective B focuses on common European Data Spaces and their contributions to the EU data economy, supported by a new consortium partner.
- **Stakeholder Engagement:** Greater involvement of data economy experts and stakeholders from the study's outset will ensure methodological robustness and allow for timely corrective measures.

These updates ensure continuity with past EDM studies while enhancing the study's ability to track progress against EU digital and data strategies.

1.2 The Data Economy as a catalyst to the EU Single Market and EU Competitiveness

The data market and data economy remain pivotal to shaping Europe's digital future, enabling growth, innovation, and competitiveness. According to our latest indicators, revenues generated by data companies in the EU27 are projected to exceed €115 billion in 2025, marking an 11.6% increase compared to 2024. Under the Baseline scenario, this figure is expected to surpass €148 billion by 2030, reflecting the growing robustness of data products and services within and outside the EU. Data monetization is also accelerating, with a 15% year-on-year growth projected for 2025.

Insights from the Letta Report³ on the Future of the Single Market underscore the transformative role of data-driven innovation. Letta highlights the need for a “fifth freedom”—the free movement of data—to enhance research, innovation, and economic integration within the EU (Letta, 2024, p. 10). The creation of common European data spaces will foster cross-border collaboration, reduce market fragmentation, and unlock economies of scale. High-speed connectivity, cloud-edge infrastructure, and cybersecurity are highlighted as essential enablers of this vision. The Draghi Report⁴ on European Competitiveness complements this perspective by emphasizing data-intensive technologies like artificial intelligence (AI), machine learning (ML), and quantum computing as critical drivers of innovation. Draghi identifies Europe's innovation gap as a pressing challenge, urging increased R&D investments, stronger public-private partnerships, and enhanced collaboration between SMEs and

³ [Enrico Letta - Much more than a market \(April 2024\)](#)

⁴ https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en#paragraph_47059

research institutions (Draghi, 2024, p. 14). The report also highlights the economic benefits of the data economy, including cost savings, efficiency gains, and new opportunities for high-skilled employment.

Our indicators estimate that the data economy's contribution to EU GDP will surpass €630 billion in 2025 and expand to €815 billion by 2030 under the Baseline scenario, representing 4.7% and 5.6% of GDP, respectively. These trends confirm the data economy's role as a critical enabler of Europe's competitiveness, aligning with Draghi's call for leveraging technological sovereignty and reducing dependencies on external players. Initiatives such as the European Chips Act and the GAIA-X project are key steps toward achieving strategic autonomy and securing Europe's digital leadership.

1.3 Measuring Data Professionals

Data professionals are workers who collect, store, manage, and/or analyse, interpret, and visualise data as their primary activity or as a relevant part of their activity. Data professionals must be proficient with the use of structured and unstructured data, should be able to work with a huge amount of data, and should be familiar with emerging database technologies. Data professionals comprise the roles played by different data users: data technical professionals, data business professionals, and data consumers. The measure of data professionals includes data technical professionals and data business professionals only.

In 2024, the number of data professionals in the EU27 reached 8.2 million, marking a 4.2% increase compared to 2023, reflecting the growing demand for data-driven skills across industries. The share of data professionals in total EU27 employment rose to 4.5% in 2024. The intensity of data professionals, measured as the number per 1,000 data user companies, remained relatively stable at 12.8 in 2024, showing a slight increase of 0.79% compared to the previous year.

1.3.1 Data Professionals Forecasts: 2025 and Three 2030 Scenarios

The escalating demand for data professionals, coupled with the rapid expansion of the data market, is exerting significant pressure on both industry and educational institutions to produce enough qualified individuals. This is crucial to prevent potential bottlenecks that could impede growth in the data sector over the next five to six years. The demand for data professionals in the EU27 is projected to exceed 10 million by 2030 under the Baseline scenario, representing an annual growth rate of 3.5% between 2025 and 2030. In the High Growth scenario, this number could increase at an annual rate of 6.1% over the same period. Achieving these figures will require Member States to implement effective training and education programs to develop the necessary talent pool. The table below provides a summary of the projected number of data professionals up to 2025 and across three scenarios for 2030.

Table 1 Data Professionals Forecast: 2025; 2030 Challenge, Baseline, and High Growth Scenarios (000's); and CAGRs (%)

	2025 (Forecast)	2030, Challenge	2030, Baseline	2030, High Growth	CAGR 2025- 2030, Challenge	CAGR 2025- 2030, Baseline	CAGR 2025- 2030, High Growth
EU27	8,566	9,853	10,171	11,508	2.8%	3.5%	6.1%
EU27 + UK	10,737	12,320	12,666	14,202	2.8%	3.4%	5.8%
Total All Countries	11,184	12,818	13,192	14,816	2.8%	3.4%	5.8%

1.4 Measuring Data Companies

Data companies are organisations that are directly involved in the production, delivery, and/or usage of data in the form of digital products, services, and technologies. They can be both data supplier and data user organisations:

- **Data suppliers** have as their main activity the production and delivery of digital data-related products, services, and technologies. They represent the supply side of the data market.
- **Data users** are organisations that generate, exploit, collect, and analyse digital data intensively and use what they learn to improve their business. They represent the demand side of the data market.

The number of **data supplier companies** increased from 249,446 in 2023 to 266,173 in 2024, reflecting a 6.7% growth rate in EU27. This growth underscores the EU's expanding focus on data-driven services and products. Additionally, **the share of data suppliers** among total companies rose from 2.2% in 2023 to 2.3% in 2024, marking a steady rise in the presence of data-focused businesses across key industries.

In parallel, the **number of data user companies** grew from **622,185 in 2023 to 644,075 in 2024, a 3.5% increase**. This rise highlights the continued adoption of data analytics and insights across a variety of sectors. However, **the share of data users** among total companies remained stable at 2.3%, indicating that while the absolute number of data user companies increased, the broader adoption rate across industries is holding steady.

1.4.1 Forecasting Data Supplier Companies: 2025 and Three 2030 Scenarios

The table below presents the summary forecast for data supplier companies in the Member States and greater European continent for 2025 and three scenarios for 2030. The projections indicate a slightly higher growth rate compared to previous forecasts, with the baseline scenario anticipating a 5% increase in the number of data supplier companies by 2030 relative to earlier estimates.

Table 2 Data Supplier Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%)

	2025 (Forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR '25– 30, Challenge	CAGR '25– 30, Baseline	CAGR '25– 30, High Growth
EU27	280,173	313,872	333,227	350,813	2.3%	3.5%	4.6%
Total EU27 + U.K.	542,381	611,096	640,128	684,493	2.4%	3.4%	4.8%
Total, all countries	559,092	630,253	660,399	705,912	2.4%	3.4%	4.8%

1.4.2 Forecasting Data User Companies: 2025 and Three 2030 Scenarios

The number of Data User Companies is also forecast to be higher by close to 5% in 2025 when compared to the previous year. The growing recognition of data as a critical asset is driving more companies to become data users. Leveraging data analytics enables businesses to gain insights into market trends, optimize operations, and enhance customer experiences. As industries increasingly rely on data to maintain competitiveness and foster innovation, the number of data user companies is expected to continue its upward trajectory.

Table 3 Data User Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Total EU27	674,180	806,026	952,979	1,155,404	3.6%	7.2%	11.4%
Total EU27 + U.K.	896,806	1,059,327	1,269,416	1,519,082	3.4%	7.2%	11.1%
Total All Countries	925,522	1,092,221	1,309,608	1,567,369	3.4%	7.2%	11.1%

1.5 Measuring Data Companies' Revenues

Data companies' revenues correspond to the aggregated value of all the data-related products and services generated by Europe-based data suppliers, including exports outside the EU. This indicator measures the revenues of the data suppliers identified and classified by Indicator 2 (see the products and services specified in our definition of the data market). Data companies' revenues do not include data monetisation as part of the data market.

In 2024, total revenues of data companies in the EU27 grew to approximately €103.2 billion, marking an 11.3% increase from €92.7 billion in 2023. This substantial growth reflects the strengthening role of data suppliers in driving economic activity across the region. Additionally, the share of data companies' revenues relative to total company revenues rose from 0.31% in 2023 to 0.34% in 2024, indicating their growing contribution to the overall economy. This increase highlights the expanding demand for data-driven solutions and the enhanced integration of data enterprises into key industries, further cementing their importance in the EU27's economic landscape.

1.5.1 Forecasting Data Companies' Revenues

The table below shows data companies' revenues will reach €115 billion in 2025 for EU27 Member States, rising to approximately €149 billion by 2030 under the Baseline scenario. Data Companies Revenues in this forecast are more than 6% higher for 2030 (Baseline) when compared with the previous forecast as growth in the data market accelerates and EU27 Member State companies become more competitive on the world market.

The rapid adoption of digital technologies across various industries has heightened the demand for data-driven solutions. The proliferation of artificial intelligence (AI) and machine learning applications has further amplified the need for extensive data analytics capabilities. Additionally, supportive government policies and initiatives aimed at fostering a data-driven economy have created a conducive environment for data companies to thrive. In summary, the combination of technological advancements, supportive policies, and evolving business strategies has led to a more optimistic outlook.

Table 4 Data Companies Revenues Forecasts: 2025 (€M), Three 2030 Scenarios (€M), and Compound Growth (%)

	2025 (Forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025– 2030, Challenge	CAGR 2025– 2030, Baseline	CAGR 2025– 2030, High Growth
EU27	115,160	143,298	148,925	173,350	4.5%	5.3%	8.5%
EEA + U.K.	144,818	187,644	197,452	227,866	5.3%	6.4%	9.5%
Total, all countries	155,714	202,642	214,404	246,512	5.4%	6.6%	9.6%

1.6 Measuring the Data Market

*The **data market** is the marketplace where digital data is exchanged as “products” or “services” as a result of the elaboration of raw data.*

The data market represents a wider concept than the market of big data & analytics (BDA), as it includes not only the value generated by pure data players developing BDA technologies, but also the value created by data-related research, businesses, information, and IT services. The digital data exchanged as “products” and “services” in the data market refers exclusively to data that is collected, processed, stored, and transmitted over digital information infrastructures and/or elaborated with digital technologies. This definition includes multimedia objects that are collected, stored, processed, elaborated, and delivered for exploitation through digital technologies (for example, image databases). The value of the data market is not exactly equal to the aggregated revenues of the European data companies because it includes imports (data products and services bought on the global digital market from suppliers not based in Europe) and excludes the exports of the European data companies.

The value of the data market in the EU27 grew from €82 billion in 2023 to €90 billion in 2024, reflecting a 9.7% increase over the previous year. This growth outpaced ICT spending, which rose by 6.3% during the same period, highlighting the increasing importance of data-driven activities across industries.

Table 5 Value and Growth of the Data Market: 2023-2024, 2025 Forecast Revenue (€ M) and 2024-2023 growth (%)

N.	Market	Name	Description	2023	2024	2025 (forecast)	Growth 2024- 2023
4.1	EU27	Value of the Data Market	Estimate of the overall value of the Data Market	82,087	90,036	100,040	9.7%

1.6.1 Data Monetisation

Data monetisation is the revenue that data suppliers get from selling data. In the data economy, we consider data monetisation as an additional direct impact, generated at the level of supplier companies.

The table below summarises the value of data monetisation among the Member States from 2023-2024, with a forecast to 2025. This is the value assigned to the sale and purchase of data within the Member States.

In 2024, the value of data monetization in the EU27 reached €29.5 billion, reflecting a significant increase of 15.3% compared to €25.6 billion in 2023. This growth highlights the rapid expansion of businesses leveraging data as a key asset, driven by rising demand for data-driven services and solutions across various industries. The notable increase in data monetization emphasizes its growing role in the EU27 economy, underscoring the importance of investments in digital infrastructure and innovation to support this trend.

Table 6 Data Market Monetization for the Member States 2023-2024, 2025 forecast (€ M) and 2024-2023 growth (%)

N.	Market	Name	Description	2023	2024	2025 (forecast)	Growth 2023-2024
4.1	EU27	Data Monetisation value	Estimate of the overall value of Data Monetisation	25,638	29,548	33,966	15.3%

1.6.2 Forecasting the Data Market

The forecast for the data market to 2025 and the three scenarios for 2030 is summarised in the table below. The data market in the EU27 will grow to €125 Billion in 2030 (Baseline), representing compound growth rate of 4.6 % over the period 2025 to 2030.

Table 7 - Data Market Forecast: 2025 (€ '000s), Three 2030 Scenarios (€ '000s), and Compound Growth (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR: 2025– 2030, Challenge	CAGR: 2025– 2030, Baseline	CAGR: 2025– 2030, High Growth
Total EU27	100,040	120,948	125,502	141,882	3.9%	4.6%	7.2%
Total EU27 + U.K.	129,923	156,042	160,998	180,205	3.7%	4.4%	6.8%
Total All Countries	139,740	167,949	173,764	194,987	3.7%	4.5%	6.9%

Data Monetisation is not included when forecasting the European Data Market, but this adds a further 37% to the market through sales of data rather than data services and tools. Monetisation contributed little to the data market in the early years, (2013-2018) but by 2020 it added a further 20% to spending on data and is forecast to grow to 37% of spending on data by 2030 (Baseline). This is expected to contribute €46.4 billion by 2030.

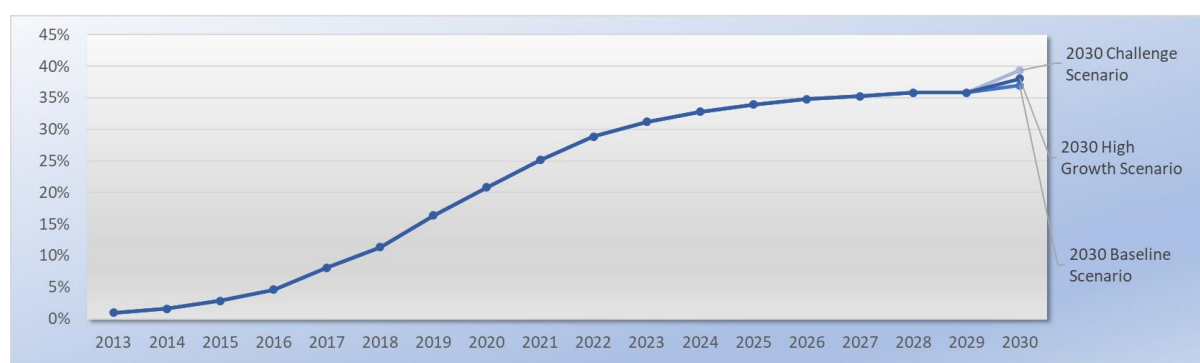


Figure 3 Data Monetisation share of the European Data Market 2013-2030 (Three Scenarios) (%)

1.7 Measuring the Data Economy

*The **data economy** measures the overall impacts of the data market on the economy as a whole. It involves the generation, collection, storage, processing, distribution, analysis elaboration, delivery, and exploitation of data enabled by digital technologies.*

The data economy captures a wider concept than the data market only, as it considers the value and wealth generated in the economy as a whole (not just across businesses) by the exploitation of data.

1.7.1 The Data Economy 2024

Since the beginning of 2021, the global economy has been facing different events that exacted a heavy toll to the global economy, in particular to Europe. Despite the global economy showing resiliency up to the end of 2023, economic recovery in Europe continues and has yet to reach its full potential – weighed down by persistent inflation and ongoing geopolitical conflicts around the region. All major countries in the European Union, as well as the UK, grew less than 1% in 2023 and 2024 (except for Spain). The short-term outlook suffers the impact of a longer-than-expected high core inflation, now due to the services component of inflation. From a broader technology perspective, the ICT market performed well in 2023, in line with expectations, driven by the double-digit growth of the software

market and the shift to cloud. In 2024, although geopolitical tensions and the economic slowdown fuelled uncertainty for European businesses, ICT investments remained safe and spending grew across all industries. A critical role has been played by Artificial Intelligence, a technology which is now more mature and widely integrated into business processes and operations, but its expected benefits will be reaped progressively, especially in terms of the return on investment. A similar economic outlook is expected for 2025 – potential growth hindered by continuous international geopolitical conflicts.

The value of the data economy for the EU27 in 2023 remained above the threshold of €500 billion, reaching around €580 billion in 2024, with an annual growth of 9.2% on previous year. The data economy is expected to pass the threshold of €630 billion in 2025, with an average annual growth of 9% between 2023 and 2025.

Table 8 Data Economy, 2023–2025: Value (€M), Growth (%), and Impact on GDP (%)

N.							Growth Rate 2024/2023	Impact on GDP, 2023	Impact on GDP, 2024	Impact on GDP, 2025
Name		Description	2023	2024	2025 (forecast)					
5.1 5.2	EU27	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	530,547	579,155	630,843	9.2%	4.1%	4.4%	4.7%
5.1 5.2	EU27 +UK	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	688,957	749,758	816,807	8.8%	4.5%	4.9%	5.2%
5.1 5.2	Total, all countries	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	748,271	814,544	885,858	8.9%	4.6%	5.0%	5.3%

1.7.2 Forecasting the Data Economy, 2030

Taking into consideration all the economic factors, the impact of inflation, especially on the ICT market and investments, and the delayed impacts projected in some technological areas, we decided to slightly decrease the overall data economy impacts.

Indirect impacts remain constant in the short term and will decrease in the longer term, from 2025 to 2030, in favour of induced impacts albeit slowly, revealing the effects of data access, data products and services exchange, and data value distribution in the economy.



Figure 4 Data Economy by Impact Type, EU27 and EU27+UK, 2030 (%)

Source: European Data Market Monitoring Tool, IDC 2024

Despite the global economic turbulences, we remain optimistic in technology's capability to spread wealth in the economy (constant induced impacts share), with the right economic, business and political approaches for the best use. In 2030, the data economy for the EU27 is expected to remain below the €1 trillion threshold, with a 5.3% 2025–2030 CAGR. When we consider the UK, the data economy in 2030 is expected to surpass the €1.1 trillion value and after adding Switzerland and the rest of EEA (NO, LI, IS) countries, the value will reach €1.2 trillion, with a 2025–2030 CAGR of 5.4%.

The Challenge scenario takes into consideration a slower growth of the impacts in the overall economy in 2030, affected by a slower growth of GDP as well caused by:

- higher restrictions to data usage, posing barriers to widespread adoption
- AI negatively affecting privacy and adoption due to potential issues arising from lack of regulation (such as low safeguard, malicious data manipulation, unregulated use of data, production of biased results)
- lower than anticipated productivity gains
- dependence on an expensive semiconductor industry.

This will translate into lower data economy value and low CAGR.

On the other hand, for a High Growth scenario, we expect to have faster growth for data economy and GDP, lower barriers and challenges, dynamic business adoption of data products and easier integration of data strategies into business, as well as delivering the expected ROI within the right timeframe.

Table 9 Data Economy Value (€M); 2030 Challenge, Baseline, and High Growth Scenarios (€M); and Impact on GDP (%)

N.	Market	Name	Description	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	25-30 CAGR			Impacts on GDP		
							2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario
5.1 5.2	EU27	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	743,146	815,108	908,438	3.3%	5.3%	7.6%	5.4%	5.6%	6.0%
5.1 5.2	EU27+UK	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	964,470	1,060,324	1,172,028	3.4%	5.4%	7.5%	6.0%	6.3%	6.6%
5.1 5.2	Total, all countries	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	1,046,569	1,151,513	1,273,227	3.4%	5.4%	7.5%	6.0%	6.4%	6.7%

Source: European Data Market Monitoring Tool, IDC 2024

1.8 Measuring the Data Professionals Skills Gap

*The **Data Professionals Skills Gap** indicator captures the potential gap between the demand and supply of data professionals in Europe.*

The measurement of this indicator is based on a model that combines the separate estimates and forecasts of the demand for data technical and business professionals and the supply of corresponding data skills by the inflow from the education system and the upskilling and reskilling of the existing workforce. This includes balancing the main sources of data skills (from the education system and retraining for the profession from other careers) with the estimated demand for data skills (from all data companies).

To reach the final estimates on the potential skills gap by country and region, indicators on the supply side such as (but not limited to) immigration inflows/outflows, level of upskilling by industry, retirement of senior workers and level of proficiency of different courses to prepare professionals for data technical roles are all factored in.

The multi-variable approach enables the model to reach a more accurate mapping of worker flows, which is then compared against the calculated demand for this workforce across key industry sectors in the EU region. Calculations on the demand of data workers are based on different indicators, such as (but not limited to) the current number of data professionals in activity, level of technology adoption, size of industry by member state and the data sector growth potential in each of these sectors.

The skills gap for data professionals keeps growing, and it will continue to expand in the 2023–2025 period albeit at a slower pace. Demand has already outgrown supply, and despite the advancements in data automation, increases are still expected between 2025-2030 in all of the scenarios and countries modelled. The following sections provide more details for the European Union and the rest of the European countries.

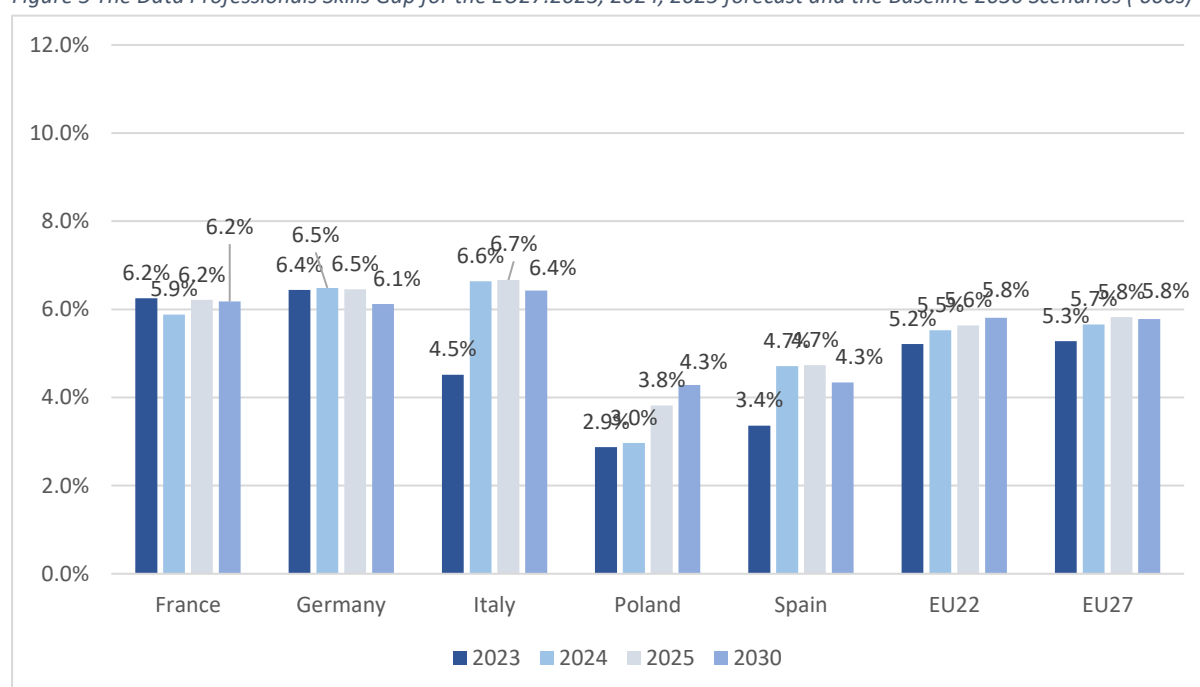
Table 10 shows the skills gap for the EU27 in 2024 as a base year and in 2030 for the three scenarios. In 2024, the data professionals' skills gap is estimated at 500,000 units across the EU27, an increase of 10.9% from 451,000 in 2023, which remains in line with the overall growing trend of the data market and the data economy in Europe. Major economies such as France, Germany and Italy continue to suffer from a skills gap higher than the average in the EU27 due to a data economy growing at fast pace and digital skills policies that have not yielded their full results yet.

Table 10 The Data Professionals Skills Demand and Gap for the EU by Member State: 2023, 2024 and 2025, and Three 2030 Scenarios (Thousands)

Member State		2023	2024	2025 (Forecast)	2030 Challenge Scenario	2030 Baseline scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
France	Numbers	83	78	86	116	101	137	6.2%	3.3%	9.9%
	% Gap	6.2%	5.9%	6.2%	7.2%	6.2%	7.4%			
Germany	Numbers	139	147	154	212	177	220	6.7%	2.8%	7.4%
	% Gap	6.4%	6.5%	6.5%	7.4%	6.1%	6.7%			
Italy	Numbers	37	56	58	75	63	83	5.1%	1.5%	7.2%
	% Gap	4.5%	6.6%	6.7%	7.7%	6.4%	7.9%			
Poland	Numbers	21	22	28	46	36	66	10.6%	5.2%	19.0%
	% Gap	2.9%	3.0%	3.8%	5.9%	4.3%	6.9%			
Spain	Numbers	21	30	31	39	33	45	4.3%	1.1%	7.4%
	% Gap	3.4%	4.7%	4.7%	5.5%	4.3%	5.4%			
EU22	Numbers	150	167	178	269	221	288	8.6%	4.4%	10.1%
	% Gap	5.2%	5.5%	5.6%	7.4%	5.8%	6.6%			
EU27	Numbers	451	500	535	757	631	839	7.2%	3.3%	9.4%
	% Gap	5.3%	5.7%	5.8%	7.2%	5.8%	6.8%			

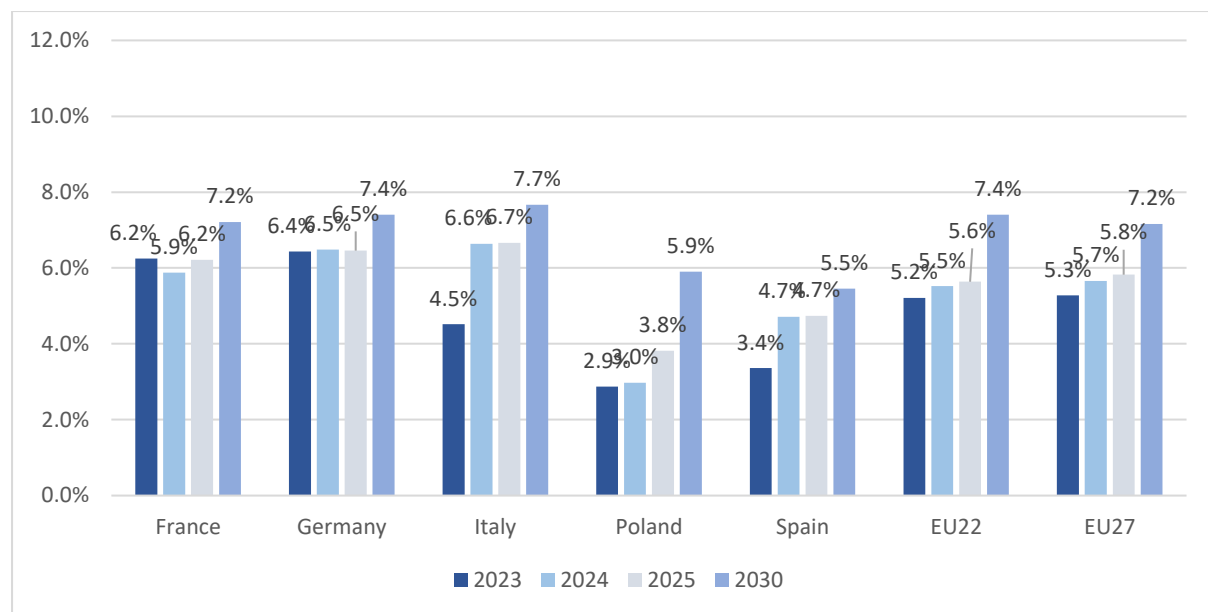
Figure 5, Figure 6 and Figure 7 provide graphic representations of the data professionals skills gap for the three scenarios by Member State.

Figure 5 The Data Professionals Skills Gap for the EU27:2023, 2024, 2025 forecast and the Baseline 2030 Scenarios ('000s)



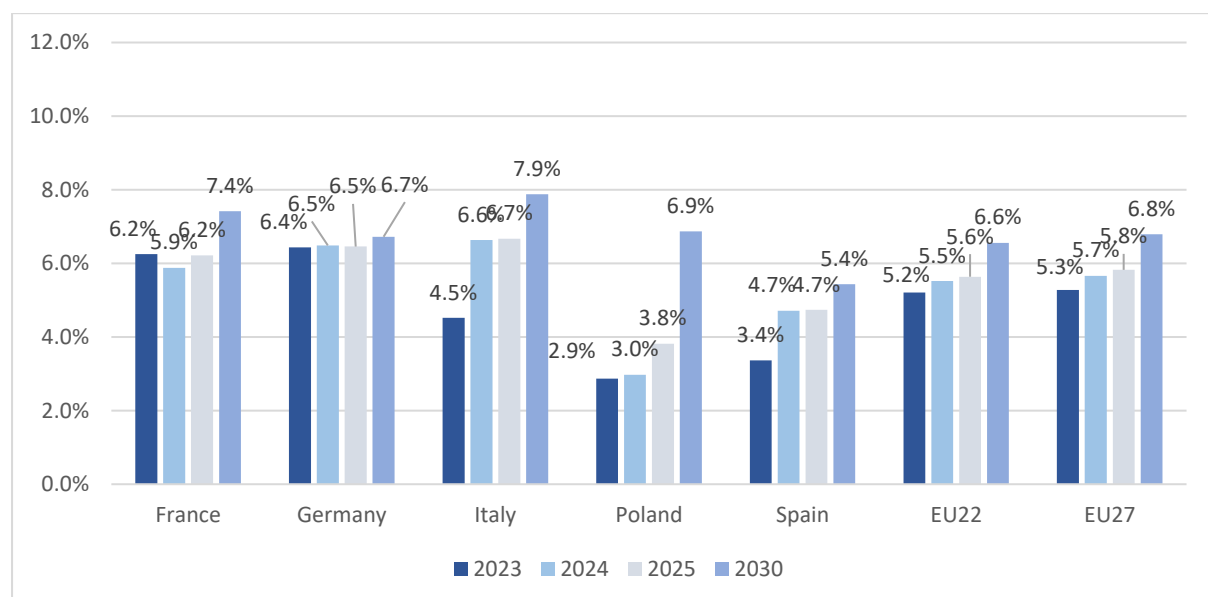
Source: European Data Market Monitoring Tool, IDC 2024

Figure 6 The Data Professionals Skills Gap for the EU27: 2023, 2024, 2025 forecast and the Challenge 2030 Scenarios ('000s)



Source: European Data Market Monitoring Tool, IDC 2024

Figure 7 The Data Professionals Skills Gap for the EU27: 2023, 2024, 2025 forecast and the High Growth 2030 Scenarios ('000s)



Source: European Data Market Monitoring Tool, IDC 2024

1.9 Measuring Data Flows

For the first time, data flows across European countries are being measured as part of the Data Market Study. Data flows are added to estimate the petabytes (PB) of data that flow to the key cloud

infrastructures inside and between EU Member States⁵. Measuring data flows is a pivotal aspect of the European Data Strategy and contributes to the measurement of the data uptake target outlined in the Digital Decade 2030 policy program.

In 2024, data flows across the EU27 reached significant volumes, led by Germany with 10,995 PB/year, reflecting a 55.9% increase from 2023. Italy followed with 6,500 PB/year, growing by 52.8%, and Poland reached 4,797 PB/year, up 55.7%. Other key contributors included France (4,376 PB/year) and Spain (3,691 PB/year), both recording growth rates close to 50%.

Other countries demonstrated some of the fastest growth rates, with Austria increasing by 66.1% to 1,178 PB/year, and Estonia and Latvia growing by 63.6% and 62.8%, respectively. These trends highlight the rapid development of digital infrastructure and data-driven activities in emerging EU economies.

1.9.1 Forecasting the Data Flows in 2030

In 2023, data flows across the EU27 totalled 29,824 PB/year, marking the early growth of the digital economy. These flows are projected to more than double by 2025, reaching 70,301 PB/year, driven by rising data demand across sectors. In 2030, total data flows across the EU27 are projected to reach 588,953 PB/year under the Baseline scenario, reflecting significant growth.

Germany continues to lead among EU27 countries, with data flows reaching 127,712 PB/year in 2030 under the Baseline scenario. Italy and France follow closely, with data flows projected to reach 84,180 PB/year and 54,576 PB/year, respectively, highlighting their significant roles in the EU27's digital economy. Countries like Poland (64,501 PB/year) and Spain (43,732 PB/year) also demonstrate strong contributions, driven by robust growth in digital infrastructure and data-driven industries. These trends emphasize the rapid expansion of data flows across the EU27, fuelled by advancements in technology and ongoing investments in digital transformation initiatives.

Table 11 Data Flow by Member Stat: 2025 (PB/Year), Three 2030 Scenarios (PB/Year), and Compound Growth (%)

Member States	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR: 2025–2030, Challenge	CAGR: 2025–2030, Baseline	CAGR: 2025–2030, High Growth
Austria	1,932	20,028	21,972	23,616	59.6%	62.6%	65.0%
Belgium	2,119	16,036	16,898	18,893	49.9%	51.5%	54.9%
Bulgaria	402	4,121	3,550	3,992	59.3%	54.6%	58.3%
Croatia	518	4,718	4,974	5,235	55.6%	57.2%	58.8%
Cyprus	163	1,138	1,160	1,184	47.5%	48.1%	48.7%
Czechia	2,026	16,012	17,428	20,830	51.2%	53.8%	59.4%
Denmark	2,392	17,056	18,876	22,103	48.1%	51.2%	56.0%
Estonia	354	3,730	4,139	5,501	60.2%	63.5%	73.1%
Finland	1,642	16,630	19,052	23,515	58.9%	63.3%	70.3%

⁵ Data Flows are measured in Petabytes per year and estimate the Enterprise Cloud-Based Data Flows (ECBDF's) generated in petabytes by each European Member state and reflect ECBDFs generated by the consumption of public cloud services by enterprises. A petabyte is 1,024 terabytes and an enterprise is a private sector organisation or a public sector organisation.

France	6,590	72,095	54,576	61,889	61.4%	52.6%	56.5%
Germany	16,861	118,742	127,712	144,404	47.8%	49.9%	53.7%
Greece	769	6,103	6,485	7,223	51.3%	53.2%	56.5%
Hungary	1,106	8,496	9,620	11,831	50.3%	54.1%	60.6%
Ireland	434	3,638	3,699	4,325	53.0%	53.5%	58.4%
Italy	9,915	75,005	84,180	90,132	49.9%	53.4%	55.5%
Latvia	457	5,142	5,442	5,472	62.3%	64.1%	64.3%
Lithuania	458	5,118	5,063	5,432	62.0%	61.7%	64.0%
Luxembourg	64	471	489	588	49.1%	50.2%	55.8%
Malta	107	955	975	1,198	54.9%	55.6%	62.1%
Netherlands	3,084	19,777	22,559	25,228	45.0%	48.9%	52.2%
Poland	7,418	59,867	64,501	74,492	51.8%	54.1%	58.6%
Portugal	1,658	11,765	13,076	15,305	48.0%	51.1%	56.0%
Romania	1,080	12,654	11,158	12,049	63.6%	59.5%	62.0%
Slovakia	482	3,957	4,083	4,863	52.4%	53.3%	58.8%
Slovenia	303	2,699	2,948	3,114	54.9%	57.6%	59.4%
Spain	5,539	49,026	43,732	47,337	54.7%	51.2%	53.6%
Sweden	2,428	18,839	20,606	24,743	50.6%	53.4%	59.1%
Switzerland	1,239	9,936	10,138	11,005	51.6%	52.3%	54.8%
United Kingdom	24,604	157,503	178,243	192,442	45.0%	48.6%	50.9%
Rest of EEA (NO, LI, IS)	1,346	9,061	10,173	11,835	46.4%	49.9%	54.5%
Total EU27	70,301	573,815	588,953	664,496	52.2%	53.0%	56.7%
Total EU27 + U.K.	94,905	731,318	767,196	856,938	50.4%	51.9%	55.3%
Total All Countries	97,490	750,314	787,507	879,778	50.4%	51.9%	55.3%

1.10 Measuring Data Maturity

Data Maturity is the assessment of the level of engagement of an organization in its use of data in key digital areas. It is measured for each Member State and for each industry relative to all Member States and all industries. Key indicators give a measure of the share of companies in each Member State or industry. For each Member State, the specific measures are weighed and added to give a total adoption level across all measures. For all Member States, the range for any specific measure is divided into six bands from the lowest to the highest measure, and the relative maturity level is given by whichever band the specific measure falls into for the Member State.

The key digital areas are:

- Businesses receiving orders through the internet.
- Businesses using Artificial Intelligence.
- Businesses purchasing cloud computing services.
- Businesses having performed big data analysis.
- Businesses using IoT.

These digital areas have weights attached to them – totaling 100%. For each industry, the percentage of organizations associated with each key area is multiplied by the corresponding weight. The result

is summed up to give a **non-dimensional⁶ value of maturity**. Industries within a member state can be compared to give relative maturity, and selection is done on company size band in addition to by industry to give a profile of maturity by company size, and by industry.

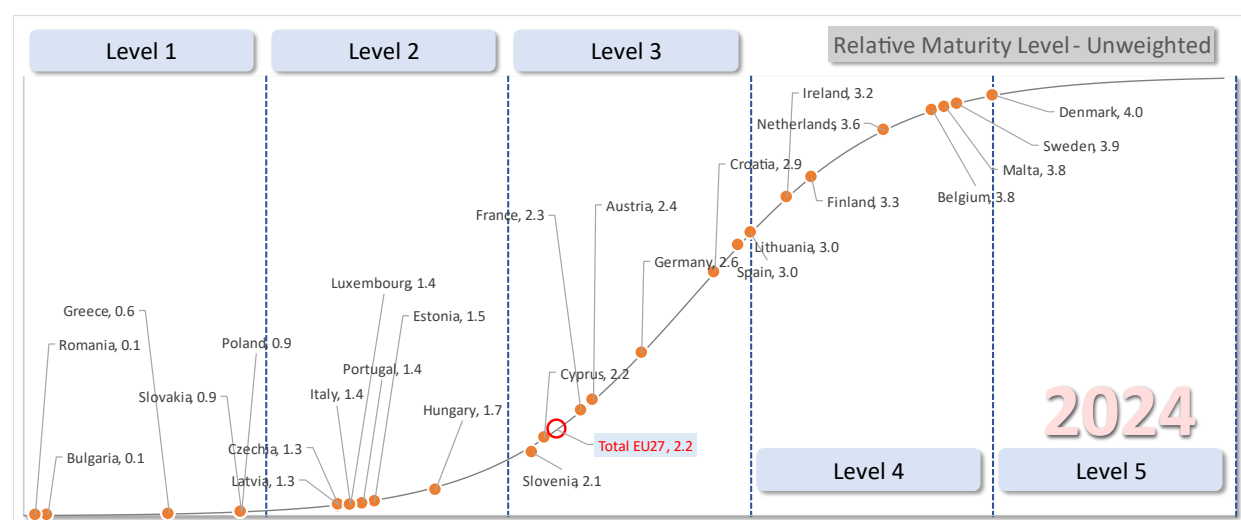
This maturity level by industry and size band gives a reference point against which organizations can measure themselves and understand where to invest for improved digital maturity. Member States will use these measures of maturity by industry to establish where to focus investments to raise the maturity of their organizations.

The Data Maturity by country, illustrated in the following chart, highlights a diverse range of maturity levels across the EU27 Member States. To interpret the chart, a Member State's overall data maturity level is the weighted sum of its maturity levels across all key digital areas. Each digital area contributes based on its assigned weight, and the overall level determines the Member State's position within one of the six maturity bands.

High-performing countries are concentrated around Level 5, with Denmark (4.0) and Sweden (3.9) leading the index. Among the Member States, the larger economies are surprisingly low in relative maturity, with Germany at 2.6, France at 2.3, Italy at 1.4, although Netherlands is at 3.6, and Spain at 3.0.

The distribution of maturity levels underscores the disparities in data readiness across EU27. While some countries lead with advanced capabilities, many lag behind, reflecting the need for targeted digital policies to bridge gaps and accelerate digital transformation across the region.

Figure 8 Data Maturity by Member State, 2024



1.11 The Data Economy Beyond the EU – the International Dimension

Following the challenges posed by the pandemic, energy crises, inflationary tensions and geopolitical upheavals, the European Union (EU27) finds itself at a critical juncture. While the EU has made significant strides in strengthening its digital economy, the global competitive landscape continues to

⁶ Thus, not expressed in, or representing terms of any particular unit (as of mass, length, or time)

evolve at a rapid pace, with the United States and China dominating the field. As inflationary pressures ease and economic activity stabilizes, the EU's commitment to fostering a resilient, green, and digital economy continues to strengthen its global standing. Indeed, despite structural hurdles, the EU's data market and broader digital economy remain robust, demonstrating steady growth and reflecting the impacts of targeted policy efforts like the Digital Decade Policy Programme and European Data Strategy.

The number of **data professionals** in the EU27 reached 7.9 million in 2023 out of an employment base of nearly 181 million employees. **Data professionals** were projected to grow by 4.2% to 8.2 million in 2024 within approximately the same base. While this growth underscores the EU's ongoing efforts to address the rising demand for digital skills, the region lags behind the United States, which boasts 21.4 million data professionals (+7.5%) among its total employment base of almost 158 million. **China**, with its massive workforce of more than 740 million, is rapidly expanding, achieving a 20.9% growth to 11.5 million professionals in 2024. **Japan** and **Brazil** exhibit slower growth rates of 3.7% and 3.5%, respectively, while Israel, although smaller in absolute terms, demonstrates a solid increase of 5.7% to 193,000 data professionals out of an employment base slightly surpassing 4.3 million employees. These figures highlight the EU's progress but also underline the need for greater investments in education, training, and reskilling to compete effectively with global leaders.

The **number of data supplier companies** in the EU27 grew from 249,446 in 2023 to a projected 266,173 in 2024 (+6.7%). This rate outpaces the growth seen in other mature markets like the United States (+1.9%) and Japan (+1.5%), but China remains a dominant player with over 917,000 companies (+1.8%). Israel, a notable outlier, is expected to see an impressive 26.5% growth, reinforcing its reputation as a dynamic hub for digital innovation. While the EU's ecosystem of data suppliers remains competitive, fragmentation and barriers to scale continue to impede its potential to rival global markets such as the US or China.

The value of **the data market in the EU27** is projected to grow by 9.7%, from €82.1 billion in 2023 to €90 billion in 2024. Despite this steady growth, the EU lags significantly behind the **United States**, where the data market is expected to reach €404 billion (+18.7%) in 2024. China is also rapidly advancing, with an anticipated value of €68.2 billion (+37.9%), while Japan and Brazil exhibit strong growth rates of 21.6% and 15.2%, respectively. Israel, while smaller in scale, shows a notable 10.3% growth, reinforcing its strategic role in niche markets. These comparisons underline the EU's position as a leading data market globally but also highlight the need for further digital integration and investment to close the gap with the US and China.

The **data economy's direct and indirect impacts** in the EU27 remain substantial, with direct contributions rising from €118.3 billion in 2023 to €132.7 billion in 2024 (+12%). Indirect backward impacts also show steady growth, increasing from €130 billion to €139 billion (+6.9%). However, the EU's growth rates are outpaced by competitors such as the US (+19% direct impacts, representing 1.65% of the US GDP in 2024; +14% indirect backward impacts) and China (+38% direct impacts, representing 1.17% of the Chinese GDP in 2024; +14% indirect impacts). Japan also demonstrates robust performance, with direct and indirect backward impacts increasing by almost 22% and 11%, respectively and with direct impacts constituting 1.63% of its GDP in 2024. With a data economy share (in terms of direct impacts) of 0.30% and 0.66% respectively in 2024, Brazil and Israel contribute on a

smaller scale but maintain consistent growth, reflecting their expanding roles in the global data economy.

Overall, the EU27's data market and data economy indicators reveal a stable trajectory of growth and development. However, the region faces significant challenges in catching up with global leaders like the United States and China. Addressing structural barriers, fostering digital skills, and promoting a unified data ecosystem are essential for the EU to fully realize its potential and strengthen its position in the global data-driven economy.

Table 12 EU27 indicators 2023-2024 Overview

Name	Metrics	2023	2024	Growth 2024-2023
Number of Data professionals	Total Number of Data professionals (Thousands)	7,897	8,232	4.2%
Data professionals' employment share	% of Data professionals on total employment	249,446	266,173	6.7%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	82,087	90,036	9.7%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	82,087	90,036	9.7%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	118,364	132,718	12.1%
Value of the Data Economy (Backward Impacts)	Backward Indirect Impacts (Million €)	130,069	139,000	6.9%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	0.92%	1.01%	10.9%

2 Introduction

Since 2013, the European Data Market (EDM) Monitoring Tool has monitored the evolution of the European data market and data economy, providing insights and quantitative evidence about its size and trends by industry and by region, contributing substantially to the development of European policy strategies in this field.

The European Commission contracted three European data market studies (SMART 2013/0063, SMART 2016/0063, VIGIE 2020-0655) – in 2013, 2016 and 2021 respectively – providing facts and figures on the size and trends of the EU data economy through the development and continuation of a European data market monitoring tool.

This report presents the **first round** of measurements in the year of 2024 of the European Data Market Monitoring Tool. This first report was produced within the framework of the fourth edition of the **European Data Market Study** (LUX/2023/OP0043) entrusted by the European Commission to IDC Italia Srl., the Lisbon Council and CARSA.

The results presented in this report leverage the work conducted by the original European Data Market Study (SMART 2013/0063), the Update of the European Data Market Study (SMART 2016/0063) and the European Data Market Study (VIGIE 2020-0655).

The **First Report on Facts and Figures (D2.1)** presents the first round of measurements of the updated version of the EDM Monitoring tool which incorporates new elements and enhancements on the methodological approaches. The latest updates and changes focus on the following **eight** indicators (with additional 2 indicators compared to the previous rounds):

- 1) the number of data professionals (including the number of data scientists);
- 2) the number of data companies and data user companies (including the number of start-ups and SMEs);
- 3) the revenue generated by data companies (including start-ups and SMEs);
- 4) the size of the data market;
- 5) the value of the data economy;
- 6) the data skills gap (including the data scientists' skills gap);
- 7) EU's data inflow and outflow;
- 8) maturity level of the data market.

As in the previous edition of this study, the above indicators are presented along three potential scenarios of evolution based on alternative development paths that were modelled on possible different evolutions of a set of key underpinning factors (such as the macroeconomic factors, policy and regulatory conditions, supply-demand dynamics of the market of data and global megatrends). Therefore, the Monitoring Tool also provides a forecast of the main indicators to the year 2030 according to three distinct and alternative development paths: Baseline, Challenge and High Growth.

2.1 Objectives

The primary aim of this study is to update and enhance the EDM Monitoring Tool, ensuring the ongoing provision of market intelligence, factual evidence, and insights on future developments necessary to support European policies in this area over the next three years. A crucial objective of the methodology outlined in this report is to maintain a balance between continuity—leveraging the value of data and understanding gathered over the past seven years—and innovation, which is essential for tracking and assessing new developments and emerging trends as the Data Economy evolves.

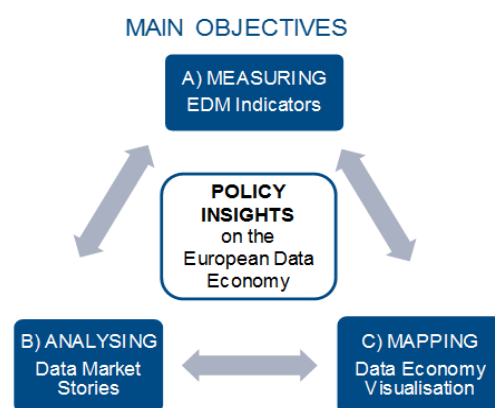


Figure 9 EDM Main Objectives

The study will be conducted through three correlated streams (see the Figure above) of work aimed at collecting and delivering factual evidence, data, and qualitative insights, which together will feed into the overarching goal to provide insights on progress towards policy targets.

1. **Bringing the EDM Monitoring Tool indicators up to date** and updating the methodology and taxonomy that was developed in the previous years to accommodate market evolution; measuring the primary EDM indicators on an *annual* basis (2024, 2025, 2026); offering data and figures on all the important aspects of the European economy and data market, with a particular emphasis on measuring growth and job creation.
2. **Producing descriptive stories** analysing the main critical issues of the development of the data economy and society, complementing the EDM statistical indicators with qualitative and quantitative evidence based on case studies and expert analysis. The stories have proven a flexible and valuable tool to investigate issues and questions raising from evolving data policy priorities during the life of the project. In this new edition of the European Data Market study a special emphasis will be on common European Data Spaces and their contribution to the European data economy.
3. **Improve the mapping of data stakeholders** within the IT environment of the European Commission, and further enhance the landscape and community of data stakeholders established in previous years. The EU data landscape will continue to progress in this edition of the EDM study, utilizing data from *Dealroom*⁷, a top source of tech firm data and an official partner of the EuropeanStartups.co EU project. In order to gather data and support for the continuous measurement of the EDM indicators, we also intend to make use of the community of data stakeholders.

⁷ <https://dealroom.co/>

2.2 Overview of Indicators

This document focuses on the following indicator sets:

- Indicator 1.1: The Number of Data Professionals
- Indicator 1.2: The Employment Share of Data Professionals
- Indicator 1.3: The Intensity Share of Data Professionals
- Indicator 2.1: The Number of Data Supplier Companies
- Indicator 2.2: The Share of Data Supplier Companies
- Indicator 2.3: The Number of Data User Companies
- Indicator 2.4: The Share of Data User Companies
- Indicator 2.5: The Share of Data User and Data Supplier Companies That Offer Data for Re-Use
- Indicator 3.1: The Total Revenues of Data Supplier Companies
- Indicator 3.2: The Share of Data Supplier Companies' Revenues
- Indicator 4.1: The Value of The Data Market
- Indicator 4.2: Data Monetisation
- Indicator 5: The Value of The Data Economy
- Indicator 5.1: The Impact of The Data Economy On GDP
- Indicator 6: The Data Professionals Skills Gaps
- **Indicator 7: Volume of Data Flows**
- **Indicator 8: Data Maturity**

Each indicator is measured at the level of the total EU and for each Member States, when available and applicable; industry-specific and company-size views are also offered with indicators provided by industry sector and company size bands, when possible. The indicators are presented for the years 2023, 2024, 2025 and 2030 according to three alternative scenarios. A select number of indicators has been developed and updated for four non-European countries, namely Brazil, Japan, China, United States and *Israel*.

For each of these countries, this report presents the following indicators:

- Indicator 1.1: Number of data professionals;
- Indicator 1.2: Data professionals' employment share;
- Indicator 2.1: Number of data supplier companies;
- Indicator 3.1: Revenues of data companies;
- Indicator 4: Value of the Data Market;
- Indicator 5.1: Value of the Data Economy (only Direct and Backward Indirect impacts);
- Indicator 5.2: Incidence of the Data Economy on GDP (only direct and backward indirect impacts).

The table below offers an overview of the full set of indicators that have been developed in this Second Report on Facts and Figures

Table 13 D2. First Report on Facts and Figures – Full Set of Indicators

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
1.1	Number of data professionals	2024	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
1.2	Employment share	2024	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 High Growth	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 Challenge	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
1.3	Intensity share	2024	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
		2030 Baseline	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 High Growth	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 Challenge	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
2.1	Number of data supplier companies	2024	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
2.2	Share of data supplier companies	2024	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable
2.3	Number of data user companies	2024	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
		2030 Challenge	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
2.4	Share of data user companies	2024	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
2.5	Share of data user and data supplier companies that offer data for re-use	2024	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2025	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 High Growth	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 Challenge	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
3.1	Total revenues of data supplier companies	2024	Not applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2026	Not applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 High Growth	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 Challenge	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
3.2	Share of data supplier	2024	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
	companies' revenues	2026	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 High Growth	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
		2030 Challenge	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
4	Value of the data market	2024	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
4.1	Data monetisation	2024	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
5	Value of the data economy	2024	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
		2026	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
5.1	Impact of the data economy on GDP	2024	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
6	Data professionals' skills gap	2024	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable
		2026	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable

#	Name of Indicator	Year	Industry	Member State	Company Size	EU27	UK+ Switzerland	Rest of EEA (NO, LI, IS)
				DE, ES, FR, IT PL)				
		2030 Challenge	Not applicable	Applicable (only for DE, ES, FR, IT PL)	Not applicable	Applicable	Applicable	Applicable
7	Volume of data flows	2024	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
8	Data Maturity	2024	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2025	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2026	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Baseline	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 High Growth	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2030 Challenge	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable
		2023	Not applicable	Applicable	Not applicable	Applicable	Applicable	Applicable

This document is accompanied by a comprehensive dataset reporting the values for all the indicators outlined in the table above.

2.2.1 New features introduced

Compared to previous editions of the EDM study (2013, 2016, 2021), the listed indicators have been updated, revised, and expanded in scope.

Two new indicators enhancing and complementing the measuring of the EU data market and data economy. The two new indicators will measure the **data flows** for EU27, EEA and the UK. The second of the two new indicators will assess the level of **maturity achieved by the data market** and the data economy by Member States and by industry for the EU27, EEA and the UK.

2.3 Structure of the Report

This **First Report on Facts & Figures** focuses on the results obtained through the first round of measurements of the European Data Market Monitoring Tool for the year of **2024** with forecasts for 2025 and for 2030 under three distinct scenarios.

The report is organised in the following chapters:

- **Chapters 2 and 3** These sections provide an introduction to the study, highlighting its primary goals and objectives. It also offers an overview of the European Data Market Monitoring Tool, explaining its purpose and how it operates. Additionally, the section delves into the methodology used for forecast scenarios and presents an analysis of the data economy in the context of the present economic and geopolitical landscape. These chapters also include the key updates introduced in this edition of the study.
- **Chapter 4** is devoted to the measurement of the data professionals, including their main values in absolute terms, their share in terms of total employment, and their forecast to 2030 according to the three scenarios under consideration.
- **Chapters 5 and 6** provide the values for the indicators measuring the data companies (both suppliers and users of data) in terms of absolute numbers and produced revenues. They include an updated forecast of the indicators to 2025 and 2030.
- **Chapter 7** presents the indicators measuring the size of the data market in Europe based on the value generated by pure data players developing BDA technologies and the value created by data-related research, businesses, information, and IT services and its contribution to the data market. In this chapter, as a new feature, an estimate for the value of data monetisation is added to the data market.
- **Chapter 8** focuses on the data economy and measures the overall impacts of the data market on the economy, including three sets of impacts – data companies’ revenues, indirect impacts, and induced impacts.
- **Chapter 9** addresses Indicator 7 on data flows, examining the movement of data into and out of Member States by enterprises utilizing cloud services over the internet. The measurement focuses on net data flows, determined by subtracting data inflows from outflow.
- **Chapter 10** presents the assessment of *Data Maturity*, measuring how organizations engage with data across essential digital areas.
- **Chapter 11** describes the latest results on the data professionals skills gap indicator in the EU.

- **Chapter 12**, International Dimension of the Data Economy, presents a select number of indicators for the United States, China, Brazil, Japan and Israel.
- **Chapter 13** provides a set of concluding remarks of the report.
- The **Methodological Annex** summarises the key methodological steps that we have undertaken to measure the indicators covered in both the previous reports and in the current report.

3 European Data Market Monitoring Tool: 2024–2026

3.1 A Novel Methodological Approach

The European Data Market study requires a complex mix of qualitative and quantitative methodologies, allowing to reach the objectives presented in the previous chapter. While quantitative methodologies represent the most relevant part of the study, qualitative methodologies are indispensable to balance the statistical approach and provide the market and social intelligence needed to lead to policy insights and the development of sound scenarios.

In order to ensure the study's continuity, the methodological approach builds upon previous EDM Monitoring Tool releases, including necessary improvements. It is important to emphasise that the EDM Monitoring Tool's modular structure does not change in its core substance, as it has already proven to be sufficiently adaptable to the evolution of the data market and data economy in past years.

The study introduces a set of methodological changes to address both the requests of the tender specifications and the need to provide more quantitative and qualitative evidence on the evolution of the data market and economy in Europe. These changes will enable the European Commission to better measure progress towards the key policy objectives set out by the EU digital strategy and the 2020 European data strategy:

The methodological approach builds on previous versions of the European Data Market Monitoring Tool, incorporating the following enhancements to maintain the study's continuity:

- The provision of facts and figures under Objective A will be enhanced by **two specific indicators** measuring the EU's data inflow and outflow, as well as the maturity level of the EU data market.
- Additional desk research and IDC data sources will support the **measurement of the value of data**. This aspect was present in the previous edition of the European Data Market Study 2021-2023 but was only an initial attempt to capture a concept and value that had not been extensively researched.
- The assessment of data professionals and the measurement of the data skills gap will benefit from the revised definition and approach introduced by the previous European Data Market Study 2021-2023. This will be further enhanced by implementing an **expanded survey** covering **18 geographies**, including three additional EU Member States (Austria, Estonia, and Portugal) and **Israel as a new non-EU country** to be monitored under the international set of indicators.
- Renewed focus and an expanded scope for the descriptive stories under Objective B, ensuring the Consortium can cover all aspects mentioned in the tender specifications. This will include specific attention to the **common European Data Spaces** and their current and potential contributions to the EU data economy, thanks to the addition of a new Consortium member.
- A broader involvement of **data economy experts and stakeholders** from the outset of the study will inform the design phase of the project and allow for the introduction of corrective measures in the methodology before the actual measurement of the indicators.

The figure below illustrates the complexity of the methodologies employed to provide facts and figures on the European data market and economy. The main methodological steps are clearly outlined as follows:

1. **Revision and Update of Conceptual Framework and Taxonomy:** This involves reviewing and refining the existing framework and taxonomy.
2. **Validation:** The revisions and updates are validated through expert interviews to ensure accuracy and relevance.
3. **Data Collection:** Organizing and conducting data collection, which includes both desk and field research. This process will be repeated annually to support the measurement of indicators.
4. **Complementary Data and Analysis:** Simultaneously, case studies, stories, and stakeholder polling will provide additional data and analytical insights.
5. **Integration into Quantitative Models:** Data collected and qualitative analyses will be integrated into eight interconnected quantitative models used to measure the main indicators.
6. **Scenario Forecasting:** Alongside indicator calculations, scenario forecasting will be conducted. This involves developing the primary assumptions that drive three alternative scenarios up to 2030 and forecasting all related indicators.
7. **Interaction Between Models and Scenarios:** The quantitative models and the scenario methodology will interact closely, providing mutual feedback to enhance precision.
8. **Quality Control:** Each step in the process will include quality control measures, focusing particularly on data quality during the data collection phase and model quality during indicator measurement and scenario development.

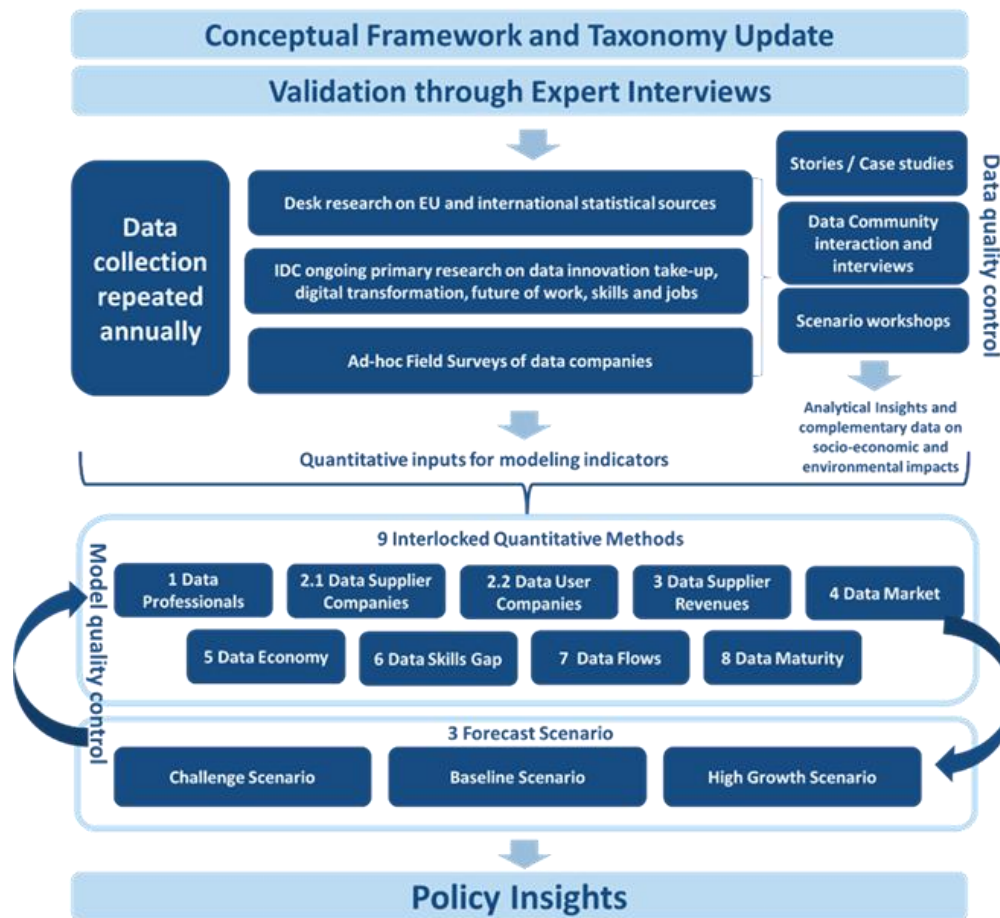


Figure 10 A Complex Methodology

The main methodological changes are outlined in the following sections:

3.1.1 Conceptual Framework Update

The modular structure of the European Data Market Monitoring Tool has proven to be both robust and flexible, effectively tracking the evolution of the data market and data economy over the years. The monitoring tool will be further enhanced by the inclusion of two new indicators: Indicator 7, which focuses on measuring data flows, and Indicator 8, which assesses data market maturity (see Figure 4 below).

As in the previous studies, the top layers of the European Data Market Monitoring Tool outline its conceptual framework (see the figure below), which is divided into two main components:

1. the Data Market Taxonomy
2. The Data Value Chain

The first component defines all key terms and elements used in the study, while the second focuses on the roles and interactions of main stakeholders and the primary conditions influencing the evolution of the Data Market and economy.

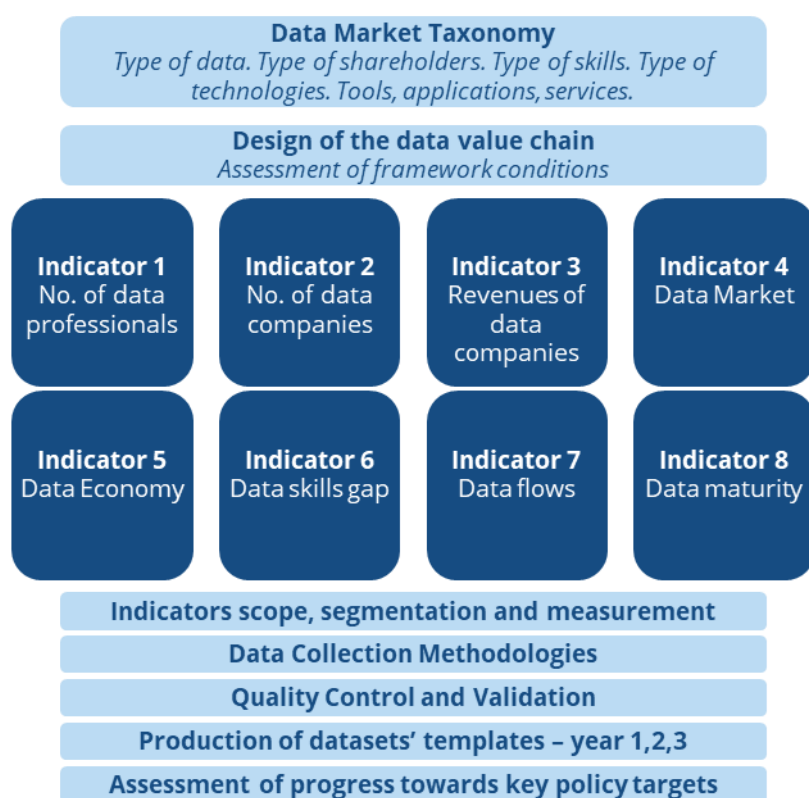


Figure 11 Data Market Monitoring Tool

3.1.2 Measuring the value of data

The conceptual framework underpinning the measurement of the data value will largely uphold the three main typologies of data monetization identified by IDC in 2018 and implemented in the previous study: 1. Direct revenue from data sale/licensing; 2. Additional revenue from bundling data with other services or products; 3. Exchange premiums/trade advantages or discounts.

Our findings have highlighted the distinction between actual data monetisation and the indirect benefits for business processes derived from data sharing and exchange, as well as the main business models adopted when measuring the value of data in the previous edition of the European Data Market Study:

- **Data monetisation:** A unilateral approach where companies generate additional revenue from the data they share with other companies. Data can also be monetised through the provision of services.
- **Data marketplaces:** Trusted intermediaries that connect data suppliers and data users on a secure online platform, generating revenue from data transactions occurring on the platform.
- **Industrial data platforms:** A collaborative and strategic approach for exchanging data among a restricted group of companies. These companies voluntarily join closed, secure, and exclusive environments to develop new products/services or improve internal efficiency. Data may be shared for free, but fees can also be considered.
- **Technical enablers:** Businesses specializing in enabling data sharing through technical solutions. They earn revenue from setting up, using, and maintaining these solutions, not from the data exchanged.

- **Open data policy:** Companies that choose to share data for free to promote the development of new products and/or services.

3.1.3 *Measuring the data flows*

In this study, data flows are added to estimate the Petabytes (PT) of data that flow to the key cloud infrastructures inside and between EU Member States. The primary source for these estimates is the European Data Flow Monitoring with its Cloud Data Flow Strategic Visualisation Tool ⁸. Relevant input is also included from the analytical framework described in the 2023 report of the Commission's study 'Economic Values of Data Flows'⁹. The OECD study 'Measuring the value of data and data flows'¹⁰ which focuses on data valuation, estimates of the value of data, and data flows, will also be fundamental for measuring data flows.

3.1.4 *Measuring data maturity*

Data Maturity evaluates an industry's engagement with data and the data market by evaluating the participation of businesses in several specific key metrics. These metrics include:

- Businesses receiving orders over the internet;
- Businesses using IoT;
- Businesses using artificial intelligence;
- Businesses purchasing cloud services;
- Businesses conducting big data analysis.

3.1.5 *Survey*

For each of the yearly measurement rounds of the indicators under Objective A, the study team will gather data and relevant quantitative evidence through different means. The outputs of these data collection efforts will be integrated into the quantitative modelling of indicators.

Field survey: A quantitative survey of 1440 respondents, an increase from the 1190 respondents in the European Data Market 2021-2023 survey, will serve as the primary data collection method to inform the construction and calculation of the 8 indicators under Objective A.

The survey will serve the following purposes:

- Monitoring the impact of the war in Ukraine on businesses in the European Union, which continue to face challenges due to the dramatic increase in energy prices, resulting in generalized inflation, and the absence of data expertise previously sourced from Ukraine.
- Enhancing the internal coherence of data collected at the member state level to facilitate data extrapolation for non-surveyed countries. The inclusion of three additional Member States will bolster the statistical representation of the data, resulting in more reliable indicators.

⁸ <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

⁹ <https://digital-strategy.ec.europa.eu/en/library/economic-value-data-flows>

¹⁰ <https://www.oecd.org/publications/measuring-the-value-of-data-and-data-flows-923230a6-en.htm>

- Improving the quantitative foundation for measuring indicators of EU international partners/competitors with the inclusion of Israel as one of the surveyed countries.
- Gathering further evidence on data economy-related themes such as socio-economic and environmental aspects and the contribution of common European Data Spaces to the European data economy.

Similar to previous editions of data market studies, the survey will be used to collect additional evidence on updated definitions for key indicators added in the previous cycle, as well as new indicators added in the current cycle, including:

- Measuring the value of data (data monetization): Investigating data monetization practices to contribute to estimating the value of data.
- Measuring data users: Analysing data innovation uptake through the investigation of data use cases and adoption to identify data users more comprehensively.
- Measuring data suppliers: Identifying data supplier companies by probing their core business, encompassing all sectors with expectations of significant identification in sectors like finance or retail.
- Measuring data skills: Providing updated evidence on organizations' data skill requirements.
- Measuring data flows: Complementing Eurostat data on data flows by querying respondents on data import and export.
- Measuring data maturity: Evaluating data maturity for surveyed organizations to complement metrics obtained through Eurostat.
- Providing primary research data for assessing the impact of common European Data Spaces: Evaluating participation and benefits gained by organizations participating in Data Spaces.

Desk research: The survey will be supplemented by additional national, European, and international statistical sources, such as Eurostat and Ilostat. From these sources, we will collect specific data relevant to each indicator.

Data collection will also include **screening of data from IDC's ongoing primary research** on major technology markets. This research is based on annual worldwide surveys of technology vendors and users, as well as databases estimating market trends and value by country, industry, and technology.

More details about the survey and the methodology used are available in the Annex 1 of this study.

3.2 Forecast Scenarios Methodology

In line with the previous editions of the European Data Market studies (SMART 2013/0063, SMART 2016/0063, VIGIE 2020-0655) this document presents the main findings of the European Data Market Monitoring Tool at the year 2030 according to three potential scenarios based on alternative development paths and driven by different macroeconomic and framework conditions.

The overall methodological framework remained unchanged. The methodology is founded upon the proficient approach that has been employed in the study since its commencement. This includes enhancements in the formulation of assumptions and their substantiation through dedicated brainstorming workshops involving experts from both within the organization and external domains.

The ultimate objective of the scenarios is to analyse which combination of framework conditions and policy actions may maximise the growth potential of the European data market and economy, and by feeding into the models estimate the actual size and depth of the potential benefits. In this way the scenarios provide a realistic approach to the forecast estimates – since we project a range of values (not a single estimate which may be widely off the mark) - and provide guidance on the potential consequences of different external events or alternative policy choices.

Important to highlight that the scenarios are not predictions but potential development paths. Their value-added lies especially in thinking through the potential consequences of different market trajectories and therefore providing a guide to action, particularly for policy makers.

The scenarios are structured as follows:

- A **Baseline scenario**, with the main assumptions based on the continuation of current growth trends and evolution of current framework conditions.
- A **High Growth scenario**, where the Data Market enters a faster growth trajectory, thanks to more favorable framework conditions.
- A **Challenge Scenario**, where the Data Market grows more slowly than in the Baseline scenario, because of less favourable framework conditions and a less positive macroeconomic context.

The general methodology approach will remain as in the previous editions and will be organized with the following main steps:

- Desk research to revise/update assumptions
- Definition of assumptions by scenario
- Brainstorming workshops for validating scenario assumptions
- Development of scenarios storyline and integration of data
- Finalisation of scenarios and development of policy insights

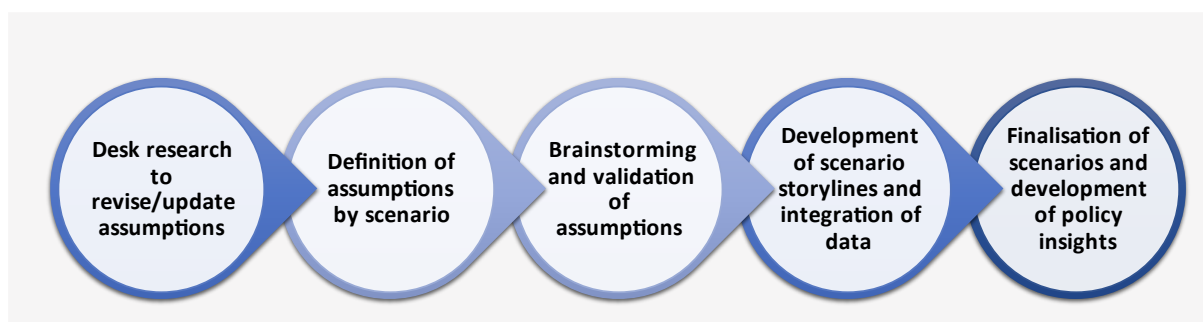


Figure 12 Scenarios Methodology Approach

The scenario model used in this study is based on the definition of alternative assumptions about four main groups of key factors. This model was developed and further implemented in various projects and studies published by IDC.

The four main groups of factors are:

1. Macroeconomic factors
2. Policy/regulatory conditions
3. Data market dynamics factors
4. Global megatrends affecting all technology markets

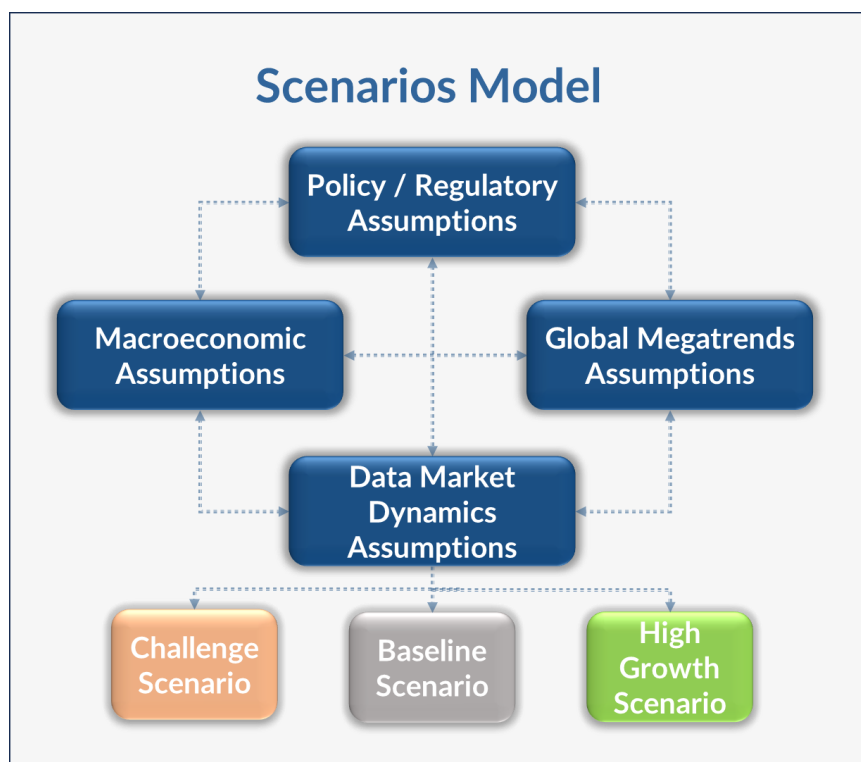


Figure 13 Scenarios Group of Factors

3.2.1 Macroeconomic Factors

The importance of data is evident in both macroeconomic and microeconomic situations. Macroeconomically speaking, the European data economy has been steadily growing its share of the EU GDP.

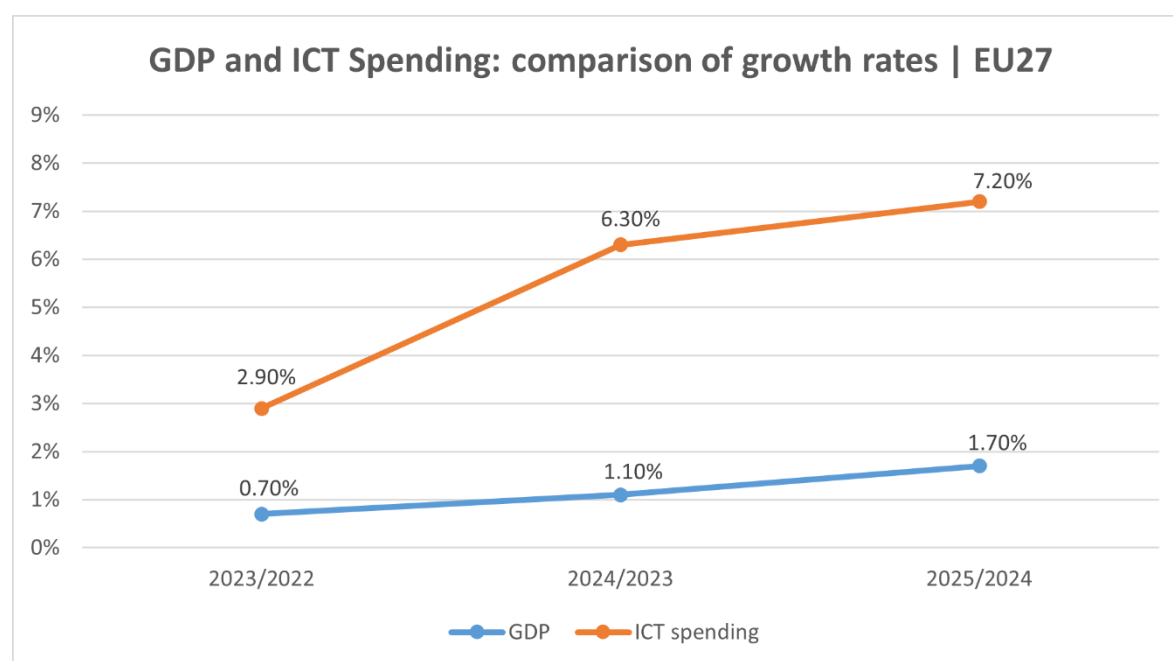
We continue to present projections for the following years under the three alternative scenarios up until 2030 in our macroeconomic assumptions. The macroeconomic context will have a strong direct impact on the pace of development of the Data Market.

In this first round of measurement, we have developed a baseline, challenge and high growth scenario to 2030. As inputs to the scenarios, we have estimated the value of ICT Spending as well as of GDP for the European Union countries (EU 27), the rest of the European Economic Area (EEA), as well as for Switzerland and the U.K (as shown in the table below).

Table 14 Macroeconomic Data Forecast for Scenarios

	2023	2024	2025	2030 Challenge	2030 Baseline	2030 High Growth
ICT Spending (EUR Millions)						
EU27	648,626	689,201	738,652	854,346	983,161	1,105,919
UK	170,052	178,177	190,929	218,137	252,841	281,616
Switzerland	38,147	40,410	43,562	50,685	57,635	64,331
Rest of EEA	16,854	18,036	19,521	25,091	28,071	31,043
GDP (EUR Millions)						
EU27	12,931,826	13,069,552	13,290,181	13,830,704	14,454,943	15,198,742
UK	2,222,102	2,237,657	2,271,222	2,347,393	2,443,253	2,551,373
Switzerland	695,141	705,568	718,268	750,490	783,859	825,456
Rest of EEA	409,589	413,090	419,058	433,949	449,277	468,265

Table 15 Macroeconomic Variables



	Growth Rate 2025/2024	CAGR 2030/2025 Challenge	CAGR 2030/2025 Baseline	CAGR 2030/2025 High Growth
ICT Spending				
EU27	7.2%	3.0%	5.9%	8.4%
UK	7.2%	2.7%	5.8%	8.1%
Switzerland	7.8%	3.1%	5.8%	8.1%
Rest of EEA (NO, LI, IS)	8.2%	5.1%	7.5%	9.7%

GDP				
EU27	1.7%	0.8%	1.7%	2.7%
UK	1.5%	0.7%	1.5%	2.4%
Switzerland	1.8%	0.9%	1.8%	2.8%
Rest of EEA (NO, LI, IS)	1.4%	0.7%	1.4%	2.2%

3.2.2 Policy and regulatory assumptions

The development of the policy/regulatory assumptions for the scenarios is highly relevant, particularly because it defines the policy options for the different scenarios and therefore it contributes to extract the policy insights, ultimate goal of this study. This requires two steps:

1. The selection of the EU policies and regulations with the highest level of impact on the data market and level of uncertainty. The evaluation ranges from very low to very high.
2. The development of alternative outcomes for the selected policies, under the 3 scenarios is done through a matrix tool which is used to help the development of these alternative assumptions by scenario.

As in the previous editions, we will continue using a matrix tool to analyze the evolution of key policy initiatives impacting the European Data Market and Data Economy.

In our analysis, we will rely on IDC's EMEA Digital Regulations and Policies Radar¹¹ as a reference point for identifying key policy areas and regulatory initiatives.

¹¹ [EMEA Digital Regulations and Policies Radar, 2023 Update](#); [EMEA Digital Regulations and Policies Radar — 2024 Update](#)

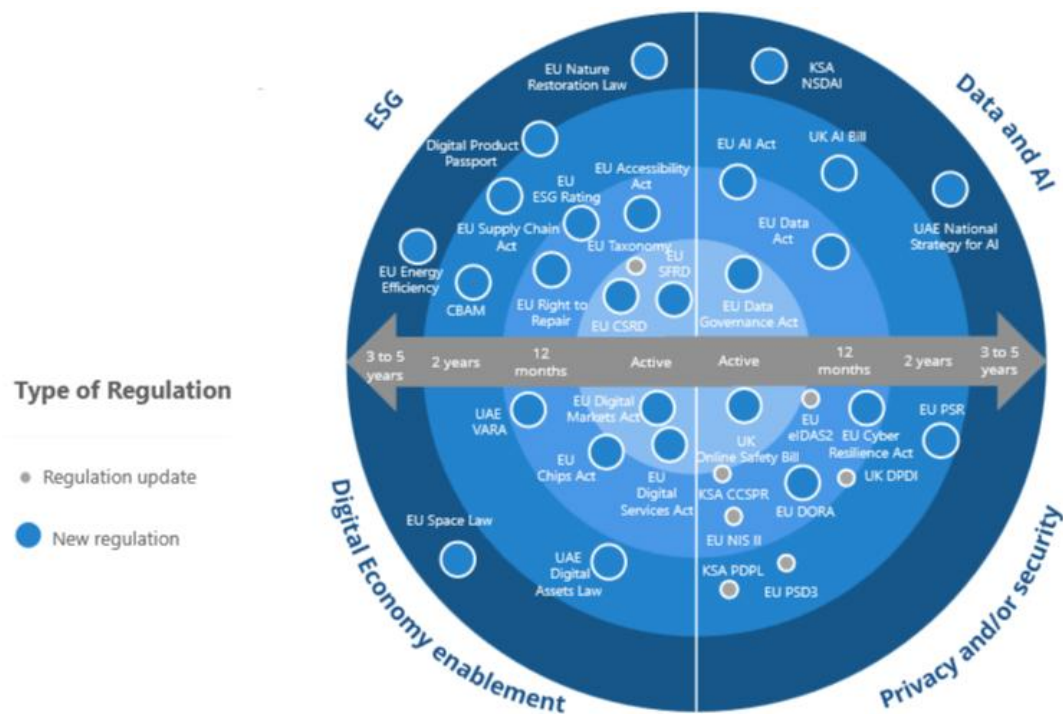


Figure 14 IDC's EMEA Digital Regulations and Policies Radar, 2024

Source: IDC, EMEA Digital Regulations and Policies Radar — 2024 Update, #EUR152325424

The European Digital Strategy, launched in 2020, outlined a five-year plan addressing various technological areas, including data, artificial intelligence, cybersecurity, and privacy. With the previous Commission's mandate concluded, a new European Commission is now being established and a new strategy for digital policies is expected to be published.

The European Union is preparing for another digital legislative push ahead of the five-year term of the next European Commission. On 18 July 2024, European Commission President Ursula von der Leyen, who was elected for a second mandate, presented to the European Parliament her so called manifesto; Political Guidelines for the next European Commission 2024–2029¹². On 17 September 2024, she also proposed a list of Commissioners-designate and determined their portfolios, aligning them with the ambitions outlined in the Political Guidelines.

The manifesto of Ursula von der Leyen is expected to prioritize digital sovereignty, growth of the data economy, and the regulation of emerging technologies, setting the stage for a renewed focus on Europe's digital transformation.

Regarding the portfolios, digital policy falls under the responsibility of Henna Virkkunen, Executive Vice-President (2024–2029) of the European Commission. Virkkunen, a Finnish national, an ex-Member of the European Parliament serves as Executive Vice-President for Tech Sovereignty, Security, and Democracy.

Looking ahead, we can consider what to expect under the new portfolio for digital and technology. In the official mission letter¹³ addressed to Ms. Virkkunen responsible for the Digital and Frontier Technologies portfolio, the key focus remains on some of the plans established earlier, such as achieving the 2030 Digital Decade targets, implementation of the digital regulations (DA, DGA, DSA,

¹² [Political Guidelines 2024-2029 | European Commission](#)

¹³ [Henna Virkkunen - Mission letter | European Commission](#)

DMA, AI Act etc.) and introducing a new list of initiatives. It is clear that both the EC president and former ECB president Mario Draghi agree that “Europe’s competitiveness is hamstrung by its lower productivity compared to its direct global competitors. Central to this is the insufficient diffusion of digital technologies, impacting our ability to use tech to develop new services and business models¹⁴”.

List of new initiatives:

Table 16 List of new EU legislative initiatives

Data	Artificial Intelligence	Quantum & Microchips	Broadband
European Data Union Strategy	AI Factories Initiative	EU Quantum Chips Plan	Digital Network Act
	Apply AI Strategy		
	European AI Research Council		
	EU Cloud and AI Development Act		

A more detailed analysis of the future legislative and policy landscape will be provided in the upcoming First Report on the Policy Conclusions. That report will explore potential pathways based on three scenarios, incorporating the initiatives mentioned above, existing policies, and investment plans. It will offer a comprehensive view of the evolving digital and tech policy environment.

3.2.3 Data Market Dynamics Factors

The key dynamics shaping the European data market include a technology-push model driving supply-side innovation, paired with an underdeveloped demand-side where potential users remain a minority. While a dynamic and emerging data industry is fostering innovation, barriers such as organizational resistance, skills gaps, high costs, and complex regulations hinder broader adoption.

Bridging the supply-demand gap requires targeted efforts to activate demand through education, skills development, and improved collaboration between stakeholders. Balanced regulatory frameworks and sector-specific initiatives will further support sustainable growth and integration of data-driven solutions.

3.2.4 Global Mega Trends

As presented in the Final Report on Facts and Figures of the last edition of the EDM Study¹⁵, the key factors driving the global trends remained unchanged in 2023 and 2024. In 2023, a new chapter of the digital business era started: AI everywhere. While in 2024 the key focus of the conventions of business and tech leaders in every organisation was all about Generative AI. In this first report we share the latest predictions.

¹⁴ [Political Guidelines 2024-2029 | European Commission](#) page 9 on “Boosting productivity with digital tech diffusion.”
¹⁵ <https://digital-strategy.ec.europa.eu/en/library/results-european-data-market-study-2021-2023>

The key source we use to define this factor is the worldwide **IDC Futurescape predictions report**¹⁶ which has consistently served as an invaluable reference for identifying megatrend (see Figure below for the extract from the 2025 IT Predictions) disruptions.

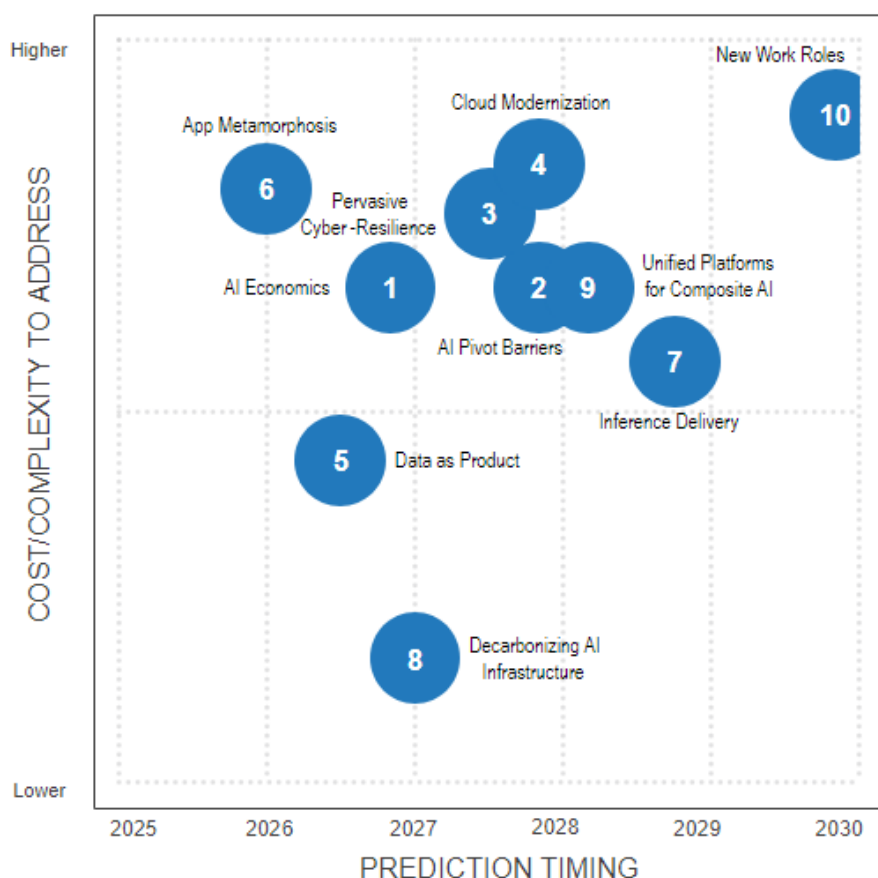


Figure 15 IT Predictions Global Mega Trends

Source: extract from IDC, IDC FutureScape: Worldwide IT Industry 2025 Predictions

Global trends assumptions are worldwide developments which directly affect the European data market and economy trajectory. The most important scenario assumptions concern the drive to automate, AI driven business models and workplace transformation, regulatory flux, customer and citizen expectations for digital services, ESG implementation and risk management, expending digital security frontiers, rethinking the globalization (supply chain and other macroeconomic challenges).

3.2.5 Overview of the scenarios for 2030

The 2030 scenarios outline different pathways of the evolution of the European Data Market (EDM) and Data Economy in the next years, exploring the different mix of factors and policy choices which may lead to achieving the EU's ambitious objectives or, on the contrary, lead to a setback.

The scenarios are structured as follows:

¹⁶ <https://www.idc.com/getdoc.jsp?containerId=US51736824&pageType=PRINTFRIENDLY>

- **Baseline scenario**, with the main assumptions based on the continuation of current growth trends and the evolution of current framework conditions.
- **High Growth scenario**, whereby the data market enters a faster growth trajectory, thanks to more favourable framework conditions.
- **Challenge scenario**, whereby the data market grows more slowly than in the Baseline scenario because of less favourable framework conditions and a less positive macroeconomic context.

3.2.6 Baseline

The baseline scenario predicates a slower growth trend to 2030 with a cumulative **GDP average growth rate of 1.7%** over the period 2025-2030 in the EU, versus a 0.8% average growth rate in the Challenge scenario and a 2.7 % in the High Growth scenario.

In the baseline scenario, ICT spending in the EU27 is projected to grow at a rate of 5.9% by 2030, with a compound annual growth rate (CAGR) of 7.2% between 2025 and 2030. This reflects moderate growth driven by gradual economic recovery and ongoing digital investments.

Value of the Data Market

The marketplace where digital data is exchanged as “products” or “services” as a result of the elaboration of raw data.



Value of the Data Economy

The Data Economy measures the overall impacts of the data market on the economy as a whole.

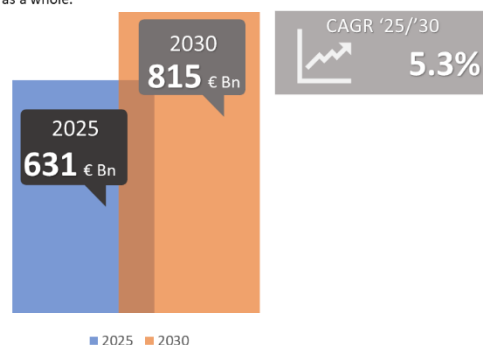


Figure 16 Baseline Scenario Overview

3.2.7 High Growth

As in the previous editions we remained on the same line of definition and the key characteristics of the High Growth Scenario. with a heightened focus on digital innovation and a greater share of ICT investments relative to GDP. A quicker resolution of international conflicts is expected to enhance economic conditions by 2025-2026, driving growth beyond the baseline from 2025 onward. This scenario features accelerated data innovation and digital transformation throughout Europe, underpinned by a globally respected data framework.

Value of the Data Market

The marketplace where digital data is exchanged as “products” or “services” as a result of the elaboration of raw data.



Value of the Data Economy

The Data Economy measures the overall impacts of the data market on the economy as a whole.

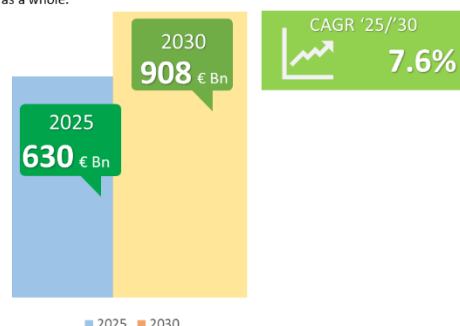


Figure 17 High Growth Scenario Overview

3.2.8 Challenge

The Challenge scenario in 2025 will be marked by a stagnant macroeconomic environment, unfavourable framework conditions, and slower dissemination of digital innovation. In this scenario, the Data Market is projected to grow at a modest pace, reaching a value of €100 billion in 2025 and €121 billion by 2030, with a 3.9% Compound Annual Growth Rate (CAGR) between 2025 and 2030. Similarly, the Data Economy is expected to be valued at €630 billion in 2025 and rise to €743 billion in 2030, reflecting a 3.3% CAGR over the same period.

Value of the Data Market

The marketplace where digital data is exchanged as “products” or “services” as a result of the elaboration of raw data.



Value of the Data Economy

The Data Economy measures the overall impacts of the data market on the economy as a whole.

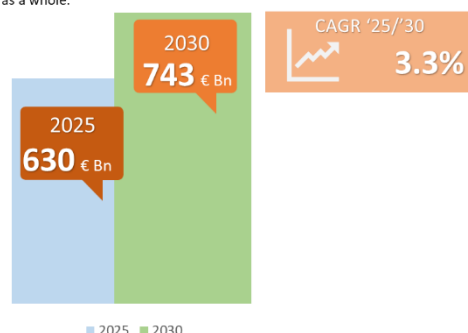


Figure 18 Challenge Scenario Overview

3.3 The Data Market and the Data Economy as catalysts of the Single Market and Europe’s Competitiveness

Whatever the trajectories followed by the data market and the data economy over the next few years, both measures will remain key in shaping Europe’s ability to offer a wider range of sophisticated data-related products and services, enlarge the employment base of data professionals and strengthen the data companies ecosystem – in terms of number of organisations participating in the data market as well as of revenues generated by these companies. The data market and the data economy will also continue to positively affect the EU’s GDP through indirect and induced impacts on Europe’s economy as examined in chapter 8 of this report. These impacts will continue to bear fruit under the evolving

(and mixed) macroeconomic setting and the positive trends in the information technology sector. In this context, the data market and the data economy can be seen as valuable contributors not only to the European data ecosystem *per se* but also to the European Union's ambitions of fortifying the EU Single Market and bolster the block's competitiveness at the global level. Insights from Enrico Letta's Report¹⁷ on the Future of the Single Market and Mario Draghi's Report¹⁸ on European Competitiveness published in April and September 2024 respectively, underscore the transformative potential of digital integration and data-driven innovation in achieving these objectives.

Based on our quantitative model, and according to our latest indicators, the revenue generated by data companies within the EU27 across the different Member States, including the export of data products and services outside the EU, is expected to exceed €115 Billion in 2025, marking an increase of 11.6% with respect to 2024 according to our Baseline scenario. These values are higher than our (already high) estimates of the Data Market indicators for the same timeframe, indicating the robustness of a European market of data product and services both inside and outside the EU. What is more, data monetisation – as measured by our mode I – continues to develop at a double-digit pace, with a year-on-year growth of 15% in 2025 over 2024. As noted in the Letta's report, the Single Market, originally designed for a "smaller, simpler world," must evolve to address the complexities of the modern global economy. This includes the rapid digitization of industries, increasing geopolitical tensions, and the rise of global competitors such as the US and China. Letta further emphasizes the need for a "fifth freedom" — the free movement of data — to enhance research and innovation in the Single Market (Letta, 2024, p. 10). The report also asserts that "establishing a common European data space is essential for fostering cross-border data flows and enabling data-driven innovation" (Letta, 2024, p. 11). This concept is particularly relevant in fostering cross-border collaboration in the data economy, reducing fragmentation, and enabling economies of scale. Overall, Letta's advocacy for a single market of data in the EU underscores the needs for high-speed connectivity, cybersecurity, and cloud-edge infrastructure. At the same time, it emphasizes the critical role that a robust market of data products and services, as well as a vibrant ecosystem of data companies can play to accomplish the EU Single Market.

Draghi's Report on European Competitiveness complements this perspective by emphasizing the role of data-intensive technologies such as artificial intelligence (AI), machine learning (ML), and quantum computing in driving innovation and keeping the EU abreast with the technological feats of its major competitors on the international scene. Draghi identifies the innovation gap as a critical challenge for the EU's competitiveness. Chapter 2 of the Draghi's report emphasizes the importance of creating a conducive environment for innovation by investing in R&D, attracting talent, and fostering collaboration between academia and industry (Draghi, 2024, p. 11). The data economy plays a central role in these efforts, as data-driven technologies such as artificial intelligence (AI), machine learning (ML), and advanced analytics are fundamental to closing the innovation gap. The report highlights the urgency of addressing Europe's innovation gap through increased R&D investments, enhanced public-private partnerships, and improved access to venture capital. These measures would not only support

¹⁷ Letta, E. (2024). Report on the Future of the Single Market. European Commission. Available at: https://single-market-economy.ec.europa.eu/news/enrico-lettas-report-future-single-market-2024-04-10_en

¹⁸ Draghi, M. (2024). The Future of European Competitiveness: A Competitiveness Strategy for Europe. European Commission. Available at: https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en (https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en)

the development of emerging technologies based on the intensive exploitation of data but also ensure their integration into the broader data economy. Draghi recommends establishing public-private partnerships and strengthening links between small and medium-sized enterprises (SMEs) and research institutions to promote data-driven innovation (Draghi, 2024, p. 14). This approach aligns with the EU's broader digital transformation goals and the creation of sector-specific data spaces in areas like healthcare, manufacturing, and mobility.

If we look at the development of the European Data Economy as measured by this Study for over more than a decade, we are confronted with a series of indicators that have been positively evolving since 2013, thus confirming the role of the data economy as a vital enabler of growth across all EU economic sectors and Member States. Our latest indicators estimate the contribution of the data market to the overall EU economy (i.e. the data economy) at nearly €580 Billion in 2024, €630 billion in 2025, and €815 Billion in 2030 according to the Baseline scenario. This translates to an overall impact of the data economy on the EU27 GDP of 4,7% in 2025 and 5.6% in 2030. If these estimates are correct, a potential link between the role of the data economy and the competitiveness upheld by Draghi can be established. Indeed, the report highlights, among other things, the economic benefits of the data economy, being them cost savings, efficiency gains, new revenue streams for European firms, or a facilitated access to global markets for European SMEs, or – again – the generation of new demand for high-skilled jobs addressing skills gaps and boosting employment in Europe. Draghi's report underscores the importance of leveraging these economic benefits to close the innovation gap and enhance Europe's global standing. In parallel, our study proposes an overall quantified estimate of some of these benefits by measuring the size and the impacts of the data economy in the EU.

A final note should be devoted to the data market and the data economy as catalysts for strategic autonomy. Both Letta and Draghi underline the strategic importance of reducing dependencies on external players and fostering European autonomy in critical technologies. As Draghi notes, "building technological sovereignty is not only a question of economic competitiveness but also a matter of strategic security for Europe" (Draghi, 2024, p. 23). The European Chips Act, GAIA-X initiative, and investments in AI-driven data ecosystems are all pivotal EU-driven initiatives towards the achievement of this goal. By measuring the key indicators of the data market and the data economy on the international level, our study introduces a few preliminary elements for a systematic comparison of the EU27 versus its major international partners and/or competitors.

4 Data Professionals

4.1 Definition

Data professionals are workers who collect, store, manage, and/or analyse, interpret, and visualise data as their primary activity or as a relevant part of their activity. Data professionals must be proficient with the use of structured and unstructured data, should be able to work with a huge amount of data, and should be familiar with emerging database technologies. Data professionals comprise the roles played by different data users: data technical professionals, data business professionals, and data consumers – defined below. The measure of data professionals includes data technical professionals and data business professionals only.

Data technical professionals are specialists in the collection, storage, management, modelling, and quality assurance of data, as well as the integration of various data sources to ensure consistency, accuracy, and quality of data. A data technical professional can, given the question that needs to be answered, ensure that the data supply chain is provided and that it is accurate.

Data business professionals have as a primary or significant focus the task of performing predictive analysis, qualitative analysis, data modelling, data extraction, and data summaries with the purpose of creating new insights and knowledge from available data. They have thorough industry and/or process understanding and can put data analysis into context and relate to existing trends within the industry or line of business they are in. They typically leave collection, management, and quality of data to the data technical professional but, using analysis tools such as Excel, Tableau, and Power BI, can summarise large amounts of data and visualise and present trends and insights to a wider audience of key stakeholders in the business in order to drive the strategic decision-making process in the organisation. Data scientists predominantly reside within the data business professional group.

Data consumers are product, process, human-resource, asset, or department employees and managers responsible for driving change or maintaining a position whereby decision-making is heavily reliant on the supply of data and insights based on large amounts of data. They work directly with data only part of the time. They are decision makers or stakeholders in a decision process whereby the data and insights provided determine the quality of the decisions made. A data consumer guides the business based on the data and insights provided through the data supply chain.

4.2 Measuring Data Professionals

As with the previous report, data professionals are defined as above and are measured using the EU Labour Force survey, with the data built from the International Labour Organisations ILOSTAT database and Eurostat's Structural Business Statistics and Business Demography. This data allows the modelling of data professionals by Member State, NACE II industry, and company size band. The data sources used are as follows:

Table 17 Data Professionals data sources

Data Source	Updated
Eurostat Business Demographic Statistics	Sep 2024
Eurostat Annual Structural Business Statistics	Aug 2024
IDC Worldwide Black Book (standard edition)	Sep 2024
ILOSTAT statistics and databases	Sep 2024

The number of data professionals in the EU27 is projected to continue its steady growth over the coming years. This highlights a sustained demand for data expertise as companies increasingly rely on data-driven decision-making. The share of data professionals as a percentage of total employment still indicates a gradual expansion of the data workforce relative to overall employment levels, suggesting that data roles are becoming a more integral part of the broader economy.

The number of data professionals per 1,000 data user companies in the EU remained relatively stable, increasing slightly from 12.7 in 2023 to 12.8 in 2024, reflecting a modest growth rate of 0.79%.

Meanwhile, the total number of data professionals in the EU grew from 7.897 million in 2023 to 8.232 million in 2024, a notable 4.2% increase. This rise indicates a growing demand for data expertise, reflecting the expanding role of data-driven practices across industries.

Additionally, the share of data professionals in the total employment rose from 4.4% to 4.5%, demonstrating a steady 2.27% growth rate. This trend highlights the increasing penetration of data roles within the broader workforce, signifying the critical role of data professionals in shaping the EU's evolving digital economy.

An overview of Data Professionals is included in the table below.

Table 18. Data Professionals – Summary Statistics, 2023–2024, 2025 Forecast, 2024-2023 Growth

N.	Region	Name	Description	2023	2024	2025 Forecast	Growth Rate 2024–2023
1.1	EU27	Number of data professionals	Total number of data professionals in EU (000s)	7,897	8,232	8,566	4.2%
1.2	EU27	Data professionals share of total employment	Share of data professionals on total employment in EU (%)	4.4%	4.5%	4.7%	2.27%
1.3	EU27	Intensity share of data professionals	Average number of data professionals per 1,000 data user company (units)	12.7	12.8	12.7	0.79%

4.2.1 Data Professionals by Country

Table 19 shows the size and growth of the number of data professionals by Member State. Growth overall remains high. Major economies like Germany, France and Italy, continue to show steady growth. Smaller economies such as Malta, Luxembourg, and Portugal are experiencing the fastest growth in data professionals between 2023 and 2024. This suggests that these countries are rapidly scaling their data capabilities, potentially catching up with larger economies in terms of digital workforce penetration.

Table 19 - Data Professionals by Country 2023, 2024, 2025 forecast, 2024-2023 growth

	2023	2024	2025 Forecast	Growth 2024/2023
Austria	156	157	158	1.1%
Belgium	142	146	149	2.6%
Bulgaria	99	103	107	3.9%
Croatia	52	54	56	3.5%
Cyprus	19	21	22	6.3%
Czechia	223	234	244	4.9%
Denmark	132	139	146	5.7%
Estonia	34	36	38	6.1%
Finland	122	127	131	4.0%
France	1,213	1,230	1,277	1.4%
Germany	1,985	2,097	2,203	5.6%
Greece	79	82	85	3.8%
Hungary	182	191	200	4.8%
Ireland	119	127	134	6.7%
Italy	755	791	820	4.8%
Latvia	36	37	38	3.1%
Lithuania	55	58	60	4.5%
Luxembourg	16	18	19	6.6%
Malta	11	12	13	7.3%
Netherlands	366	383	401	4.8%
Poland	675	675	679	0.0%
Portugal	203	217	231	6.9%
Romania	225	252	264	11.8%
Slovakia	112	119	125	6.1%
Slovenia	41	42	43	3.0%
Spain	569	596	619	4.6%
Sweden	275	289	303	5.2%
Switzerland	234	246	255	5.1%
United Kingdom	2,029	2,107	2,171	3.8%
Rest of EEA (NO, LI, IS)	172	183	192	6.1%

Total EU27	7,897	8,232	8,566	4.2%
Total EU27 + U.K.	9,926	10,339	10,737	4.2%
Total All Countries	10,332	10,767	11,184	4,2%

The Figure below presents an overview of the number of data professionals by country for 2024 and the growth rate from 2023 to 2024. The figure highlights the largest data markets, with Germany and France leading in absolute numbers, followed by Italy, Spain, and the Netherlands. These countries continue to be key players in the European data workforce, reflecting their strong digital economies and well-established industries reliant on data expertise.

A crucial insight from the figure is the growth rate in data professionals between 2023 and 2024, which varies significantly across different countries. The highest growth rate was recorded in Romania, with an impressive increase of 11.8%, signalling a rapid expansion of its data-driven economy. Other high-growth countries include Malta (7.3%), Portugal (6.9%), and Ireland (6.7%), reflecting a surge in demand for data professionals in these regions.

In contrast, some countries experienced slower growth or stagnation, such as Poland (0.0%) and Austria (1.1%), indicating relatively stable or slower-growing data professional markets in these nations.

This data underscores the evolving demand for data professionals across Europe, with some regions experiencing accelerated growth, while others maintain more moderate expansion. The trends reflected in this figure provide valuable insights into the shifting landscape of data expertise, helping policymakers and businesses understand where data-driven skills are growing most rapidly.

Figure 19 Data Professionals by country 2024 and 2024-2023 growth

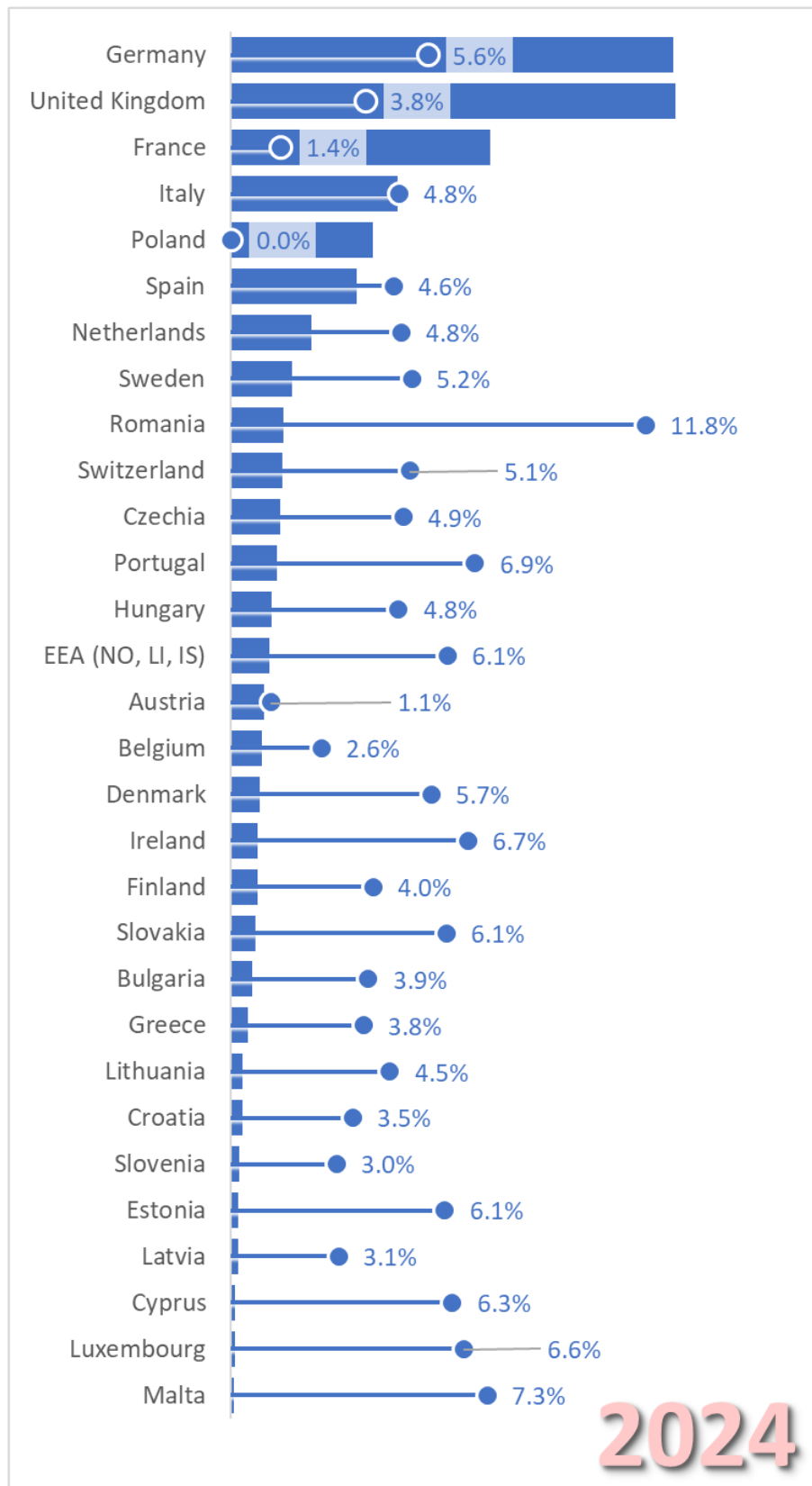
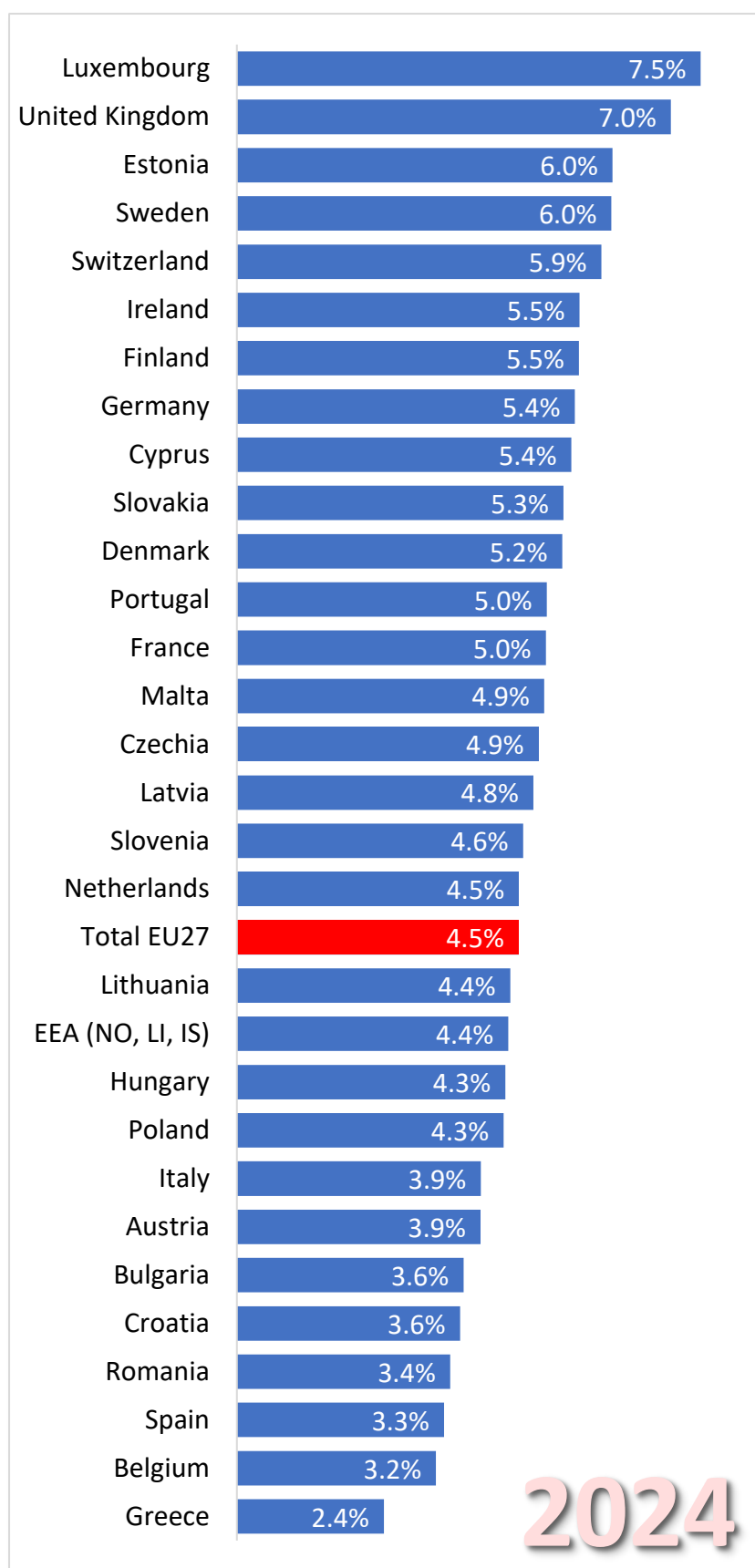


Figure 20 Data Professionals - share of employment by country 2024

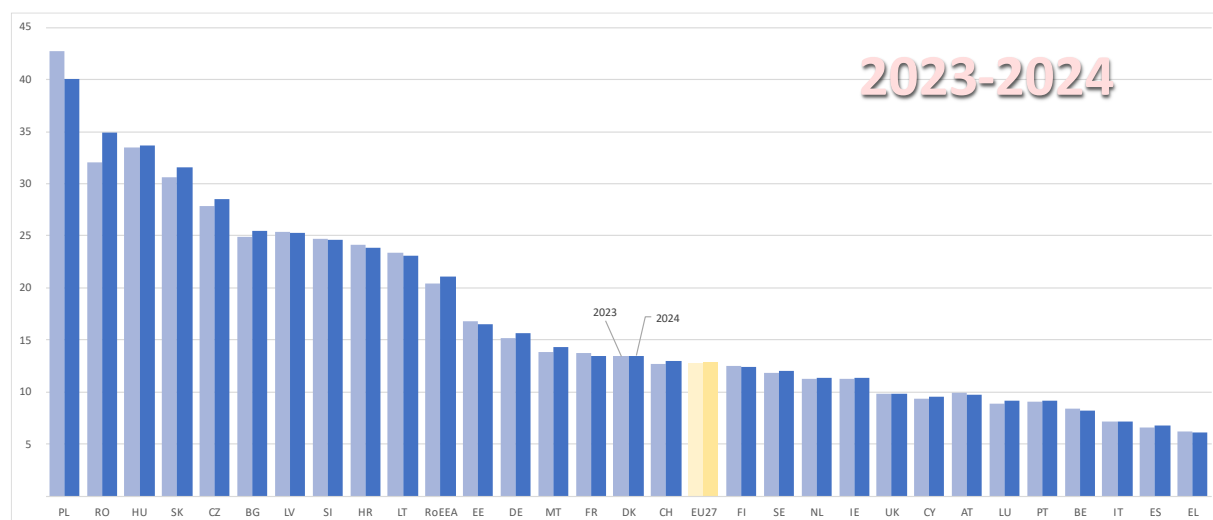


With data professionals comprising 7.5% of its workforce in 2024, Luxembourg leads Europe in this metric, underscoring the country's emphasis on financial services and digital innovation.

The increase in the proportion of data professionals within the EU workforce from 4.4% in the previous study to 4.5% in 2024 represents modest growth. The incorporation of data roles across various industries is a progressive process. Organizations often require time to adapt to new technologies and to recognize the value of data-driven decision-making, leading to a steady rather than rapid increase in data professional employment. Developing a workforce skilled in data science and analytics necessitates substantial investment in education and training. The time required to educate and train individuals to meet industry standards contributes to the gradual growth in the percentage of data professionals. Economic fluctuations can influence hiring practices. During periods of economic uncertainty, companies may be cautious in expanding their workforce, including roles in emerging fields like data science, thereby affecting the rate of growth in this sector.

The economic structure of each Member State significantly influences the average number of data professionals per data user company, as depicted in Figure 21. Economies centred on services, information technology, or manufacturing tend to employ more data professionals per user company compared to those focused on resource extraction or agriculture. However, some countries with a strong emphasis on data have a lower average number of data professionals per user company. This discrepancy is often due to a higher number of data user companies in these countries, rather than a shortage of data professionals.

Figure 21 - Average number of data professionals per user company by country 2023-2024



4.2.2 Data Professionals by Industry

Figure 22 and Table 20 presents the distribution of data professionals across various industries in 2024, along with the growth rates from 2023 to 2024. The data indicates a broadening recognition across industries of the value that data professionals bring to organizational strategy and operations. Sectors traditionally less data-intensive, such as healthcare and manufacturing, are increasingly investing in data expertise to drive innovation and maintain competitiveness. This trend underscores the necessity for a skilled data workforce capable of meeting the diverse and evolving needs of various industries.

The Information and Communication Technology sector dominates in growth of data professionals, reflecting its inherent reliance on data-driven processes and innovation. Notably, following the Information & Communication sector, the healthcare sector exhibits one of the highest growth rates in data professionals between 2023 and 2024. The surge is likely driven by the increasing adoption of electronic health records, telemedicine, and personalized medicine initiatives, all of which require robust data analysis capabilities.

Figure 22 - Data Professionals by Industry 2024 and 2024-2023 growth EU27

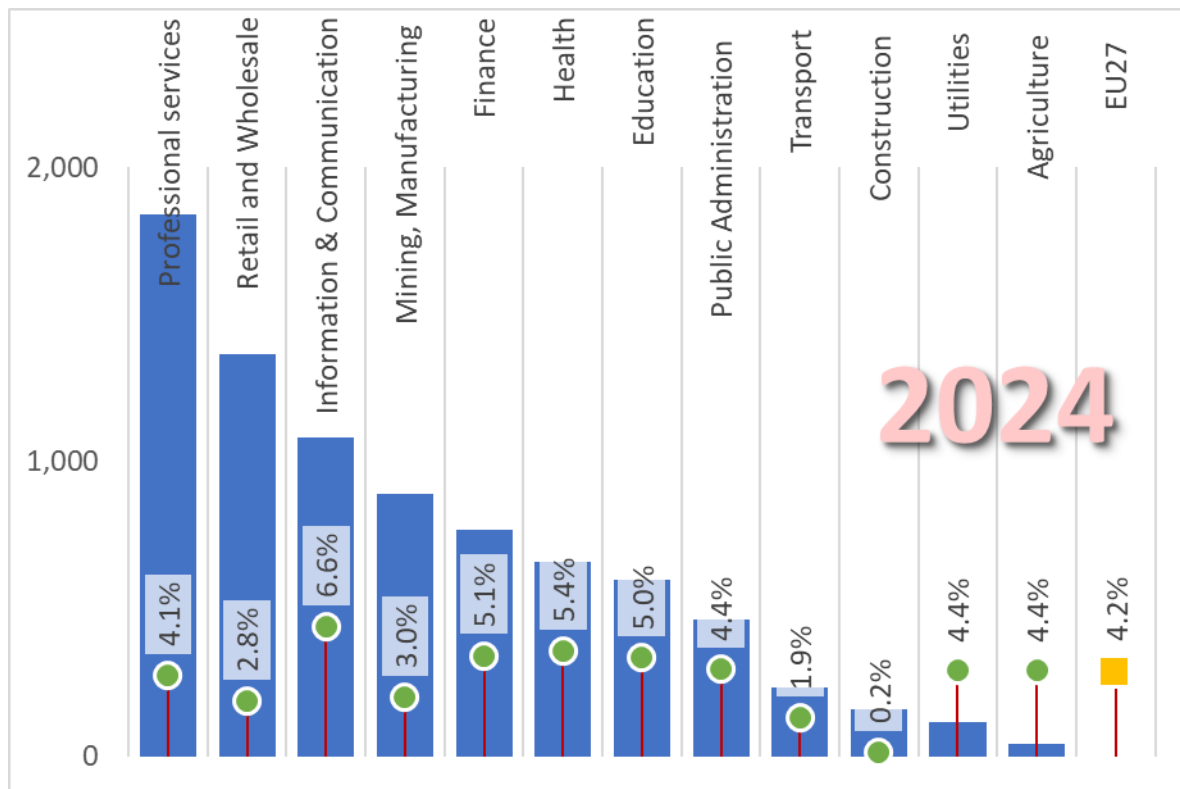


Table 20 - Data Professionals by industry 2023-2024, 2025 Forecast, growth 2024-2023

	2023	2024	2025 Forecast	Growth Rate 2024/2023
Professional services	1,769	1,843	1,930	4.1%
Retail and Wholesale	1,330	1,367	1,404	2.8%
Information & Communication	1,014	1,081	1,148	6.6%
Mining, Manufacturing	866	892	919	3.0%
Finance	732	770	803	5.1%
Health	626	659	687	5.4%
Education	572	600	624	5.0%
Public Administration	445	465	477	4.4%
Transport	231	235	245	1.9%
Construction	159	159	164	0.2%
Utilities	112	117	121	4.4%
Agriculture	41	43	43	4.4%
EU27	7,897	8,232	8,566	4.2%

4.3 Data Professionals Forecasts 2025 and 2030

Table 21 presents forecasts for the number of data professionals under three scenarios: Challenge, Baseline, and High Growth. We continue to anticipate strong growth in the number of data professionals over the period of the forecast, from 2025 to 2030. The High Growth Scenario anticipates a Compound Annual Growth Rate (CAGR) of 6.1% for the EU27 between 2025 and 2030, reaching approximately 11.5 million data professionals. Such robust expansion is driven by favorable policies, increased investment in data-driven industries, and accelerated digital transformation initiatives. Factors contributing to this growth include the implementation of supportive regulations, substantial funding for technological advancements, and widespread adoption of data-centric practices across sectors. The Challenge Scenario projection, with a CAGR of 2.8%, estimates approximately 9.9 million data professionals in the EU27 by 2030. This scenario may result from economic uncertainties, slower adoption of data-centric practices, or less supportive policy environments. Factors include economic downturns, regulatory hurdles, or a lack of investment in digital infrastructure, leading to restrained growth in the data professional workforce.

Table 21 - Data Professionals summary forecast, 2025, 2030 three scenarios (000's) and CAGR's (%)

	2025	2030, Challenge	2030, Baseline	2030, High Growth	CAGR 2025- 2030, Challenge	CAGR 2025- 2030, Baseline	CAGR 2025- 2030, High Growth
EU27	8,566	9,853	10,171	11,508	2.8%	3.5%	6.1%
EU27 + UK	10,737	12,320	12,666	14,202	2.8%	3.4%	5.8%
Total All Countries	11,184	12,818	13,192	14,816	2.8%	3.4%	5.8%

The shortage of data professionals in Europe significantly impacts growth forecasts within the sector. The High Growth Scenario anticipates a substantial increase in data professionals, driven by favorable policies and significant investments in education and training. The Challenge Scenario reflects slower growth, where the shortage is inadequately addressed, leading to significant limitations in the data market's development. Addressing the shortage of data professionals is vital for Europe to achieve more optimistic growth forecasts in the data and technology sectors.

Artificial intelligence (AI) significantly influences projections for data professionals. AI integration across industries heightens the need for professionals skilled in AI and machine learning. This trend is evident in the growing number of job postings requiring AI-related competencies in optimistic scenarios, proactive adaptation to AI trends leads to robust growth in data professions. Conversely, failure to embrace AI advancements may result in stagnation or decline in the data workforce.

Among the Member States, Germany is projected to have the highest number of data professionals by 2030, with estimates ranging from 2,655,000 in the Challenge scenario to 3,024,000 in the High Growth scenario.

Figure 23 Data Professionals by country 2025 forecast, 2030 three scenarios (000's)

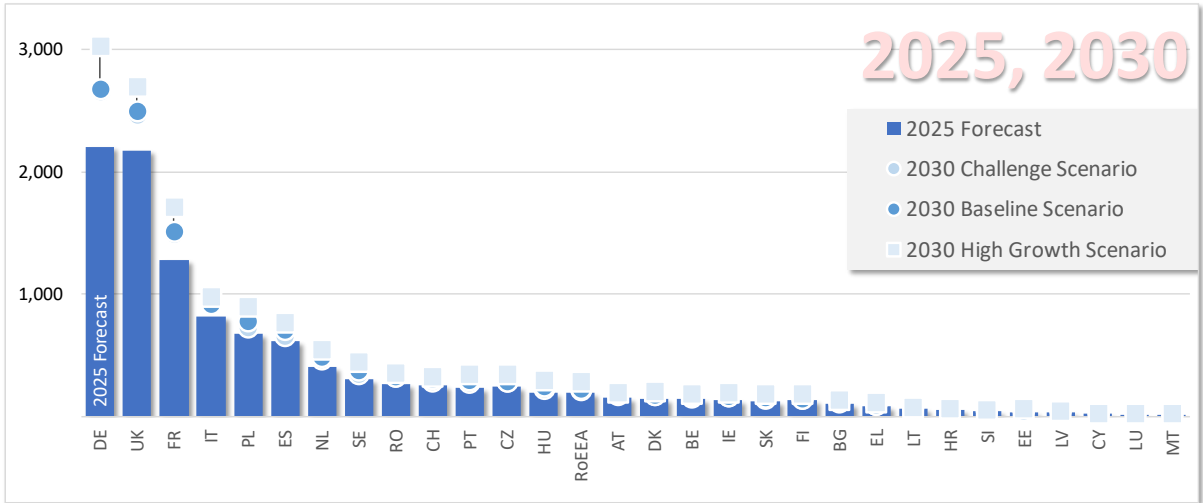


Table 22 - Data Professionals Forecast by country, 2025 and 2030 three scenarios (000's) and CAGR's (%)

	2025 Forecast	2030 Challenge	2030 Baseline	2030 high growth	CAGR '25- 30 Challenge	CAGR '25- 30 Baseline	CAGR '25- 30 High Growth
Austria	158	174	181	195	1.9%	2.8%	4.2%
Belgium	149	158	166	186	1.1%	2.2%	4.5%
Bulgaria	107	115	123	139	1.5%	3.0%	5.4%
Croatia	56	60	64	67	1.7%	2.7%	3.8%
Cyprus	22	27	27	28	4.2%	4.6%	5.0%
Czechia	244	286	289	345	3.2%	3.4%	7.2%
Denmark	146	174	179	210	3.5%	4.1%	7.5%
Estonia	38	45	47	63	3.4%	4.2%	10.3%
Finland	131	146	150	185	2.1%	2.7%	7.1%
France	1,277	1,486	1,510	1,713	3.1%	3.4%	6.0%
Germany	2,203	2,655	2,675	3,024	3.8%	4.0%	6.5%
Greece	85	92	99	111	1.7%	3.2%	5.4%
Hungary	200	221	241	296	2.1%	3.8%	8.2%
Ireland	134	163	165	193	3.9%	4.3%	7.6%
Italy	820	914	916	981	2.2%	2.2%	3.7%
Latvia	38	41	43	43	1.5%	2.7%	2.7%
Lithuania	60	65	71	77	1.7%	3.5%	5.0%
Luxembourg	19	23	24	29	4.5%	5.3%	9.3%
Malta	13	16	17	20	4.8%	5.2%	9.7%
Netherlands	401	463	489	547	2.9%	4.0%	6.4%
Poland	679	726	781	902	1.4%	2.9%	5.9%
Portugal	231	275	295	345	3.6%	5.0%	8.4%
Romania	264	325	327	353	4.3%	4.4%	6.0%
Slovakia	125	148	153	182	3.4%	4.1%	7.8%
Slovenia	43	46	49	52	1.4%	2.7%	3.8%
Spain	619	662	712	770	1.3%	2.8%	4.5%
Sweden	303	344	376	451	2.5%	4.4%	8.3%
Switzerland	255	285	301	327	2.2%	3.4%	5.1%
United Kingdom	2,171	2,467	2,495	2,694	2.6%	2.8%	4.4%
Rest of EEA (NO, LI, IS)	192	213	226	287	2.1%	3.3%	8.4%
Total EU27	8,566	9,853	10,171	11,508	2.8%	3.5%	6.1%
Total EU27 + U.K.	10,737	12,320	12,666	14,202	2.8%	3.4%	5.8%
Total All Countries	11,184	12,818	13,192	14,816	2.8%	3.4%	5.8%

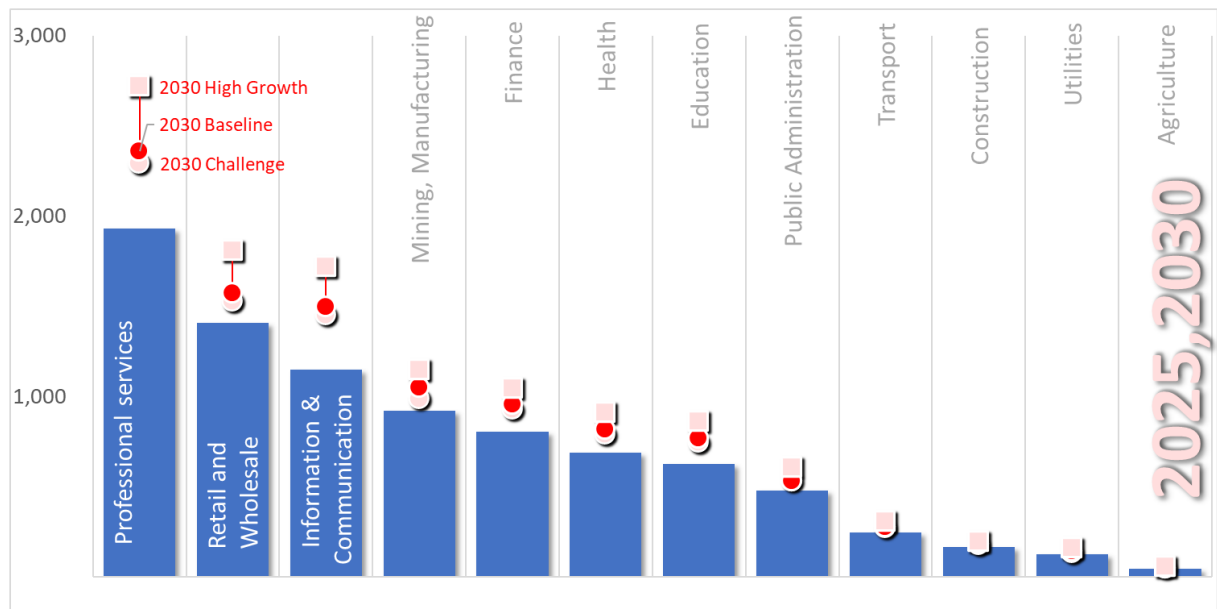
4.3.1 Data Professionals by Industry: Forecasts 2025, 2030

These projections by industry highlight a significant and widespread increase in the demand for data professionals across various industries by 2030, particularly under the High Growth scenario.

The top three industries account for more than half (53%) of data professionals by 2030 (Baseline forecast), and the top four industries account for nearly two-thirds (64%) of data professionals by this time.

The Information & Communication sector is projected to experience the highest growth, emphasizing the critical role of data expertise in driving innovation and efficiency. Other sectors, including Professional Services, Education, Health, and Finance, also demonstrate substantial growth, indicating a broadening recognition of the value of data-driven decision-making.

Figure 24 - Data Professionals forecast by Industry 2025 Forecast, 2030 three scenarios (000's)



4.4 Key Findings

KEY HIGHLIGHT FOR THE EU27

There is a rising demand for data professionals and the growth in the data market itself increases pressure on industry and education to deliver enough Data Professionals to not strangle growth of the data market over the next 5-6 years.

In 2024, the number of data professionals across EU Member States experienced steady growth, highlighting the increasing importance of data expertise throughout the region. **The total number of data professionals in the EU-27 grew from 7.897 million in 2023 to 8.232 million in 2024, marking a notable 4.2% increase. This rise reflects the expanding role of data-driven practices across industries and the growing demand for skilled professionals in the field.** Germany continued to lead as the largest contributor, followed by France and Italy, with Spain and Poland also playing significant roles in expanding the data workforce. Even smaller Member States, such as Malta, Cyprus, and Luxembourg, showed consistent growth, demonstrating the widespread demand for skilled data professionals across the European Union. This trend underscored the critical role of data expertise in driving innovation and supporting digital transformation efforts across Europe.

The number of Data User companies rises in line with the growth in the number of data professional. **The** more optimistic forecast for data user companies' forecasts growth higher than that for Data Professionals, suggesting a possible shortfall in these professionals if growth is towards the more optimistic end of the overall data forecast.

There will be more than 10 million data professionals in the EU27 by 2030 (Baseline forecast), if Member States are able to put in place the training and education needed to develop these professionals- a growth of 3.5% per year between 2025 and 2030. Our most optimistic forecast sees the number of data professionals growing at 6.1% each year out to 2030.

Data Professionals' share of total employment continues rising up to 4.5% by 2024 from 4.4% in 2023. This reinforces the importance of the data economy within the Member States.

In 2024, the distribution of data professionals across sectors in the EU27 showcased a significant growth in areas critical to the economy and digital transformation. The professional services sector led the way, employing the largest number of data professionals, followed by retail and wholesale, and information and communication, which also showed notable increase. Other key sectors, such as finance, health, and mining and manufacturing, experienced steady growth, reflecting the expanding reliance on data-driven solutions across these industries. This trend is expected to be confirmed and accentuate over the next few years: by 2030, particularly under the High-Growth scenario, the top three industries will account for more than half of data professionals; if we extend the picture to the top four industries (adding the finance sector to professional services, retail and wholesale and information and communication technologies), the European economy will encompass nearly two-thirds of the overall data professionals.

While Professional Services remains a key sector, its intensity share of data professionals is expected to slightly decline from 9.9 in 2023 to 9.7 in 2025. However, industries like Mining & Manufacturing and Utilities show a steady increase in their data workforce, signalling an expanding role of data expertise across traditionally less data-intensive sectors.

In 2024, the distribution of data professionals across sectors in the EU27 highlighted significant growth in areas critical to the economy and digital transformation. The professional services sector led the way, employing the largest number of data professionals, followed by retail and wholesale, and information and communication, which also showed notable increase. Other key sectors, such as finance, health, and mining and manufacturing, experienced steady growth, reflecting the expanding reliance on data-driven solutions across these industries.

5 Data Companies

5.1 Definition

Data companies are organisations that are directly involved in the production, delivery, and/or usage of data in the form of digital products, services, and technologies. They can be both data supplier and data user organisations:

- **Data suppliers** have as their main activity the production and delivery of digital data-related products, services, and technologies. They represent the supply side of the data market.
 - The data supplier's definition accommodates the inclusion of the sale and purchase of data (data monetisation), as well as data software tools, hardware, and data services.
 - European data suppliers, counted as legal entities based in one EU Member State, as a share of the total number of enterprises included in the industry classifications of A, C, E, G, H, J, K, M, P, and Q from NACE rev2¹⁹.
- **Data users** are organisations that generate, exploit, collect, and analyse digital data intensively and use what they learn to improve their business. They represent the demand side of the data market.
 - European data users, counted as legal entities based in one EU Member State, as a share of the total number of private enterprises in the EU.

These definitions are unchanged from the prior studies.

5.2 Measuring Data Companies

Table 23 gives an overview of **the number of data supplier and data user companies** across the Member States. The number of **data supplier companies** increased from approximately 249,446 in 2023 to 266,173 in 2024, reflecting a 6.7% growth rate in EU27. This growth underscores the EU's expanding focus on data-driven services and products. Additionally, **the share of data suppliers** among total companies rose from 2.2% in 2023 to 2.3% in 2024, marking a steady rise in the presence of data-focused businesses across key industries.

In parallel, the **number of data user companies** grew from approximately **622,185 in 2023 to 644,075 in 2024, a 3.5% increase**. This rise highlights the continued adoption of data analytics and insights across a variety of sectors. However, **the share of data users** among total companies remained stable at 2.3%, indicating that while the absolute number of data user companies increased, the broader adoption rate across industries is holding steady.

¹⁹ [Statistical Classification of Economic Activities in the European Community Rev. 2 - EU Vocabularies - Publications Office of the EU](#)

Table 23 - Indicator 2: Data Companies 2023-2024, 2025 forecast and 2024-2023 growth

N.	Name	Description	Market	2023	2024	2025 Forecast	Growth 2024/2023
2.1	Number of data suppliers	Total number of data suppliers measured as legal entities based in the EU ('000s)	EU27	249,446	266,173	280,173	6.7%
2.2	Share of data suppliers	Percentage share of data companies of total companies in the NACE II industries of A, C, E, G, H, J, K, M, P, and Q	EU27	2.2%	2.3%	2.4%	4.5%
2.3	Number of data users	Total number of data users in the EU, measured as legal entities based in one EU country	EU27	622,185	644,075	674,180	3.5%
2.4	Share of data users	Percentage share of data users of total companies in the EU industry	EU27	2.3%	2.3%	2.4%	0.1%

5.3 Measuring Data Supplier Companies

5.3.1 Data Suppliers by Country

Germany continues to be the country with the largest number of data suppliers among the EU27 increase from 46,802 in 2023 to 48,326 in 2024 representing a modest growth rate of 3.3%. As Europe's largest economy, Germany's diverse industrial base—including automotive, engineering, and manufacturing sectors—drives demand for data analytics and digital services. Initiatives like "Industrie 4.0" promote digital integration in manufacturing, fostering the growth of data suppliers. The country's strong emphasis on STEM education ensures a steady stream of data science and IT professionals, while a robust startup ecosystem, supported by government incentives and venture capital, encourages the proliferation of data-centric enterprises.

Ireland experienced one of the most significant increases among EU27 countries, with the number of data suppliers rising by 8.9% from 6,205 in 2023 to 6,755 in 2024. This growth is driven Ireland's favourable business environment, low corporate tax rates, and robust tech ecosystem have attracted numerous data-centric enterprises. The country's strategic location and strong digital infrastructure further enhance its appeal as a hub for data suppliers.

Notably, countries such as Cyprus and Malta also demonstrated remarkable growth in 2024, with increases of 13.1% and 13.3%, respectively. Meanwhile, Romania, with a growth rate of 5.9%, continues to build on its competitive labour costs and a growing pool of IT professionals.

Spain, Italy, and France also reported strong increases, with Spain growing by 7.5%, Italy by 7.4%, and France by 9.9%. This growth is indicative of these nations' increasing investments in digital infrastructure and the adoption of data-driven business practices across various industries.

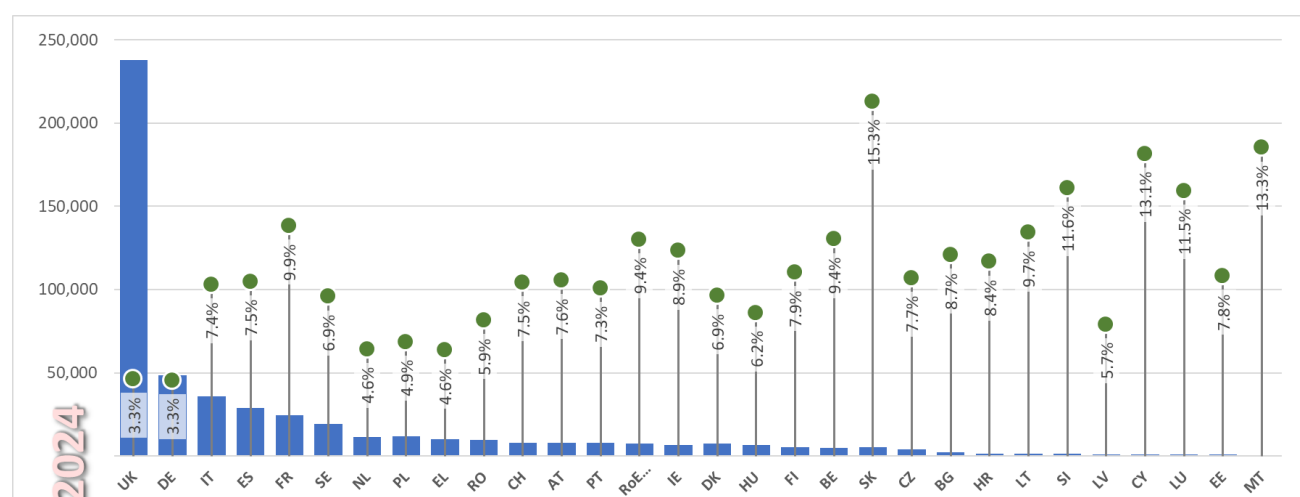
Slovakia stands out with the highest growth rate of 15.3% among EU27 countries, rising from 4,483 data suppliers in 2023 to 5,170 in 2024. This surge highlights the impact of government-led digital transformation initiatives and increasing foreign investment in the region.

These trends underline the continued expansion of the data economy across the EU27 in 2024, with both larger and smaller economies contributing to the growth of data suppliers.

Table 24 – Data Supplier Companies by country 2023-2024, 2025 forecast, and 2024-2023 growth

	2023	2024	2025 Forecast	Growth 2024/2023
Austria	7,218	7,766	8,409	7.6%
Belgium	4,613	5,045	5,295	9.4%
Bulgaria	2,181	2,370	2,393	8.7%
Croatia	1,360	1,474	1,478	8.4%
Cyprus	937	1,060	1,107	13.1%
Czechia	3,503	3,773	4,020	7.7%
Denmark	6,990	7,475	7,634	6.9%
Estonia	946	1,020	1,076	7.8%
Finland	4,765	5,143	5,592	7.9%
France	22,317	24,536	25,199	9.9%
Germany	46,802	48,326	50,495	3.3%
Greece	9,833	10,283	11,246	4.6%
Hungary	6,125	6,504	7,121	6.2%
Ireland	6,205	6,755	7,742	8.9%
Italy	33,452	35,931	36,738	7.4%
Latvia	1,052	1,112	1,155	5.7%
Lithuania	1,212	1,329	1,353	9.7%
Luxembourg	949	1,058	1,093	11.5%
Malta	445	504	535	13.3%
Netherlands	10,853	11,354	12,319	4.6%
Poland	11,252	11,807	11,952	4.9%
Portugal	7,165	7,685	8,166	7.3%
Romania	9,016	9,544	10,698	5.9%
Slovakia	4,483	5,170	5,180	15.3%
Slovenia	1,061	1,184	1,204	11.6%
Spain	26,801	28,822	30,744	7.5%
Sweden	17,909	19,142	20,231	6.9%
Switzerland	7,540	8,105	8,611	7.5%
United Kingdom	230,052	237,685	262,208	3.3%
Rest of EEA (NO, LI, IS)	6,986	7,640	8,099	9.4%
Total EU27	249,446	266,173	280,173	6.7%
Total EU27 + U.K.	479,499	503,858	542,381	5.1%
Total All Countries	494,025	519,603	559,092	5.2%

Figure 25 – Data Supplier Companies by Country 2024, 2024-2023 growth



5.3.2 Data Supplier Companies by Industry.

Table 25 and Figure 26 and Figure 27 shows the relative size and growth of each industry for 2023-2025. Between 2023 and 2024, several industries were projected to experience notable growth in the number of data supplier companies. The mining and manufacturing sectors have seen an increase of 66.8%, expanding from 115 to 191 companies. This substantial growth reflects the industry's escalating adoption of data-driven technologies aimed at enhancing operational efficiency and fostering innovation. The retail and wholesale industry grew by 13.8%, growing from 11,873 to 13,514 companies. This surge underscores the sector's shift towards e-commerce and personalized customer experiences, necessitating robust data analytics capabilities to meet evolving consumer demands.

Other sectors, such as agriculture and construction, also exhibited steady growth, with agriculture increasing from 69 to 76 companies (a 11% rise) and construction growing from 157 to 175 companies (a 11.8% rise). The utilities sector, with its focus on infrastructure and sustainability, expanded from 645 to 790 companies (22.5% growth), while the transport industry increased from 286 to 354 companies (23.8% growth).

Table 25 - Data Supplier Companies by industry 2023-2024, 2025 Forecast and 2024-2023 growth

	2023	2024	2025 (Forecast)	Growth 2024/2023
Agriculture	69	76	87	11.0%
Construction	157	175	200	11.8%
Mining, Manufacturing	115	191	357	66.8%
Transport	286	354	407	23.8%
Education	381	468	538	22.7%
Utilities	645	790	905	22.5%
Health	7,009	8,245	9,490	17.6%
Finance	10,475	11,959	13,479	14.2%
Retail and Wholesale	11,873	13,514	18,520	13.8%
Professional services	97,772	104,824	107,878	7.2%
Information & Communication	120,664	125,577	128,313	4.1%

Figure 26 - Data Supplier companies by Industry 2024 and 2024-2023 growth

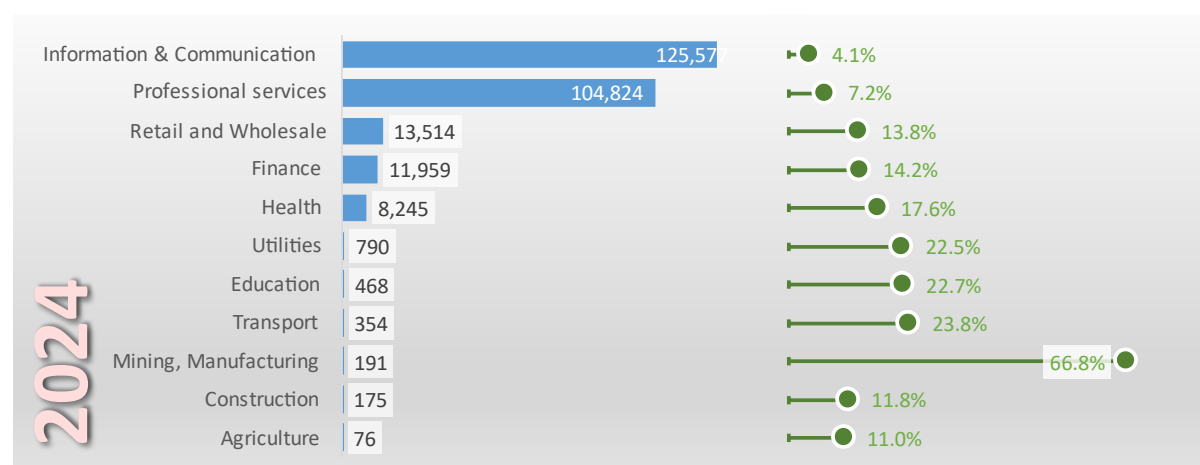
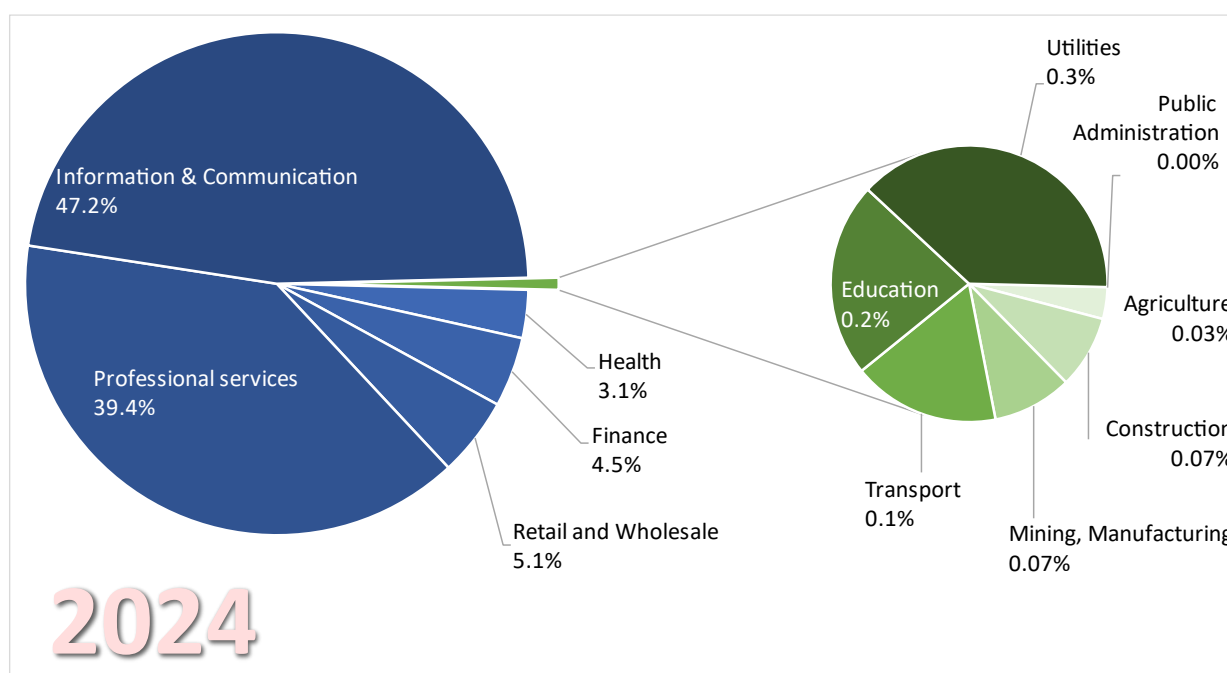


Figure 27 - Data Supplier companies share by industry 2024



5.3.3 Data Supplier Companies by Company Size Band

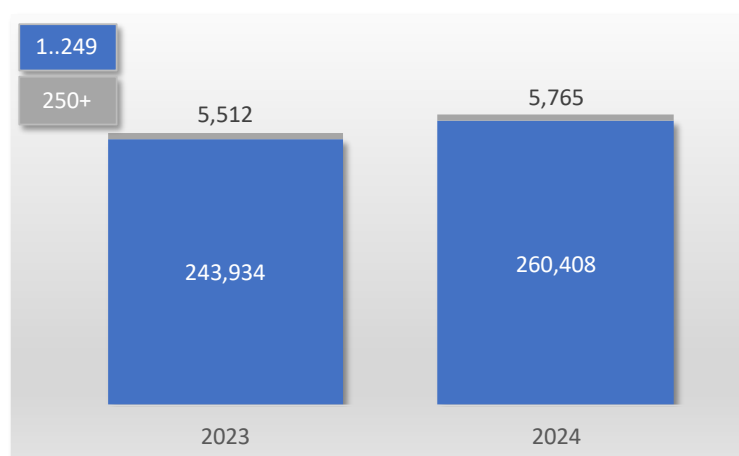
Table 26 shows the number of data supplier companies by size band, and the relative sizes are shown in Figure 28.

Approximately 98% of data supplier companies within EU Member States are small to medium-sized enterprises (SMEs) with 1 to 249 employees, mirroring the overall business size distribution across these countries. These smaller firms are also experiencing a higher growth rate compared to their larger counterparts.

Table 26 - Data Supplier Companies 2023-2024, 2025 forecast and 2024-2023 growth

	2023	2024	2025 (Forecast)	Growth 2024/2023
250+ employees	5,512	5,765	5,981	4.6%
1-249 employees	243,934	260,408	274,193	6.8%

Figure 28 - Data Supplier Companies by company size band 2023-2024



5.4 Measuring Data User Companies

5.4.1 Data Users by Country

The relationship between data user and data supplier companies is symbiotic. As more companies adopt data-driven approaches, the demand for data suppliers grows, fostering a robust data economy. Conversely, the availability of diverse data suppliers enables user companies to access tailored data solutions, further driving adoption. This dynamic interplay accelerates the overall growth of the data ecosystem.

Table 27 shows the number of data user companies by country and Figure 29 shows these graphically with the smaller countries inset to show their relative size. Between 2023 and 2024, the number of data user companies across EU Member States is projected to increase, with growth rates varying by country. Estonia experienced one of the highest growth rates at 7.7%, followed by Ireland and Lithuania both at 5.7%, and Portugal at 5.6%. These significant increases may be attributed to these countries' efforts to enhance digital infrastructure and promote data-driven business practices.

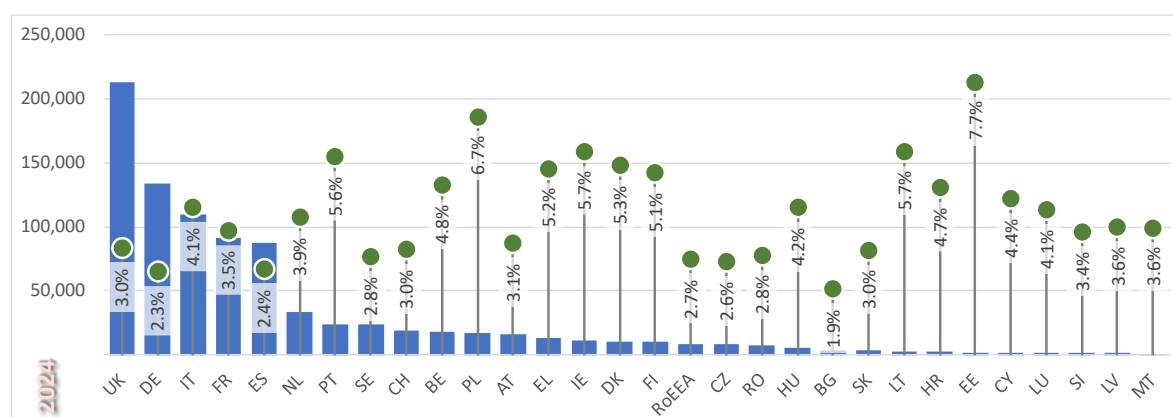
Adoption rates were re-surveyed, and some countries gave different adoption rates when compared with the prior survey. In the 2021 survey, Estonia's data adoption rates were not directly assessed; instead, Poland's rates were used as a proxy. However, the 2024 survey revealed that Estonia's actual adoption rates were significantly higher than previously estimated, indicating that earlier data had underestimated Estonia's adoption.

The EU27 as a whole saw a growth rate of 3.5% in data user companies from 2023 to 2024, marking a steady trend towards digitalization. Germany, Italy, and Spain collectively account for more than one-third of data companies within the European Union.

Table 27 - Data User Companies 2023-2024, 2025 forecast and 2024-2023 growth

	2023	2024	2025 (forecast)	Growth 2024/2023
Austria	15,690	16,184	16,844	3.1%
Belgium	16,948	17,756	18,675	4.8%
Bulgaria	3,979	4,052	4,253	1.9%
Croatia	2,161	2,263	2,441	4.7%
Cyprus	2,070	2,161	2,277	4.4%
Czechia	8,010	8,220	8,545	2.6%
Denmark	9,781	10,302	10,859	5.3%
Estonia	2,047	2,204	2,400	7.7%
Finland	9,730	10,228	10,735	5.1%
France	88,008	91,073	94,673	3.5%
Germany	130,885	133,952	139,029	2.3%
Greece	12,693	13,359	14,151	5.2%
Hungary	5,444	5,670	5,962	4.2%
Ireland	10,543	11,147	11,919	5.7%
Italy	105,621	110,004	115,790	4.1%
Latvia	1,406	1,457	1,529	3.6%
Lithuania	2,359	2,494	2,667	5.7%
Luxembourg	1,837	1,912	2,016	4.1%
Malta	815	844	887	3.6%
Netherlands	32,494	33,749	35,450	3.9%
Poland	15,791	16,849	17,682	6.7%
Portugal	22,435	23,686	25,278	5.6%
Romania	7,019	7,217	7,574	2.8%
Slovakia	3,653	3,760	3,866	3.0%
Slovenia	1,649	1,706	1,773	3.4%
Spain	85,851	87,916	92,063	2.4%
Sweden	23,264	23,907	24,843	2.8%
Switzerland	18,389	18,935	19,704	3.0%
United Kingdom	206,768	212,992	222,626	3.0%
Rest of EEA (NO, LI, IS)	8,429	8,656	9,012	2.7%
Total EU27	622,185	644,075	674,180	3.5%
Total EU27 + U.K.	828,953	857,067	896,806	3.4%
Total All Countries	855,771	884,657	925,522	3.4%

Figure 29 - Data User Companies by Country 2024 and growth 2024-2023

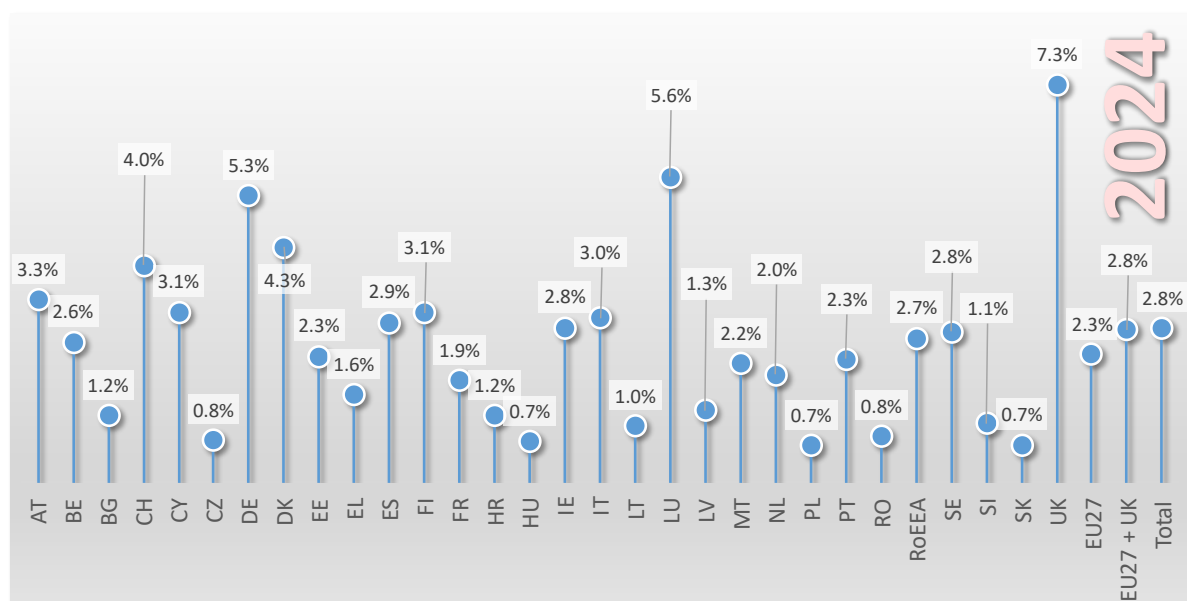


Recognizing data as a strategic asset, many companies are integrating data analytics into their decision-making processes, enabling more informed and timely choices. Technological advancements, such as the proliferation of advanced data analytics tools, cloud computing, and artificial intelligence, have made data utilization more accessible and cost-effective for businesses of all sizes. Additionally, evolving regulations require companies to maintain accurate data records, prompting investments in robust data management systems.

The integration of artificial intelligence and machine learning enables companies to derive deeper insights from data, automate processes, and personalize customer interactions. The ability to process and analyze large datasets allows businesses to identify patterns, predict trends, and make data-driven decisions. Furthermore, the expansion of Internet of Things (IoT) devices generates vast amounts of data, which companies can leverage to optimize operations and develop new services. Collectively, these trends contribute to the increasing number of data user companies, as businesses recognize the value of data in driving innovation and maintain competitiveness.

Figure 30 shows each country's data user companies' share of all companies for 2024 which gives a view of the data orientation of each country. Luxembourg, Germany and Denmark exhibited the highest proportions of data user companies relative to their total number of enterprises, with shares of 5.6%, 5.3%, and 4.3%, respectively. These figures indicate a strong emphasis on data-driven operations within these nations. Luxembourg's higher-than-average proportion of data user companies can be attributed to its robust financial sector, which heavily relies on data analytics for decision-making and risk management. Germany's strong share reflects its position as a leading industrial and technological powerhouse, where data analytics play a key role in driving efficiency and innovation across industries. Additionally, the country's advanced digital infrastructure and supportive regulatory environment encourage businesses to adopt data-driven strategies. The government's emphasis on innovation and research further fosters a culture where companies leverage data to enhance operations and maintain competitiveness.

Figure 30 - Data User Companies' share of all companies by country 2024



5.4.2 Data User Companies by Industry

Table 28 and Figure 31 show the size and growth for each of the industries for the Member States. The top four industries among the Member States account for more than two thirds (68%) of data user companies in 2024. These industries are Professional Services, Retail and Wholesale, Information and Communication, and Mining and Manufacturing.

In 2024, Professional Services leads with 187,727 data user companies, followed by Retail and Wholesale with 109,034 companies. Information and Communication ranks third with 64,732 companies, while Mining and Manufacturing accounts for 81,415 companies. Despite its size, Mining and Manufacturing shows a slight decline compared to the previous year, underscoring shifts in industry dynamics.

Table 28 - Data User Companies by industry 2023-2024, 2025 forecast and 2024-2023 growth

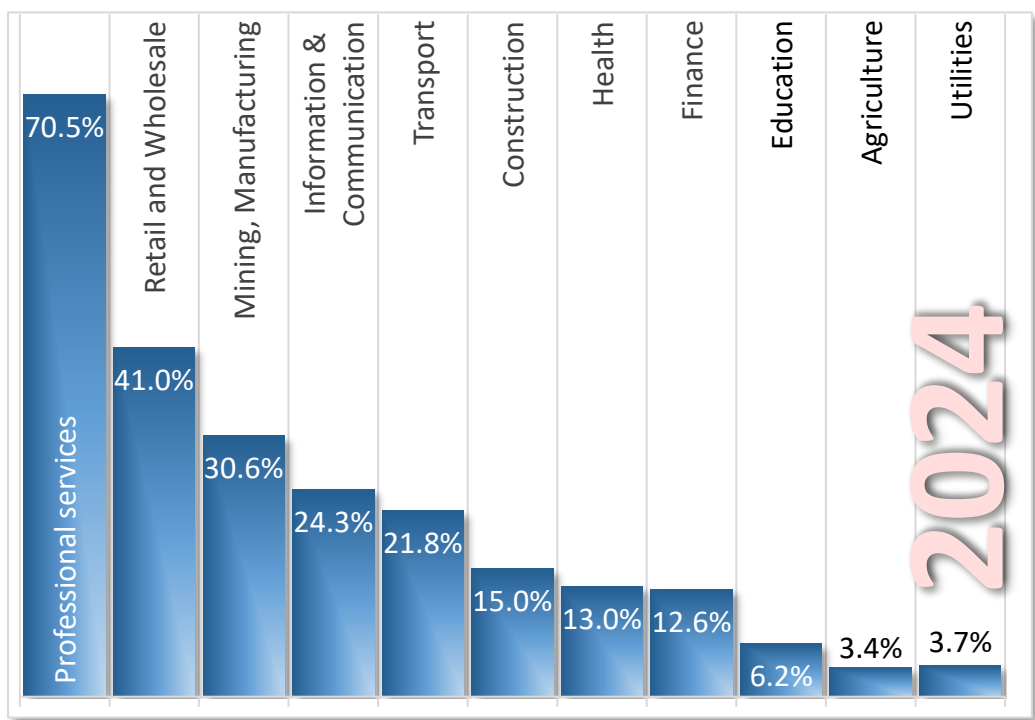
	2023	2024	2025 (forecast)	Growth 2024/2023
Agriculture	7,422	8,999	11,122	21.2%
Construction	39,044	39,934	41,757	2.3%
Education	15,490	16,507	17,773	6.6%
Finance	32,896	33,487	34,287	1.8%
Health	32,459	34,495	36,652	6.3%
Information & Communication	63,447	64,732	66,544	2.0%
Mining, Manufacturing	82,905	81,415	82,201	-1.8%
Professional services	178,163	187,727	198,830	5.4%
Retail and Wholesale	101,770	109,034	116,608	7.1%
Transport	58,810	57,972	58,425	-1.4%
Utilities	9,779	9,773	9,980	-0.1%
Total EU27	622,185	644,075	674,180	3.5%

Figure 31 - Data User Companies by Industry 2024, and growth 2024-2023



Figure 32 showing the share of the total number of companies by industry to show the data focus for each of the industries among the Member States.

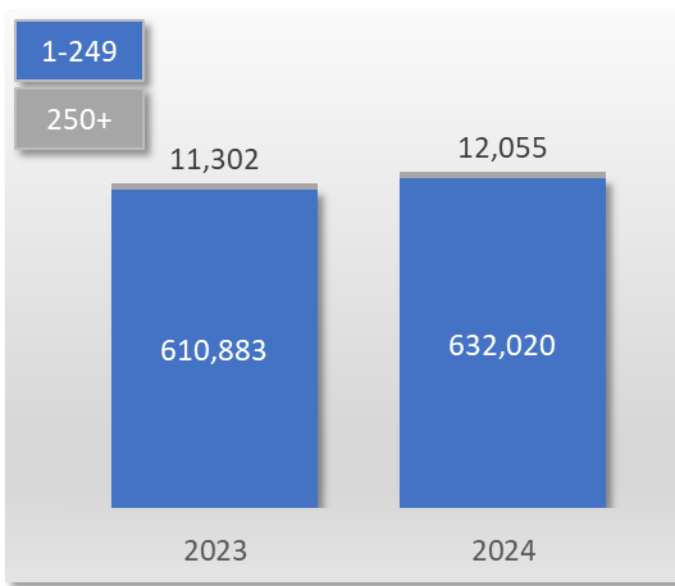
Figure 32 - Data user Companies share of total by Industry 2024



5.4.3 Data User Companies by Size Band

In 2024, organizations with fewer than 250 employees constituted over 98% of all companies, as illustrated in Figure 33. This distribution mirrors the overall business landscape, similar to the pattern observed among data supplier companies.

Figure 33 - Data User Companies by size band 2023-2024



5.5 Forecasting Data Companies

5.5.1 Forecasting Data Supplier Companies, 2025 and 2030 Scenarios

The table below presents the summary forecast for data supplier companies in the Member States and greater European continent for 2025 and three scenarios for 2030. In the EU27, the number is expected to increase at a Compound Annual Growth Rates (CAGR) of 2.3%, 3.5%, and 4.6%, for the Challenge, Baseline and Growth scenario, respectively. These projections indicate a slightly higher growth rate compared to previous forecasts, with the baseline scenario anticipating a 5% increase in the number of data professionals by 2030 relative to earlier estimates.

Table 29 Data Supplier Companies Forecasts: 2025, Three 2030 Scenarios, and Growth (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR '25–30, Challenge	CAGR '25– 30, Baseline	CAGR '25–30, High Growth
EU27	280,173	313,872	333,227	350,813	2.3%	3.5%	4.6%
Total EU27 + U.K.	542,381	611,096	640,128	684,493	2.4%	3.4%	4.8%
Total, all countries	559,092	630,253	660,399	705,912	2.4%	3.4%	4.8%

5.5.2 Forecasting Data Supplier Companies by Country

Table 30 shows the outlook for all countries out to 2025 and the three scenarios for 2030.

The data supplier industry within the EU27 is projected to experience significant growth between 2025 and 2030, as indicated by the forecasted figures across different growth scenarios. The total number of data supplier companies in the EU27 is estimated to rise from 280,173 in 2025 to between 313,872 (Challenge Scenario), 333,227 (Baseline Scenario), and 350,813 (High Growth Scenario) by 2030. This translates to a compound annual growth rate ranging from 2.3% to 4.6%, depending on the scenario. The increase highlights the expanding role of data-driven industries and the growing demand for data analytics, AI integration, and digital transformation across sectors.

Among the leading contributors, Germany remains the largest market, forecasted to grow from 50,495 in 2025 to between 54,804 and 59,686 by 2030, with a CAGR of 1.7% to 3.4%. France follows closely, reaching up to 30,902 companies in the High Growth Scenario, reflecting an annual growth rate of 2.3% to 4.2%. Italy and Spain are also set for substantial expansion, with Italy's data suppliers projected to reach up to 45,077 (CAGR of 1.8% to 4.2%) and Spain's reaching 38,692 (CAGR of 2.1% to 4.7%) by 2030.

Countries in Central and Eastern Europe are expected to grow at an accelerated pace. Poland's data supplier industry is projected to increase from 11,952 to up to 15,361 companies, registering a CAGR of 2.6% to 5.1%. Similarly, Romania and Hungary show strong potential, with their highest growth scenarios forecasting 6.1% and 5.9% CAGR, respectively. The Baltic states (Estonia, Latvia, and Lithuania) and Czechia also demonstrate robust growth, with CAGRs exceeding 4% in the Baseline Scenario and 5% in the High Growth Scenario.

Cyprus, Malta, and Luxembourg are expected to see more moderate growth, with their data supplier industries expanding at CAGRs between 1.7% and 4.4% depending on the scenario. Meanwhile, Denmark, Finland, and Sweden are projected to show consistent growth, particularly in the Baseline and High Growth Scenarios, where Finland's CAGR reaches 6.3% and Sweden's up to 4.9%.

Beyond the EU27, the United Kingdom, Switzerland, and the rest of the EEA (Norway, Iceland, Liechtenstein) are also expected to see considerable growth. The UK remains a dominant market, with its data supplier companies projected to grow from 262,208 in 2025 to between 297,225 and 333,680 by 2030. Switzerland, while smaller in scale, is set to experience a 2.8% to 4.9% CAGR, while the rest of the EEA follows a similar growth trajectory. When including these markets, the total number of data suppliers across all countries is forecasted to reach between 630,253 and 705,912 by 2030, marking a 3.4% to 4.8% CAGR.

Table 30 - Data Supplier Companies forecast by country 2025 forecast and three scenarios 2030.

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR '25- 30 Challenge	CAGR '25- 30 Baseline	CAGR '25- 30 High Growth
Austria	8,409	10,031	10,127	10,676	3.6%	3.8%	4.9%
Belgium	5,295	5,990	6,317	6,718	2.5%	3.6%	4.9%
Bulgaria	2,393	2,857	2,910	3,177	3.6%	4.0%	5.8%
Croatia	1,478	1,626	1,754	1,822	1.9%	3.5%	4.3%
Cyprus	1,107	1,206	1,219	1,295	1.7%	1.9%	3.2%
Czechia	4,020	4,859	4,970	5,288	3.9%	4.3%	5.6%
Denmark	7,634	8,265	9,030	9,292	1.6%	3.4%	4.0%
Estonia	1,076	1,202	1,327	1,404	2.2%	4.3%	5.5%
Finland	5,592	6,874	6,919	7,594	4.2%	4.4%	6.3%
France	25,199	28,260	28,462	30,902	2.3%	2.5%	4.2%
Germany	50,495	54,804	58,610	59,686	1.7%	3.0%	3.4%
Greece	11,246	12,490	13,174	13,768	2.1%	3.2%	4.1%
Hungary	7,121	8,238	8,891	9,497	3.0%	4.5%	5.9%
Ireland	7,742	9,614	9,937	11,077	4.4%	5.1%	7.4%
Italy	36,738	40,159	42,413	45,077	1.8%	2.9%	4.2%
Latvia	1,155	1,259	1,368	1,360	1.7%	3.4%	3.3%
Lithuania	1,353	1,554	1,674	1,730	2.8%	4.4%	5.0%
Luxembourg	1,093	1,197	1,251	1,329	1.8%	2.7%	4.0%
Malta	535	587	609	663	1.9%	2.6%	4.4%
Netherlands	12,319	14,579	14,578	16,354	3.4%	3.4%	5.8%
Poland	11,952	13,593	15,301	15,361	2.6%	5.1%	5.1%
Portugal	8,166	8,696	9,612	10,268	1.3%	3.3%	4.7%
Romania	10,698	12,524	13,748	14,410	3.2%	5.1%	6.1%
Slovakia	5,180	5,390	5,892	6,137	0.8%	2.6%	3.4%
Slovenia	1,204	1,347	1,470	1,485	2.3%	4.1%	4.3%
Spain	30,744	34,052	36,526	38,692	2.1%	3.5%	4.7%
Sweden	20,231	22,619	25,137	25,748	2.3%	4.4%	4.9%
Switzerland	8,611	9,898	10,417	10,930	2.8%	3.9%	4.9%
United Kingdom	262,208	297,225	306,901	333,680	2.5%	3.2%	4.9%
Rest of EEA (NO, LI, IS)	8,099	9,258	9,854	10,489	2.7%	4.0%	5.3%
Total EU27	280,173	313,872	333,227	350,813	2.3%	3.5%	4.6%
Total EU27 + U.K.	542,381	611,096	640,128	684,493	2.4%	3.4%	4.8%
Total All Countries	559,092	630,253	660,399	705,912	2.4%	3.4%	4.8%

5.5.3 Forecasting Data Supplier Companies by Industry

Table 31 and Figure 34 shows the projections by industry for 2025 and the three scenarios for 2030.

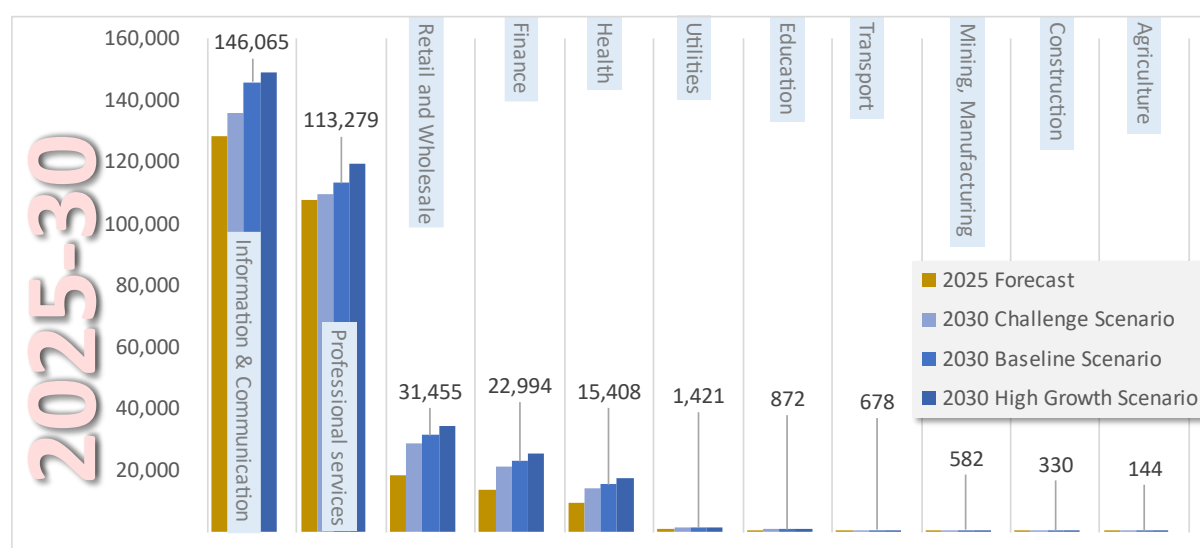
Overall, the data indicates a dynamic in the data supplier landscape, with traditionally data-intensive industries maintaining steady growth, while sectors previously less reliant on data are accelerating their adoption, leading to higher growth rates in the coming years.

Industries such as Finance and Retail are expected to experience substantial growth, with baseline scenario Compound Annual Growth Rates (CAGR) of 11.3% and 11.2%, respectively. This surge is likely driven by the increasing reliance on data-driven decision-making and digital transformation initiatives within these sectors. Conversely, the Information & Communication and Professional Services sectors, despite currently hosting the highest number of data supplier companies, are projected to exhibit more modest growth rates, with baseline scenario CAGRs of 2.6% and 1.0%, respectively.

Table 31 - Data Supplier Companies forecast by Industry 2025 forecast, and 2030 three scenarios.

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR '25- 30 Challenge	CAGR '25- 30 Baseline	CAGR '25- 30 High Growth
Agriculture	87	130	144	158	8.4%	10.7%	12.7%
Construction	200	306	330	369	8.9%	10.5%	13.1%
Education	538	817	872	988	8.7%	10.1%	12.9%
Finance	13,479	21,259	22,994	25,670	9.5%	11.3%	13.8%
Health	9,490	14,356	15,408	17,296	8.6%	10.2%	12.8%
Information & Communication	128,313	136,212	146,065	148,990	1.2%	2.6%	3.0%
Mining, Manufacturing	357	541	582	652	8.7%	10.3%	12.8%
Professional services	107,878	109,669	113,279	119,725	0.3%	1.0%	2.1%
Retail and Wholesale	18,520	28,590	31,455	34,576	9.1%	11.2%	13.3%
Transport	407	620	678	751	8.8%	10.7%	13.0%
Utilities	905	1,371	1,421	1,638	8.7%	9.4%	12.6%
Total EU27	280,173	313,872	333,227	350,813	2.3%	3.5%	4.6%

Figure 34 - Data Supplier Companies Forecast 2025, and 2030, three scenarios.



5.5.4 Forecasting Data Supplier Companies by Company Size

Figure 35 and Table 32 summarise the difference in the size of the number of data supplier companies by company size band, with small and medium companies dominating the number of suppliers.

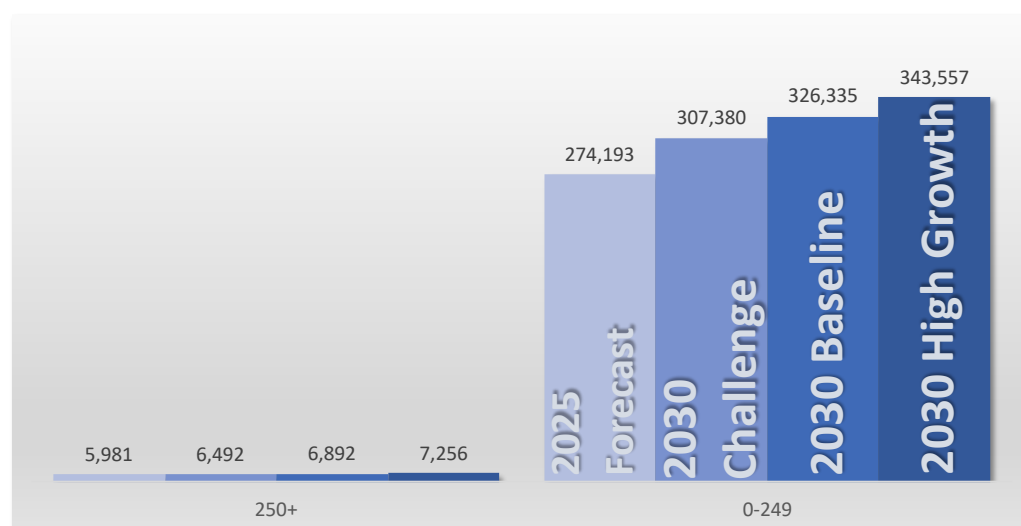
The projected growth rates for data supplier companies between 2025 and 2030 indicate that small and medium-sized enterprises (SMEs), defined as those with 1 to 249 employees, are expected to grow at a compound annual growth rate (CAGR) of 3.5% in the baseline scenario. In contrast, larger enterprises with over 250 employees are projected to grow at a CAGR of 2.9%. This disparity can be attributed to the numerical dominance of SMEs within the European business landscape, where they constitute over 98% of all enterprises.

SMEs often exhibit greater agility and adaptability, enabling them to swiftly implement data-driven strategies to enhance competitiveness. However, larger enterprises typically possess more substantial resources, allowing for significant investments in advanced data infrastructures and specialized talent. This capacity provides them with a competitive edge in delivering comprehensive data solutions.

Table 32 - Data Supplier Companies forecast by company size band 2025 forecast and 2030 three scenarios.

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
250+ employees	5,981	6,492	6,892	7,256	1.7%	2.9%	3.9%
1-249 employees	274,193	307,380	326,335	343,557	2.3%	3.5%	4.6%

Figure 35 - Data Supplier Companies Forecast by company size band 2025 forecast and 2030 three scenarios



5.5.5 Forecasting Data User Companies: 2025 and 2030 Scenarios

Table 33 summarises the growth in data user companies out to 2025 and the three scenarios for 2030. The number of Data User Companies is also forecast to be higher by close to 5% when compared to the previous forecast. The current baseline forecast anticipates that the number of data user companies in the EU27 will reach 952,979 by 2030, with a compound annual growth rate (CAGR) of 7.2% from 2025 to 2030. Since the onset of the Ukraine conflict, European economies have demonstrated resilience, adapting to new challenges and uncertainties. Additionally, the accelerated digital transformation across various sectors has heightened the importance of data-driven decision-making. The European Union's strategic initiatives, such as the Digital Decade policy programme, aim to have 75% of EU companies utilizing cloud services, artificial intelligence, or big data by 2030. These efforts are fostering a conducive environment for businesses to adopt data-centric approaches. The growing recognition of data as a critical asset is driving more companies to become data users. Leveraging data analytics enables businesses to gain insights into market trends, optimize operations, and enhance customer experiences. As industries increasingly rely on data to maintain competitiveness and foster innovation, the number of data user companies is expected to continue its upward trajectory.

Table 33 - Data User Companies Forecast 2025 and 2030 three scenarios

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Total EU27	674,180	806,026	952,979	1,155,404	3.6%	7.2%	11.4%
Total EU27 + U.K.	896,806	1,059,327	1,269,416	1,519,082	3.4%	7.2%	11.1%
Total All Countries	925,522	1,092,221	1,309,608	1,567,369	3.4%	7.2%	11.1%

5.5.6 Forecasting Data User Companies by Country

Table 34 shows the forecast for the number of data user companies to 2025 and the three scenarios for 2030.

Germany, Italy, and Spain collectively account for over one-third of the European Union's data user companies, reflecting their substantial economic activities and advanced digital infrastructures. Notably, the United Kingdom, despite its departure from the EU, stands out with approximately 24% of data user companies, underscoring its significant role in the data economy.

Germany and Italy, with their mature data markets, show moderate growth rates, indicating a saturation point in data user company expansion. In contrast, countries like Luxembourg and Poland are experiencing higher growth rates, around 9% for the Baseline scenario, suggesting a rapid adoption of data-driven practices and a burgeoning data economy.

Luxembourg's higher growth is driven by its strategic focus on becoming a leading data economy. The country's robust digital infrastructure, favorable regulatory environment, and initiatives to attract data-centric businesses have contributed to this trend. Additionally, Luxembourg's economic structure, with a significant emphasis on financial services and technology sectors, naturally aligns with higher data utilization.

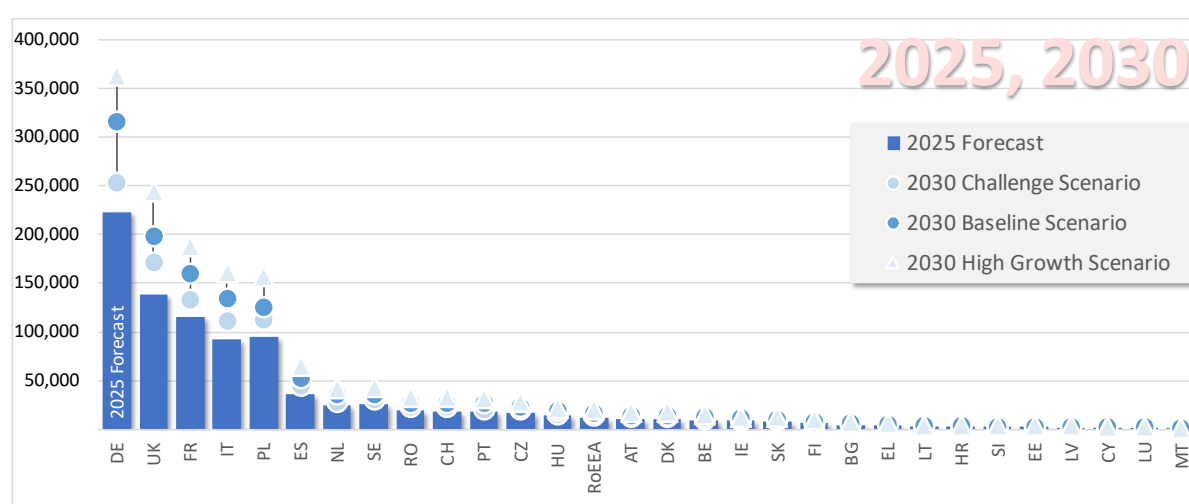
In Poland, after a sharp deceleration in 2023, real GDP growth has accelerated in 2024. Poland's strategic investments in digital infrastructure and education have enhanced its technological capabilities, enabling businesses to adopt data-driven practices more readily. The government's support for the tech industry, coupled with a growing pool of skilled IT professionals, has further accelerated the integration of data-centric operations across various sectors. These combined efforts have positioned Poland as a rapidly emerging player in the European data economy.

Overall, most countries exhibit growth rates in data user companies that do not significantly deviate from the average, indicating a consistent trend across the region.

Table 34 - Data User Companies by country 2025 forecast and 2030 three scenarios

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Austria	16,844	20,756	23,104	28,912	4.3%	6.5%	11.4%
Belgium	18,675	22,630	27,311	33,155	3.9%	7.9%	12.2%
Bulgaria	4,253	5,397	6,417	7,720	4.9%	8.6%	12.7%
Croatia	2,441	2,809	3,492	3,992	2.8%	7.4%	10.3%
Cyprus	2,277	2,952	3,312	4,019	5.3%	7.8%	12.0%
Czechia	8,545	9,143	11,364	13,595	1.4%	5.9%	9.7%
Denmark	10,859	12,994	14,832	18,485	3.7%	6.4%	11.2%
Estonia	2,400	2,605	3,319	4,130	1.7%	6.7%	11.5%
Finland	10,735	12,406	14,749	17,620	2.9%	6.6%	10.4%
France	94,673	112,485	125,622	157,758	3.5%	5.8%	10.8%
Germany	139,029	171,408	198,806	244,320	4.3%	7.4%	11.9%
Greece	14,151	15,398	19,562	22,483	1.7%	6.7%	9.7%
Hungary	5,962	6,832	8,389	10,115	2.8%	7.1%	11.2%
Ireland	11,919	13,650	17,001	20,263	2.7%	7.4%	11.2%
Italy	115,790	133,564	160,674	187,794	2.9%	6.8%	10.2%
Latvia	1,529	1,739	2,207	2,526	2.6%	7.6%	10.6%
Lithuania	2,667	3,262	3,848	4,616	4.1%	7.6%	11.6%
Luxembourg	2,016	2,550	3,115	3,769	4.8%	9.1%	13.3%
Malta	887	1,098	1,273	1,576	4.4%	7.5%	12.2%
Netherlands	35,450	45,190	52,173	65,218	5.0%	8.0%	13.0%
Poland	17,682	20,653	27,173	32,236	3.2%	9.0%	12.8%
Portugal	25,278	31,259	35,432	44,270	4.3%	7.0%	11.9%
Romania	7,574	8,986	10,679	12,979	3.5%	7.1%	11.4%
Slovakia	3,866	4,688	5,658	6,931	3.9%	7.9%	12.4%
Slovenia	1,773	1,955	2,490	2,847	2.0%	7.0%	9.9%
Spain	92,063	110,992	134,655	161,396	3.8%	7.9%	11.9%
Sweden	24,843	28,627	36,320	42,677	2.9%	7.9%	11.4%
Switzerland	19,704	22,619	27,612	32,971	2.8%	7.0%	10.8%
United Kingdom	222,626	253,301	316,437	363,679	2.6%	7.3%	10.3%
Rest of EEA (NO, LI, IS)	9,012	10,275	12,580	15,316	2.7%	6.9%	11.2%
EU27	674,180	806,026	952,979	1,155,404	3.6%	7.2%	11.4%
Total EU27 + U.K.	896,806	1,059,327	1,269,416	1,519,082	3.4%	7.2%	11.1%
Total All Countries	925,522	1,092,221	1,309,608	1,567,369	3.4%	7.2%	11.1%

Figure 36 - Data User Companies forecast by country, 2025, and 2030 three scenarios



5.5.7 Forecasting Data User Companies by Industry

Table 35 and Figure 37 show the forecast for the number of data user companies by industry for the Member States.

The professional services and retail and wholesale industries have the highest number of data user companies, with 198,830 and 116,608 respectively as forecasted in 2025. This prominence is due to their extensive customer interactions and the necessity to manage vast amounts of information efficiently. Despite their already substantial data utilization, both industries are projected to continue growing above the average rate. This sustained growth underscores the increasing reliance on data-driven strategies to enhance operational efficiency, customer engagement, and competitive advantage in these industries.

Agriculture is projected to experience the highest increase in the high growth scenario, reaching 15.4% between 2025 and 2030. This significant increase underscores the sector's accelerating adoption of data-driven technologies, likely driven by advancements in precision farming and agri-tech innovations.

Following agriculture, the retail and wholesale sector is expected to grow at 12.4% in the high-growth scenario, driven by the increasing importance of e-commerce, personalized customer experiences, and supply chain analytics. Health services also show strong expansion, with a 12.0% growth rate, reflecting the growing reliance on data-driven healthcare solutions, telemedicine, and AI in diagnostics and patient management. Education follows closely, with an 11.8% growth rate, as digital learning tools, online education platforms, and adaptive learning systems become more prevalent.

The professional services sector, despite already being one of the largest, is forecasted to grow at an 11.9%, benefiting from increasing automation, AI-driven analytics, and cloud-based business solutions. Information & communication industries are also expected to expand significantly, reaching a 10.8%, as data-driven technologies continue to revolutionize digital communication, cybersecurity, and content delivery.

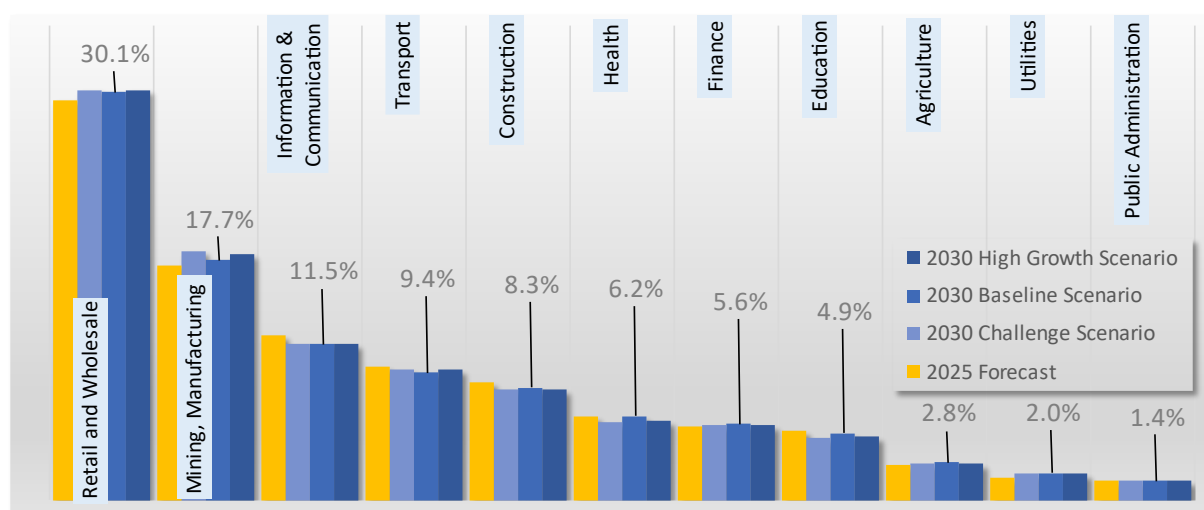
Other industries showing notable growth include construction (10.3%), utilities (10.3%), mining & manufacturing (10.2%), and transport (10.1%), reflecting the gradual integration of data analytics, IoT, and AI-driven automation in these sectors.

Overall, these projections highlight a widespread and accelerating adoption of data analytics across industries, with sectors like agriculture, education, and health leading in growth rates.

Table 35 - Data User Companies by industry 2025 forecast and 2030 three scenarios

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Agriculture	11,122	15,875	18,906	22,800	7.4%	11.2%	15.4%
Construction	41,757	46,445	59,162	68,088	2.2%	7.2%	10.3%
Education	17,773	21,469	26,331	31,112	3.9%	8.2%	11.8%
Finance	34,287	37,400	46,926	54,591	1.8%	6.5%	9.7%
Health	36,652	45,018	53,483	64,614	4.2%	7.9%	12.0%
Information & Communication	66,544	78,066	89,879	111,047	3.2%	6.2%	10.8%
Mining, Manufacturing	82,201	93,177	109,590	133,337	2.5%	5.9%	10.2%
Professional services	198,830	244,071	287,093	349,391	4.2%	7.6%	11.9%
Retail and Wholesale	116,608	147,731	168,726	209,602	4.8%	7.7%	12.4%
Transport	58,425	65,490	79,306	94,559	2.3%	6.3%	10.1%
Utilities	9,980	11,285	13,578	16,262	2.5%	6.4%	10.3%

Figure 37 - Data User Companies by Industry share of total: 2025, 2030 three scenarios



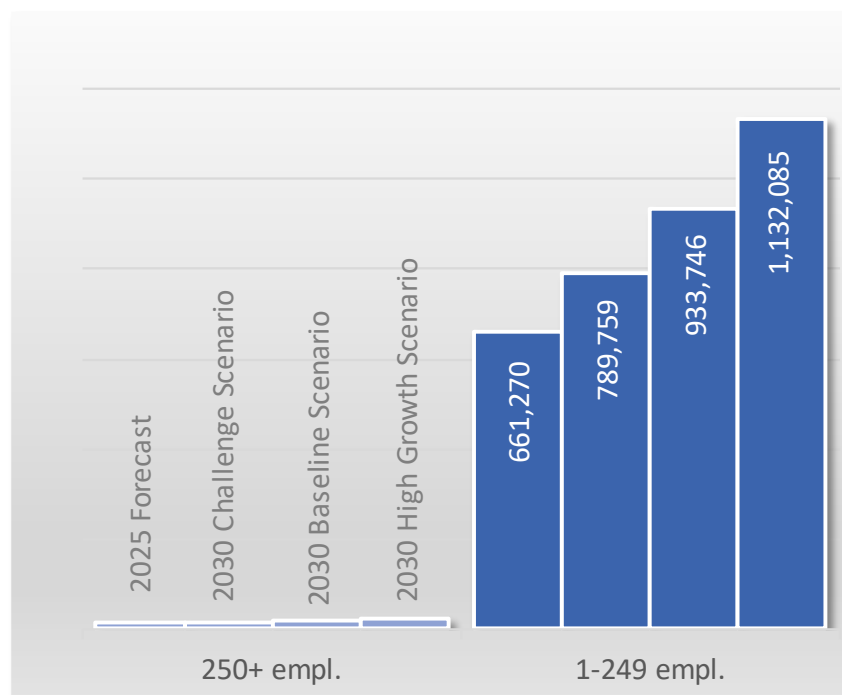
Finally, Table 36 and Figure 38 show the forecast for the number of data user companies in the EU27 by company size band to 2025 and the three scenarios for 2030, demonstrating the dominance of

smaller companies. However, similar to data supplier companies, we anticipate a more significant increase in the number of data user companies within the larger size category. This expectation stems from the emerging market for data monetization, where larger organizations possess a greater capacity to leverage their extensive data volumes for economic gain.

Table 36 - Data User Companies by Company Size Band 2025 forecast and 2030 three scenarios

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025- 2030 Challenge	CAGR 2025- 2030 Baseline	CAGR 2025- 2030 High Growth
250+ employees	12,910	16,267	19,233	23,319	4.7%	8.3%	12.6%
1-249 employees.	661,270	789,759	933,746	1,132,085	3.6%	7.1%	11.4%

Figure 38 - Data User Companies forecast by Company Size Band 2025 Forecast, and 2030 three scenarios.



5.6 Key Findings

KEY HIGHLIGHT FOR THE EU27

In the EU27, the number of data supplier companies grew significantly, rising from 249,446 in 2023 to 266,173 in 2024, with a 6.7% growth rate. This upward trend is expected to continue, reaching a forecasted 280,173 in 2025. Similarly, data user companies increased from 622,185 in 2023 to 644,075 in 2024, growing at a slower but steady rate of 3.5%. The forecast projects further expansion, with 674,180 data users by 2025. These trends highlight a dynamic data market in the EU27, with robust growth in data suppliers outpacing that of data users, reflecting the increasing importance of data-driven businesses.

Data Suppliers

In 2024, the **number of data supplier** companies grew, with Germany (48,326), France (24,536), and Italy (35,931) leading in absolute numbers. Spain and the Netherlands also showed notable increases, reflecting a broad expansion across member states.

By industry, Information & Communication remained the largest sector with 125,577 data suppliers in 2024, followed by Professional Services (104,824) and Retail and Wholesale (13,514). Other industries, such as Finance and Health, also experienced steady growth, highlighting the increasing demand for data-driven solutions.

According to the 2025 forecast, the number of data suppliers is expected to reach 280,173, continuing its upward trend. Looking further ahead, projections for 2030 suggest continued growth, with estimates ranging from 313,872 in the Challenge Scenario to 350,813 under the High Growth Scenario, reflecting varying economic and market conditions.

Data Users

In the EU27, the number of data user companies increased in 2024, with Germany (133,952), Italy (110,004), and France (91,073) leading in absolute numbers. Spain (87,916) and the Netherlands (33,749) also showed notable increases, reflecting a broad expansion of data-driven business adoption across member states.

By industry, Professional Services remained the dominant sector, increasing from 178,163 in 2023 to 187,727 in 2024, followed by Retail and Wholesale (109,034) and Information & Communication (64,732). The Finance and Health sectors also expanded, reaching 33,487 and 34,495 data users in 2024, respectively, demonstrating the increasing reliance on data-driven strategies in these fields.

According to the 2025 forecast, the number of data user companies is expected to reach 674,180, continuing its steady growth. Looking further ahead, projections for 2030 indicate continued expansion, with estimates ranging from 806,026 in the Challenge Scenario to 1,155,404 in the High Growth Scenario. Across industries, Professional Services is projected to remain the largest sector, potentially reaching 349,391 data user companies in the High Growth Scenario, while Retail and Wholesale could expand to 209,602. These projections highlight the growing importance of data across all industries and suggest that economic and technological developments will significantly influence future growth.

6 Data Companies' Revenues

6.1 Definition

Data companies' revenues correspond to the aggregated value of all the data-related products and services generated by Europe-based data suppliers, including exports outside of the EU. This indicator measures the revenues of the data suppliers identified and classified by Indicator 2 (see the products and services specified in our definition of the data market). Data companies' revenues do not include data monetisation as part of the data market.

The overall value of data revenues is very close, but not identical, to the overall value of the data market for the following reasons:

- The value of the data market corresponds to the aggregated value of all the data-related products and services bought by European users (demand), including imports from foreign suppliers.
- The value of revenues corresponds to the aggregated value of all the revenues generated by Europe-based enterprises (supply) through the production, distribution, and sale of data-related products and services, including exports outside of the EU.

Table 37. Main Data Sources for Data Companies' Revenues

Data Source	Updated
IDC Big Data Spending Guide	Aug 2024
IDC Worldwide Black Book (standard edition)	Sep 2024
IMF World Economic Outlook	Apr 2024

6.2 Measuring Data Companies' Revenues

Data companies' revenues grew by 11.3% in 2024, reaching €103 billion from 93 billion in 2023. The increase reflects the expanding role of data-driven services across various sectors, highlighting the escalating demand for data analytics, artificial intelligence, and related technologies.

Table 38 - Data Companies' Revenues (€M) and share (%) 2023-2024, 2025 forecast, 2024-2023 growth rate

N.	Region	Name	Description	2023	2024	2025 (forecast)	Growth 2024-2023
3.1	EU27	Total revenues of data companies in the EU	Total revenues of the data suppliers calculated by Indicator 2	92,727	103,171	115,160	11.3%
3.2	EU27	Share of data companies' revenues	Ratio of data suppliers' revenues to total companies' revenues – NACE II industries A, C, E, G, H, J, K, M, P, and Q	0.31%	0.34%	-	9,7%

6.3 Data Companies' Revenues by Country

The table below shows the data companies' revenues for the EU27 Member States and other countries in Europe. Figure 37, which arranges these revenues in descending order for 2024, indicates that Germany remains the largest contributor to data company revenues in the EU27, growing from €26,696 million in 2023 to €29,206 million in 2024, with a growth rate of 9.4%. Despite this dominance, France's higher growth rate highlights its rising influence in the digital economy.

France remains the second-largest contributor to data company revenues within the EU27, reflecting its robust digital economy and the critical role of data-driven enterprises. In 2024, France's data companies' revenues are projected to grow from €16,618 million in 2023 to €19,541 million in 2024, representing an impressive 17.6% year-on-year growth rate, which significantly surpasses the EU27 average of 11.3%. This notable increase underscores France's commitment to fostering innovation and expanding its data market, cementing its leadership position in the European data economy.

Among smaller countries, Estonia leads the EU27 with the highest year-on-year growth rate of 24.1% in 2024/2023, followed by Romania at 21.1% and Slovakia at 18.8%, showcasing the rapid digital transformation in these regions. Other notable contributors to growth include Italy (11.8%), Spain (12.9%), and Ireland (11.7%), reflecting these countries' ongoing investments in data-intensive sectors.

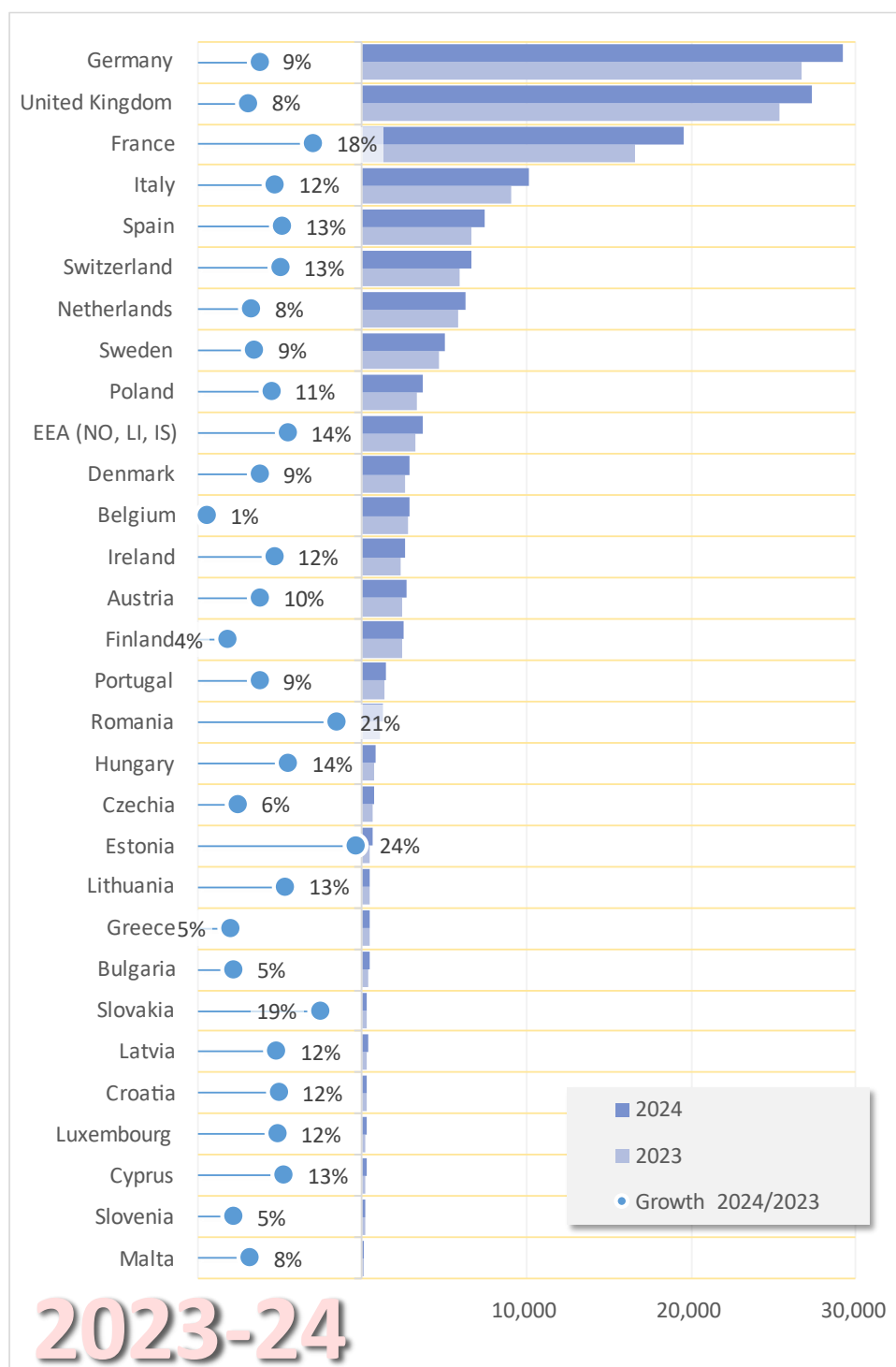
Overall, the total revenues of data companies in the EU27 are projected to reach €103,171 million in 2024, with the combined total for EU27 and the UK amounting to €130,502 million, marking a 10.51% increase compared to 2023. This steady growth illustrates the increasing adoption of data-driven strategies across Europe, with both large and small economies contributing to the expansion of the data market.

Table 39 - Data Companies' Revenues (€M) by Country 2023-2024,2025 Forecast and 2024-2023 growth (%)

	2023	2024	2025 (forecast)	Growth 2024-2023
Austria	2,437	2,669	2,785	9.5%
Belgium	2,831	2,872	3,151	1.4%
Bulgaria	421	444	476	5.5%
Croatia	287	323	358	12.3%
Cyprus	231	261	286	13.2%
Czechia	684	726	844	6.1%
Denmark	2,631	2,880	3,164	9.5%
Estonia	516	640	728	24.1%
Finland	2,412	2,520	2,700	4.5%
France	16,618	19,541	22,704	17.6%
Germany	26,696	29,206	31,754	9.4%
Greece	457	479	509	4.9%
Hungary	709	807	913	13.9%
Ireland	2,358	2,633	2,948	11.7%
Italy	9,068	10,143	11,340	11.8%
Latvia	316	354	378	12.1%
Lithuania	436	494	550	13.4%
Luxembourg	248	278	303	12.1%
Malta	80	87	93	8.0%
Netherlands	5,824	6,303	6,952	8.2%
Poland	3,306	3,676	4,108	11.2%
Portugal	1,346	1,473	1,696	9.4%
Romania	1,083	1,311	1,548	21.1%
Slovakia	282	335	410	18.8%
Slovenia	169	178	197	5.5%
Spain	6,611	7,463	8,531	12.9%
Sweden	4,671	5,076	5,734	8.7%
Switzerland	5,933	6,682	7,122	12.6%
United Kingdom	25,365	27,332	29,658	7.8%
Rest of EEA (NO, LI, IS)	3,214	3,654	3,774	13.7%

Total EU27	92,727	103,171	115,160	11.3%
Total EU27 + U.K.	118,092	130,502	144,818	10.51%
Total All Countries	127,239	140,839	155,714	10.7%

Figure 39 - Data revenues by Country 2023-2024, growth 2024-2023

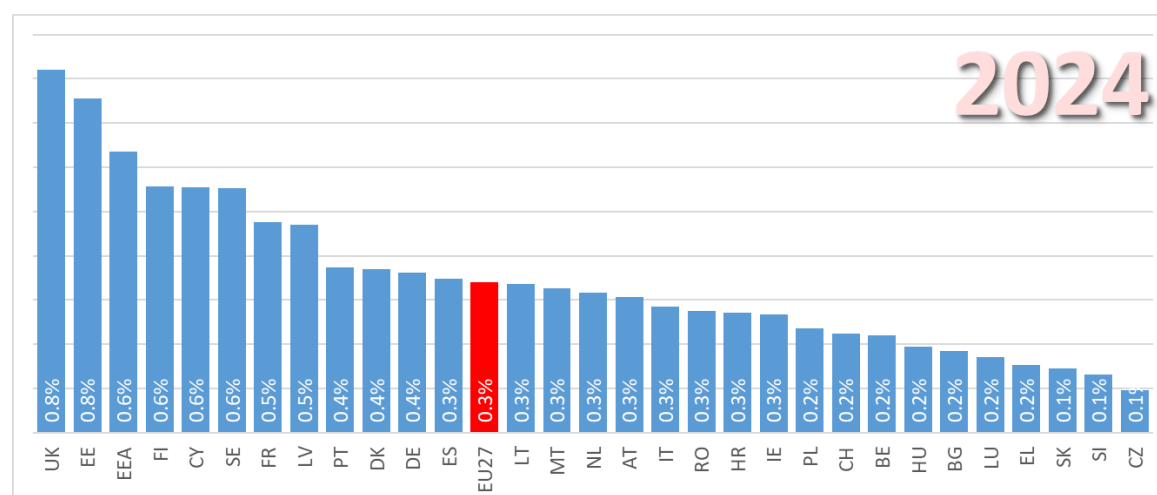


6.4 Shares of All Companies' Revenues by Country

Figure 40 illustrates the proportion of data companies' revenues relative to the total revenues of all companies across various European countries in 2024. Countries with a strong focus on data-intensive sectors tend to have a more substantial presence of data supplier companies, thereby contributing a higher percentage to the overall corporate revenues.

Among EU27 countries, Estonia, Finland, and Cyprus show the highest shares of data companies' revenues, reflecting their strong focus on data-driven industries and digital transformation. The overall EU27 average stands at 0.3%, with countries like Germany, Spain, and Italy aligning closely with this figure.

Figure 40 - Data Companies' Revenue Share 2024 - All Companies A, C, E, G, H, J, K, M, N, P, Q



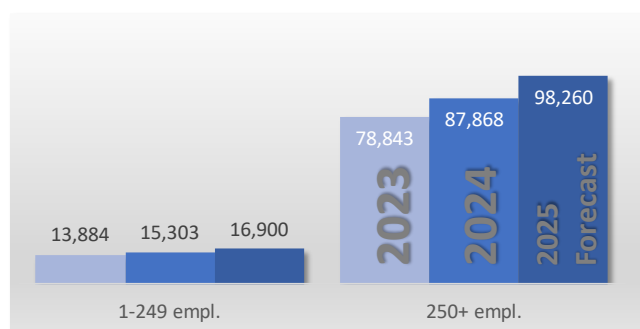
6.5 Data Companies' Revenues by Company Size

Table 40 and Figure 41 show data revenues by company size band and the significantly greater revenues associated with larger companies is clear – the opposite of the number of data supplier companies, which are almost exclusively smaller companies. Larger companies have greater resources, scalability, and ability to invest in advanced data solutions. However, smaller companies demonstrate robust growth, indicating ongoing opportunities and dynamism within the data sector across various company sizes.

Table 40 - Data Companies' Revenues (€M) by Company Size Band 2023-2024, 2025 Forecast and growth 2024-2023

	2023	2024	2025 (forecast)	Growth 2024-2023
1-249 employees	13,884	15,303	16,900	10.2%
250+ employees	78,843	87,868	98,260	11.4%

Figure 41 - Data Companies' Revenues by Company Size Band 2023-2024, 2025 Forecast



6.6 Data Companies Revenue Forecast

Data companies' revenues in the EU27 are projected to experience robust growth as the data market expands. According to Table 41, revenues are expected to reach €115 billion in 2025 and rise to around €149 billion by 2030 under the baseline scenario.

The rapid adoption of digital technologies across various industries has heightened the demand for data-driven solutions. The proliferation of artificial intelligence (AI) and machine learning applications has further amplified the need for extensive data analytics capabilities. Additionally, supportive government policies and initiatives aimed at fostering a data-driven economy have created a conducive environment for data companies to thrive. The COVID-19 pandemic has also played a role in accelerating digital transformation, compelling businesses to adopt data-centric approaches to remain competitive. This shift has led to increased investments in data infrastructure and analytics, further propelling the growth of the data market. In summary, the combination of technological advancements, supportive policies, and evolving business strategies has led to a more optimistic outlook.

Table 41 - Data Companies' Revenue Forecast 2025 and 2030 three scenarios (€M) and CAGR (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025– 2030, Challenge	CAGR 2025– 2030, Baseline	CAGR 2025– 2030, High Growth
EU27	115,160	143,298	148,925	173,350	4.5%	5.3%	8.5%
EEA + U.K.	144,818	187,644	197,452	227,866	5.3%	6.4%	9.5%
Total, all countries	155,714	202,642	214,404	246,512	5.4%	6.6%	9.6%

6.6.1 Data Companies' Revenue Forecast by Country

Table 42 and Figure 42 present the data companies revenues forecast in 2025 and 2030 according to the three different scenarios under consideration.

Germany is projected to lead in data company revenues within the EU27, with an estimated €37 billion by 2030 under the baseline scenario, reflecting a modest compound annual growth rate (CAGR) of

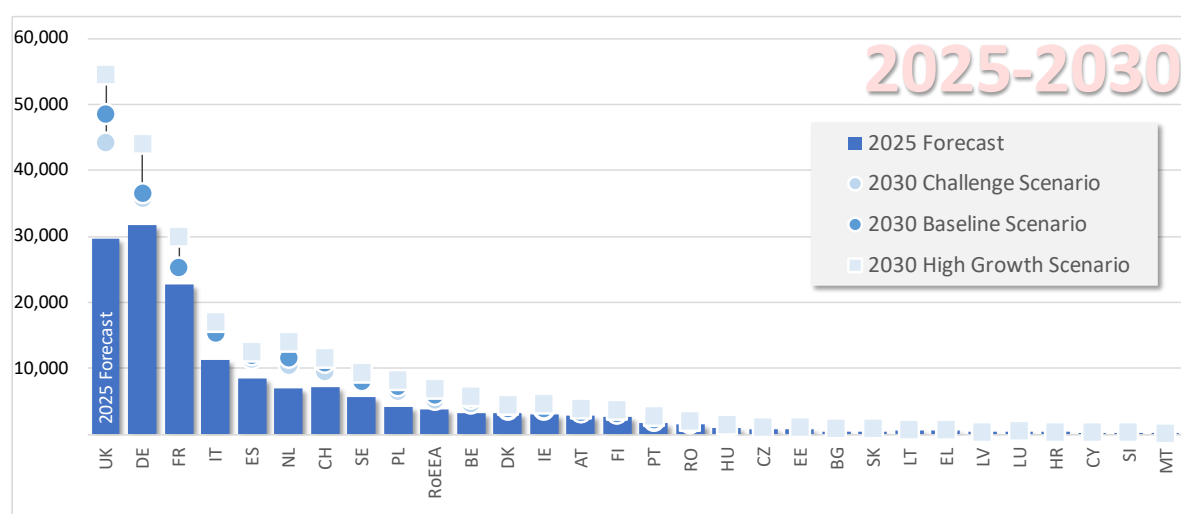
2.9% from 2025 to 2030. France, holding the second position, is expected to reach approximately €25 billion by 2030, with an even lower CAGR of 2.2% over the same period. These subdued growth rates can be attributed to the already substantial size and maturity of the data sectors in these countries, where market saturation and established infrastructures limit rapid expansion.

In contrast, the United Kingdom, despite being outside the EU27, is forecasted to achieve data company revenues of €48.5 billion by 2030, accompanied by a robust CAGR of 10.3% from 2025 to 2030. This significant growth rate suggests a dynamic and expanding data market, potentially driven by aggressive investments in data infrastructure, innovation, and favorable regulatory environments that encourage data-driven business models.

Table 42 - Data Companies Revenues forecast 2025 and 2030 three scenarios (€M) and CAGR (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Austria	2,785	3,318	3,337	4,020	3.6%	3.7%	7.6%
Belgium	3,151	4,667	5,413	5,907	8.2%	11.4%	13.4%
Bulgaria	476	777	794	874	10.3%	10.8%	12.9%
Croatia	358	418	428	476	3.1%	3.6%	5.9%
Cyprus	286	361	376	410	4.7%	5.6%	7.4%
Czechia	844	958	1,012	1,218	2.6%	3.7%	7.6%
Denmark	3,164	3,786	3,968	4,607	3.7%	4.6%	7.8%
Estonia	728	961	1,007	1,156	5.7%	6.7%	9.7%
Finland	2,700	3,197	3,221	3,725	3.4%	3.6%	6.6%
France	22,704	24,993	25,253	29,967	1.9%	2.2%	5.7%
Germany	31,754	35,758	36,575	44,162	2.4%	2.9%	6.8%
Greece	509	640	652	781	4.7%	5.1%	8.9%
Hungary	913	1,206	1,353	1,563	5.7%	8.2%	11.3%
Ireland	2,948	3,719	3,948	4,741	4.8%	6.0%	10.0%
Italy	11,340	15,033	15,358	17,063	5.8%	6.3%	8.5%
Latvia	378	475	481	488	4.6%	4.9%	5.2%
Lithuania	550	716	724	803	5.4%	5.7%	7.9%
Luxembourg	303	409	455	583	6.2%	8.5%	14.0%
Malta	93	192	199	243	15.5%	16.3%	21.1%
Netherlands	6,952	10,581	11,709	14,101	8.8%	11.0%	15.2%
Poland	4,108	6,572	7,418	8,177	9.9%	12.5%	14.8%
Portugal	1,696	2,135	2,238	2,904	4.7%	5.7%	11.4%
Romania	1,548	1,785	1,823	2,108	2.9%	3.3%	6.4%
Slovakia	410	719	774	910	11.9%	13.6%	17.3%
Slovenia	197	314	318	405	9.7%	10.1%	15.5%
Spain	8,531	11,540	11,936	12,637	6.2%	6.9%	8.2%
Sweden	5,734	8,068	8,153	9,320	7.1%	7.3%	10.2%
Switzerland	7,122	9,651	10,971	11,645	6.3%	9.0%	10.3%
United Kingdom	29,658	44,346	48,528	54,516	8.4%	10.3%	12.9%
Rest of EEA (NO, LI, IS)	3,774	5,348	5,980	7,001	7.2%	9.6%	13.2%
Total EU27	115,160	143,298	148,925	173,350	4.5%	5.3%	8.5%
Total EU27 + U.K.	144,818	187,644	197,452	227,866	5.3%	6.4%	9.5%
Total All Countries	155,714	202,642	214,404	246,512	5.4%	6.6%	9.6%

Figure 42 - Data Companies Revenue Forecast by Country 2025, 2030 three scenarios



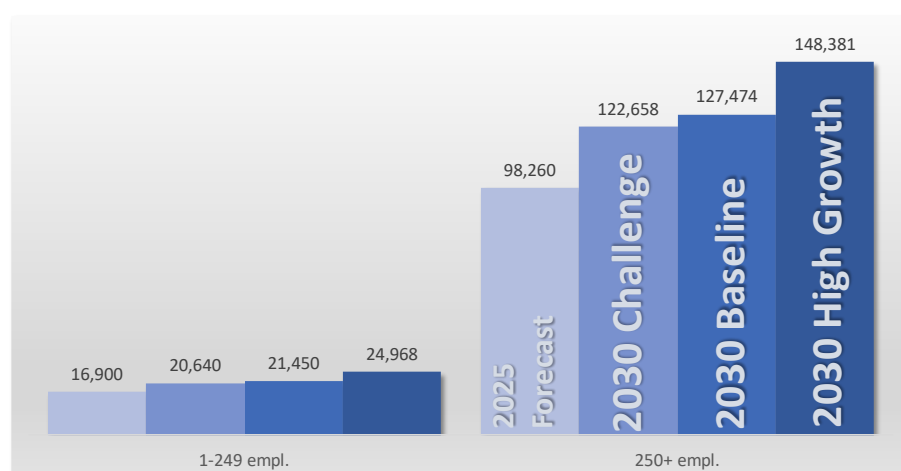
6.6.2 Data Companies' Revenues by Company Size

Data companies' revenues are projected to remain higher for larger enterprises, with those employing 250 or more individuals expected to account for 85% of total revenues by 2030 in the Baseline scenario. Table 43 illustrates revenue distribution across different company sizes under three scenarios for 2030. The compound annual growth rates (CAGR) for both small and large companies are relatively close over the forecast period. Larger firms leverage their market dominance, while smaller companies exhibit greater flexibility and agility, enabling them to effectively develop and market emerging technologies that larger, less nimble organizations may struggle to adopt.

Table 43 - Data Companies' Revenues, forecast by company size 2025 and 2030 three scenarios (000's) and CAGR (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025- 2030 Challenge	CAGR 2025- 2030 Baseline	CAGR 2025- 2030 High Growth
1-249 empl.	16,900	20,640	21,450	24,968	4.1%	4.9%	8.1%
250+ empl.	98,260	122,658	127,474	148,381	4.5%	5.3%	8.6%

Figure 43 - Data Companies Revenue Forecast by Size Band 2025 and 2030 - three scenarios



6.7 Key Findings

KEY HIGHLIGHT FOR THE EU27

In 2024, data companies' revenues among EU27 Member States reached €103 billion, reflecting steady growth in the European data economy with an average growth rate of 11.3% compared to 2023. France stands out with a significant 17.6% growth, reaching €19,5 billion, while Germany leads with €29,2 billion in revenues, growing by 9.4%. Countries such as Estonia (24.1%), Romania (21.1%), and Slovakia (18.8%) show the fastest growth, underscoring their rapid digital transformation and increasing focus on data-driven enterprises.

Across all countries measured (EU27, the UK, Switzerland and the rest of EEA) revenues exceeded €140 billion, underscoring the increasing adoption of data-driven technologies and services across the region.

Data Revenues differ from the data market – as data revenues reflect the global income for data companies based in the European Union, whereas the data market includes data revenues taken in Europe by all companies, irrespective of whether they are headquartered in the European Union or not. These two track each other as the data market is a global market, and the imports and exports of data tools, hardware, and services, and data are expected to track each other over the duration of this forecast.

Data Companies' Revenues in this forecast are projected to reach €115.2 billion in 2025, reflecting steady expansion across industries as EU27 companies strengthen their position in the global digital economy. Looking ahead to 2030, revenues could grow further, reaching €148.9 billion in the Baseline Scenario, while the High Growth Scenario projects €173,4 billion, and the Challenge Scenario estimates a more conservative €143.3 billion.

Data technologies had a notable increase in development over the past 2-3 years, particularly with the roll-out of generative AI across various sectors.

These innovations contribute to the more optimistic outlook for data company revenues, with the CAGR (2025–2030) for the Baseline Scenario standing at approximately 5.3%.

The projections highlight the increasing role of digital transformation, AI adoption, and data-driven innovation in shaping the future of the EU27 data economy, reinforcing the sector's importance in driving competitiveness and economic growth.

Data Companies' revenues account for 0.34% of all EU27 companies' revenues in 2024, up from 0.31% in 2023. Data Revenues, demonstrating the growing importance of the data economy in the overall EU economy.

Larger companies are expected to account for more than 85% of data companies revenues in 2025, again unchanged from previous forecasts, although companies with more than 250 employees account for only 2% of all companies.

7 The Data Market

7.1 Definition

*The **data market** is the marketplace where digital data is exchanged as “products” and “services” because of the elaboration of raw data.*

The data market captures the aggregate value of the demand of digital data without measuring the direct, indirect, and induced impacts of data in the economy. Further, the data market represents a wider concept than the market of big data & analytics (BDA), as it includes not only the value generated by pure data players developing BDA technologies, but also the value created by data-related research, businesses, information, and IT services. The digital data exchanged as “products” and “services” in the data market refers exclusively to data that is collected, processed, stored, and transmitted over digital information infrastructures and/or elaborated with digital technologies. This definition includes multimedia objects that are collected, stored, processed, elaborated, and delivered for exploitation through digital technologies (for example, image databases). The value of the Data market is not exactly equal to the aggregated revenues of the European data companies because it includes imports (data products and services bought on the global digital market from suppliers not based in Europe) and excludes the exports of the European data companies.

7.2 Measuring the Data Market

Table 44 - The Data Market - Main data sources

Data Source	Updated
IDC Worldwide Black Book (standard edition)	Sep 2024
IMF World Economic Outlook	Aug 2024
IT Big Data and Analytics spending Guide	Aug 2024

The table below gives an overview of the latest estimates for the value and growth of the data market. The EU27 market grew by 9.7% in 2024 to a value of **€90 billion**, up from **€82 billion** in 2023.

The growth rate for the EU27 data market from 2023 to 2024 is 9.7% which aligns with the previous study's measurement and largely outpace the growth of the overall ICT industry (estimated at 6.3% in 2024 over the previous year) as measured by the ICT spending values included in the dataset accompanying this report. While indicating a consistent and robust expansion trajectory in Europe's data economy, this growing trajectory underscores the escalating importance of data-driven technologies and services across various sectors in the EU. The data market's expansion is a testament to the increasing reliance on data analytics, artificial intelligence, and other data-centric innovations that drive economic development and enhance competitiveness within the region.

As shown in the table below, the projected growth of the EU27 data market, from €82.1 billion in 2023 to an estimated €100 billion in 2025, reflects a strong and sustained upward trajectory. The 9.7% growth rate between 2023 and 2024 not only demonstrates the resilience of the European data economy but also signals an accelerating demand for data-driven products and services. This robust performance positions the data market as a central pillar of the digital economy, underlining its critical

role in supporting innovation, digital transformation, and economic competitiveness. The consistent expansion also indicates that data-related industries are becoming increasingly integral to various sectors, including manufacturing, healthcare, finance, and public services, where data technologies are essential for improving operational efficiency and driving decision-making processes.

Moreover, the data market's value approaching €100 billion by 2025 emphasizes the EU's progress towards achieving its digital ambitions, particularly those outlined in the European Strategy for Data and the Digital Decade 2030 targets. The steady growth suggests that European businesses are progressively harnessing the potential of big data analytics, artificial intelligence (AI), and cloud computing to unlock new revenue streams and optimize processes. However, this expansion also underscores the need for continuous investment in digital infrastructure, interoperability, and data governance frameworks to ensure sustainable growth. As the data market includes imports and excludes exports, the positive trajectory also highlights an opportunity for the EU to strengthen its strategic autonomy by fostering domestic data capabilities, enhancing data sharing within the European data spaces, and reducing dependency on non-European data providers. Ultimately, these trends highlight the data market's increasing relevance as a key indicator of Europe's digital sovereignty and economic resilience in the global digital landscape.

Table 45 - Value and Growth of the Data Market: 2023-2024, 2025 Forecast, Revenue (€ M) and 2024-2023 growth (%)

N.	Market	Name	Description	2023	2024	2025 (forecast)	Growth 2024- 2023
4.1	EU27	Value of the Data Market	Estimate of the overall value of the Data Market	82,087	90,036	100,040	9.7%

7.3 Measuring the Value of Data

Data monetization represents a critical component of the data market, capturing the value derived from transforming raw data into revenue-generating products and services. Within the broader context of the data market, data monetization measures how companies leverage data assets not only for internal operational efficiency but also as tradable commodities that generate direct economic value. This process includes the commercialization of data through the sale, licensing, or exchange of datasets, as well as the creation of data-driven products, analytics services, and AI-powered solutions. The link between data monetization and the data market is fundamental: as organizations recognize the commercial potential of data, the demand and supply of data-driven offerings expand, directly influencing the overall value of the data market. The rise of data marketplaces, which provide structured environments for data exchange, as well as the introduction of the common European data space concept, has further accelerated this trend by lowering entry barriers and enabling more businesses to participate in the data economy.

Moreover, data monetization plays a pivotal role in stimulating innovation across industries by enabling companies to develop tailored services based on, for example, consumer insights, financial trends, healthcare outcomes, and industrial performance. For instance, retail businesses monetize consumer behaviour data to optimize marketing strategies, while healthcare institutions leverage anonymized patient data for research and development. This ability to transform data into actionable

knowledge and revenue streams significantly enhances the competitiveness of data-driven enterprises and boosts the aggregate value of the data market. The European Commission's Digital Decade Policy Programme 2030 underscores the importance of data monetization by promoting a unified data market that encourages cross-border data sharing and collaboration among businesses and public administrations. As data monetization matures, driven by advancements in analytics, regulatory clarity, and heightened data awareness, it becomes an essential indicator of the health and growth potential of the European data market.

Table 46 summarises the value of data monetisation among the Member States from 2023-2024 with a forecast to 2025, showing the growth rate of 2024-2023. This is the value assigned to the sale and purchase of data within the Member States.

The European Union's **data monetization market** is projected to grow from **€25.6 billion** in 2023 to **€29.5 billion in 2024**, reflecting a 15.3% growth rate between 2023 and 2024. This significant expansion underscores the increasing recognition of data as a valuable asset. The surge is driven by advancements in data analytics, artificial intelligence, and the proliferation of data-driven business models. Enhancing data monetization can facilitate the broader adoption of AI-based models, particularly among companies offering AI services to clients aiming to integrate AI into their operations. As organizations continue to leverage data for strategic decision-making and innovation, the data monetization market is poised for sustained growth in the coming years.

Data monetization has become a pivotal focus for European enterprises and policymakers. The European Commission has introduced several initiatives to foster data sharing and monetization, aiming to create a robust data economy within the EU. A cornerstone of this strategy is the Data Governance Act (DGA), which provides a framework to enhance trust in voluntary data sharing for the benefit of businesses and citizens. The DGA establishes mechanisms to facilitate the reuse of certain categories of protected data held by public sector bodies, sets up a framework for data intermediation services, and promotes data altruism. Complementing the DGA, the Data Act, which entered into force on January 2024, aims to make more data available for use via new rules on who can use and access data and for which purposes across all economic sectors in the EU. The Data Act addresses legal, economic, and technical issues that lead to data being underused, ensuring fairness in the digital environment and stimulating a competitive data market. Additionally, the European Data Strategy envisions the creation of common European data spaces in strategic sectors, such as health, agriculture, and finance. These data spaces are designed to overcome legal and technical barriers to data sharing, fostering an environment where data can flow freely across sectors and borders within the EU.

Despite these initiatives, challenges persist. Ensuring data privacy and security remains paramount, necessitating robust frameworks to protect sensitive information. Moreover, achieving interoperability between diverse data platforms and systems is essential to facilitate seamless data exchange. Building trust among stakeholders is also crucial, as concerns over data misuse can hinder participation in data-sharing ecosystems.

Table 46 - Data Market Monetization for the Member States 2023-2024, 2025 forecast (€ M) and 2024-2025 growth (%)

N.	Market	Name	Description	2023	2024	2025 (forecast)	Growth 2024-2023
4.1	EU27	Data Monetisation value	Estimate of the overall value of Data Monetisation	25,638	29,548	33,966	15.3%

7.4 Data Market by Country

The European data market (as shown in Table 47 and Figure 44 - European Data Market 2024 Revenue (€M) and 2024-2023 growth (%)) exhibits significant disparities in size across Member States. In 2024, Germany led with a data market valued at €24.5 billion, followed by France at €15.6 billion. Germany's projected growth rate from 2023 to 2024 stands at 8.8%, which is below the EU27 average of 11.1%. In contrast, France growth rate in 2024 is 11.6% slightly surpassing the EU average.

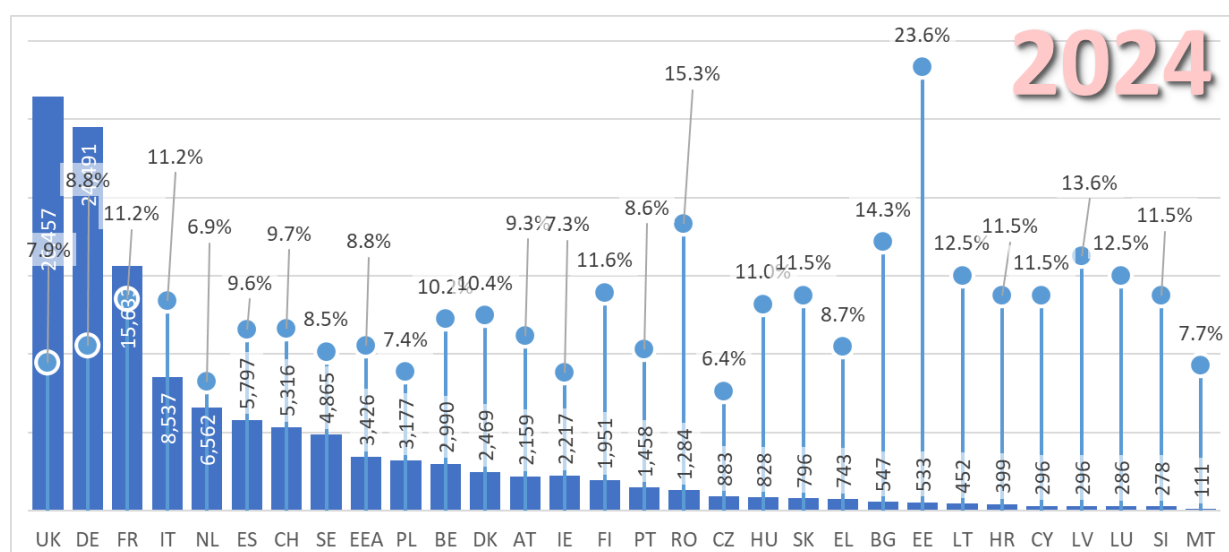
The European data market also shows notable growth across other EU countries. Italy and Spain stand out with data market sizes of €8.5 billion and €5.8 billion, respectively, in 2024. Both countries recorded strong growth rates, with Italy at 11.2% and Spain at 9.6%, reflecting their efforts to enhance digital transformation and data utilization. Modest-sized economies and lower-income Member States also recorded significant positive performances in the development of the data market. Estonia (23.6%), Romania (15.3%), and Bulgaria (14.3%), for example, achieved some of the highest growth rates in the EU27, highlighting their rapid advancements in adopting data-driven technologies. These figures underscore the diverse pace of development across Member States, with smaller economies often experiencing more dynamic growth as they invest in digital infrastructure and data innovation.

Table 47 - European Data Market by Country 2023-2024, 2025 Forecast Revenue (€ M) and 2024-2023 growth (%)

Member State	2023	2024	2025 Forecast	Growth 2024-2023
Austria	2,065	2,217	2,417	7.3%
Belgium	2,713	2,990	3,422	10.2%
Bulgaria	478	547	634	14.3%
Croatia	357	399	444	11.5%
Cyprus	265	296	329	11.5%
Czechia	831	883	922	6.4%
Denmark	2,237	2,469	2,736	10.4%
Estonia	431	533	606	23.6%
Finland	1,748	1,951	2,160	11.6%
France	14,052	15,633	17,811	11.2%
Germany	22,515	24,491	26,497	8.8%
Greece	684	743	815	8.7%
Hungary	746	828	911	11.0%
Ireland	1,975	2,159	2,437	9.3%
Italy	7,679	8,537	9,505	11.2%
Latvia	260	296	323	13.6%
Lithuania	402	452	499	12.5%
Luxembourg	254	286	313	12.5%
Malta	103	111	121	7.7%
Netherlands	6,141	6,562	7,337	6.9%
Poland	2,958	3,177	3,505	7.4%
Portugal	1,342	1,458	1,557	8.6%
Romania	1,114	1,284	1,448	15.3%
Slovakia	714	796	887	11.5%
Slovenia	250	278	310	11.5%
Spain	5,287	5,797	6,608	9.6%
Sweden	4,486	4,865	5,485	8.5%
Switzerland	4,846	5,316	6,025	9.7%
United Kingdom	24,524	26,457	29,883	7.9%
Rest of EEA (NO, LI, IS)	3,150	3,426	3,792	8.8%

Total EU27	82,087	90,036	100,040	9.7%
Total EU27 + U.K.	106,611	116,493	129,923	9.3%
Total All Countries	114,607	125,236	139,740	9.3%

Figure 44 - European Data Market 2024 Revenue (€M) and 2024-2023 growth (%)



7.5 Data Market by Industry

Table 48 and Figure 45 show the size and growth in Data Market of the industries for the EU27 Member States.

The finance and manufacturing industries remain the largest contributors, consistent with previous study. In 2024, finance and manufacturing led with a market size slightly higher than €19.1 billion each. However, the public administration sector stands out as the fastest-growing industry, with an exceptional 29% growth rate from 2023 to 2024. This surge reflects increasing government investments in digital public services to enhance efficiency and accessibility, as emphasized in the European Commission's Digital Decade Policy Programme 2030. The European Commission's Digital Decade Policy Programme 2030 underscores this commitment by setting clear targets for the digital transformation of public services across EU Member States. A key component of this transformation is the adoption of open data frameworks, which allow public sector information to be freely accessed and reused, thereby fostering innovation and economic growth. The European Data Strategy emphasizes the importance of open data in creating a single market for data, facilitating seamless data exchange and collaboration. Implementing interoperability standards is also crucial, as it enables different government agencies and services to exchange data seamlessly, improving service delivery and operational efficiency. The European Interoperability Framework provides guidance on setting up interoperable digital public services, ensuring that various systems can work together effectively. These initiatives highlight the public administration sector's dedication to leveraging data to enhance governance and public service delivery, contributing to its projected growth in the data market.

The construction sector also saw substantial growth, with a 21.1% increase between 2023 and 2024. This growth highlights the increasing adoption of data-driven innovations, like Building Information Modeling (BIM) and smart construction technologies, which are becoming increasingly integral to modern construction practices.

Other notable growth rates include health (11.9%), information and communication (12.5%), and utilities (5.3%), showcasing the expanding use of data-driven solutions in these sectors. In contrast, education (1.1%) and professional services (1.5%) exhibited more modest growth, reflecting slower but steady adoption of data practices.

Table 48 - Data Market by Industry 2023-2024, 2025 Forecast and 2024-2023 growth (%)

	2023	2024	2025 Forecast	Growth 2024-2023
Finance	17,193	19,113	21,298	11.2%
Mining, Manufacturing	17,473	19,110	21,150	9.4%
Public Administration	8,251	10,654	12,850	29.1%
Information & Communication	8,585	9,658	10,996	12.5%
Professional services	9,033	9,169	9,730	1.5%
Retail and Wholesale	8,301	8,555	8,903	3.1%
Utilities	3,733	3,933	4,497	5.3%
Health	2,669	2,988	3,351	11.9%
Transport	2,969	3,068	3,209	3.3%
Education	1,816	1,836	1,840	1.1%
Construction	416	504	599	21.1%
Agriculture	299	311	334	3.9%
Home ²⁰	1,348	1,137	1,282	-15.7%
EU27	82,087	90,036	100,040	9.7%

²⁰ The “home” market represents the consumer consumption of data, i.e. the spending of households and private consumers on data and data-related products and services. After a significant rise in spending in 2022 following the rebound in consumption from COVID-19 restrictions, the consumer segment has decelerated its growth and stabilised. Focusing on data-related products and services, households allocated approximately 3.3% of their total consumption to this sector, thus about 1.7% of the EU’s GDP (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Household_consumption_by_purpose). While specific figures for household spending on data-related products and services in 2024 are pending, existing data from 2023 and early 2024 suggest a worsening trend in this sector due primarily to persistent inflationary pressures which continued throughout 2024 within the EU (https://ec.europa.eu/eurostat/documents/2995521/18343103/2-17012024-AP-EN.pdf/9d885442-f323-cdde-e149-17ed99a63a6f?utm_source=chatgpt.com).

Figure 45 - Data Market by Industry 2023-2024 and 2024-2023 Growth (%)

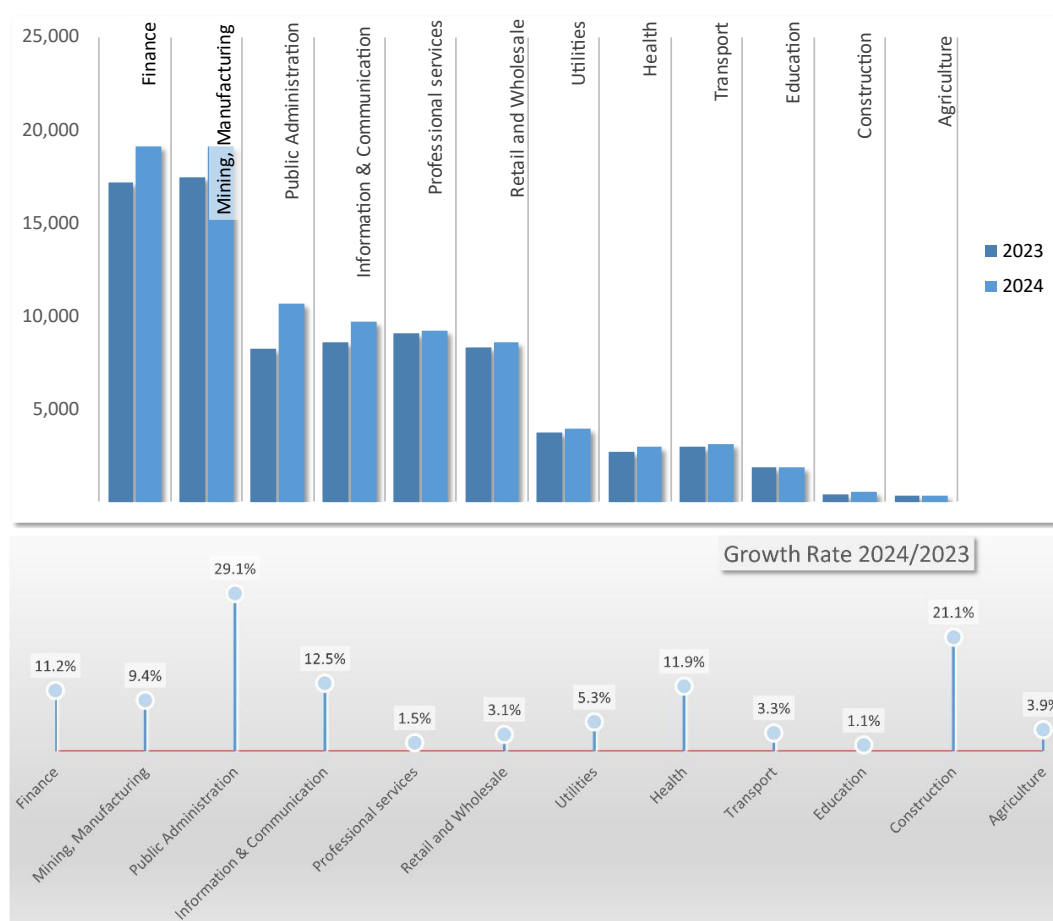


Figure 46 - Industry share of total growth 2023-2024 (%)



7.6 Data Monetisation

Data monetization involves organizations generating revenue by providing access to their data assets. This practice is a significant component of the broader data market, as it enables companies to capitalize on the information they collect. Examples of data that can be sold include:

- **Consumer Behavior Data:** Retailers and e-commerce platforms can sell insights into purchasing patterns, preferences, and trends to manufacturers and marketers aiming to tailor their products and campaigns.
- **Financial Data:** Banks and financial institutions may offer anonymized transaction data to investment firms and market analysts for economic forecasting and investment strategies.
- **Healthcare Data:** Aggregated and anonymized patient data can be sold to pharmaceutical companies and research institutions to aid in drug development and public health studies.
- **Telecommunications Data:** Mobile network operators can provide location-based data to businesses for purposes like targeted advertising and urban planning.
- **Industrial IoT Data:** Manufacturing companies can sell data from connected machinery to equipment suppliers and maintenance service providers for predictive maintenance and product improvement.

In Europe, data monetization can be seen as another fundamental component of the data economy and a catalyst for initiatives aimed at fostering data-driven innovation and economic growth. The European Commission's Digital Decade Policy Programme 2030 emphasizes the development of a single market for data, promoting data sharing and monetization among businesses and public administrations. Moreover, the proliferation of data marketplaces facilitates the exchange and monetization of data assets, enabling organizations to capitalize on their data resources. These platforms provide structured environments for buying and selling data, thereby streamlining the monetization process and contributing to the overall expansion of the data market.

This study projections indicate that the data monetization segment is maturing more rapidly than anticipated in previous study. The trend reflects a broader shift towards data-driven business models, where data is not only used internally but also as a commodity in the marketplace. The maturation of the data monetization market is likely driven by several factors:

- **Advancements in Data Analytics:** Improved analytical tools enable organizations to extract actionable insights from raw data, increasing its market value.
- **Regulatory Developments:** Evolving data privacy laws and regulations are prompting companies to establish transparent data practices, thereby building trust with data buyers.
- **Emergence of Data Marketplaces:** Platforms facilitating the buying and selling of data have become more prevalent, streamlining transactions and expanding market access.
- **Increased Data Awareness:** Organizations are becoming more aware of the potential revenue streams that data monetization can offer, leading to more active participation in the data economy.

Figure 47 – Data Monetisation share of the European Data Market 2013-2030 (Three Scenarios) (%)

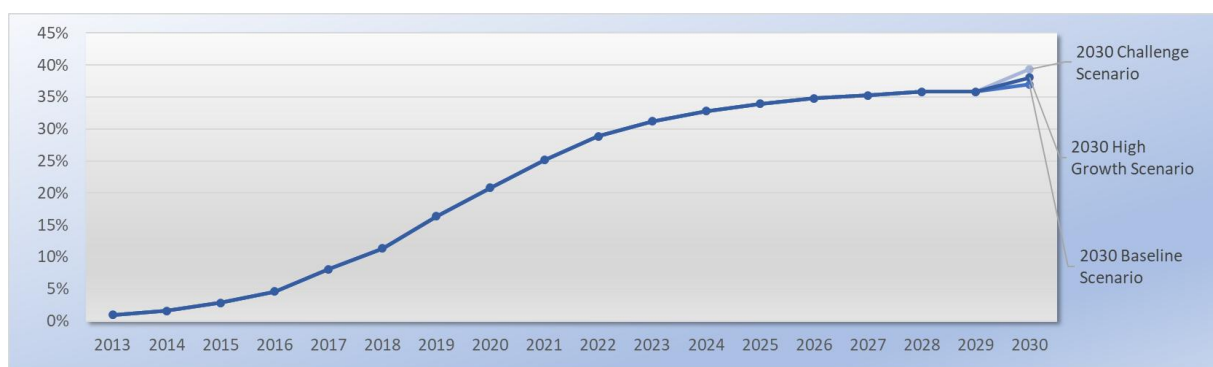


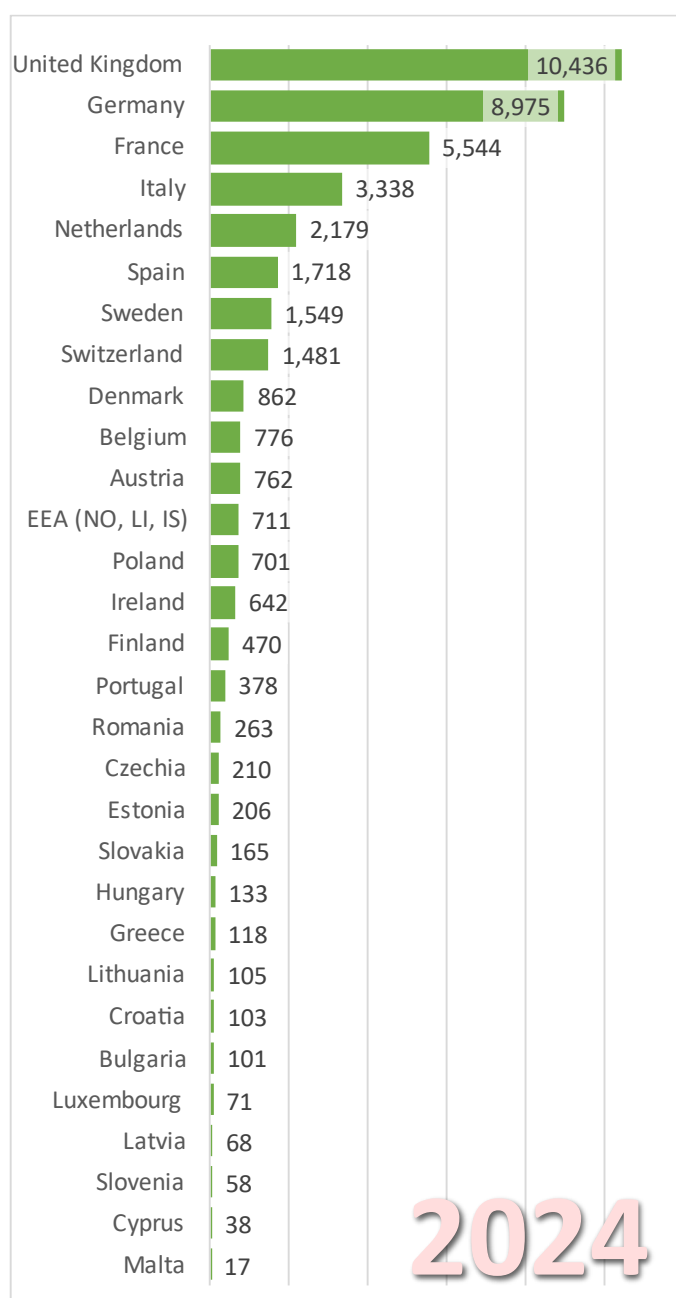
Table 49 and Figure 48 show the size of data monetization by country. The leading countries in data monetization within the EU27—Germany and France—reflect their strong positions in the broader data market. In 2024, Germany leads with nearly €9 billion, followed by France with €5.5 billion.

The total data monetization revenues for the EU27 reached €29.5 billion in 2024, reflecting a growth rate of 15.3% compared to 2023. This growth underscores the increasing role of data monetization in driving the EU's digital economy. Among the smaller economies, notable growth was observed in countries such as Estonia, Slovakia, and Romania, reflecting their rapid adoption of data-driven business models.

Table 49 – Data Monetization by country 2023-2024, 2025 Forecast and 2024-2023 growth (%)

	2023	2024	2025 (Forecast)	Growth 2024-2023
Austria	685	762	805	11.3%
Belgium	593	776	927	30.8%
Bulgaria	79	101	137	27.6%
Croatia	81	103	124	26.6%
Cyprus	30	38	54	26.8%
Czechia	168	210	258	25.1%
Denmark	735	862	971	17.2%
Estonia	153	206	242	34.4%
Finland	375	470	591	25.3%
France	4,966	5,544	6,972	11.6%
Germany	7,989	8,975	10,092	12.3%
Greece	104	118	132	13.1%
Hungary	117	133	171	13.9%
Ireland	558	642	704	15.2%
Italy	2,762	3,338	3,565	20.9%
Latvia	48	68	79	40.3%
Lithuania	84	105	116	26.0%
Luxembourg	57	71	85	24.2%
Malta	15	17	19	10.7%
Netherlands	1,904	2,179	2,398	14.4%
Poland	578	701	867	21.3%
Portugal	348	378	432	8.6%
Romania	184	263	298	42.8%
Slovakia	122	165	194	35.1%
Slovenia	41	58	64	40.3%
Spain	1,524	1,718	1,909	12.7%
Sweden	1,337	1,549	1,757	15.9%
Switzerland	1,270	1,481	1,624	16.6%
United Kingdom	9,117	10,436	11,170	14.5%
Rest of EEA (NO, LI, IS)	634	711	942	12.0%
Total EU27	25,638	29,548	33,966	15.3%
Total EU27 + U.K.	34,754	39,983	45,136	15.0%
Total All Countries	36,659	42,176	47,701	15.0%

Figure 48 – Data Monetisation by Country 2024 (€M)

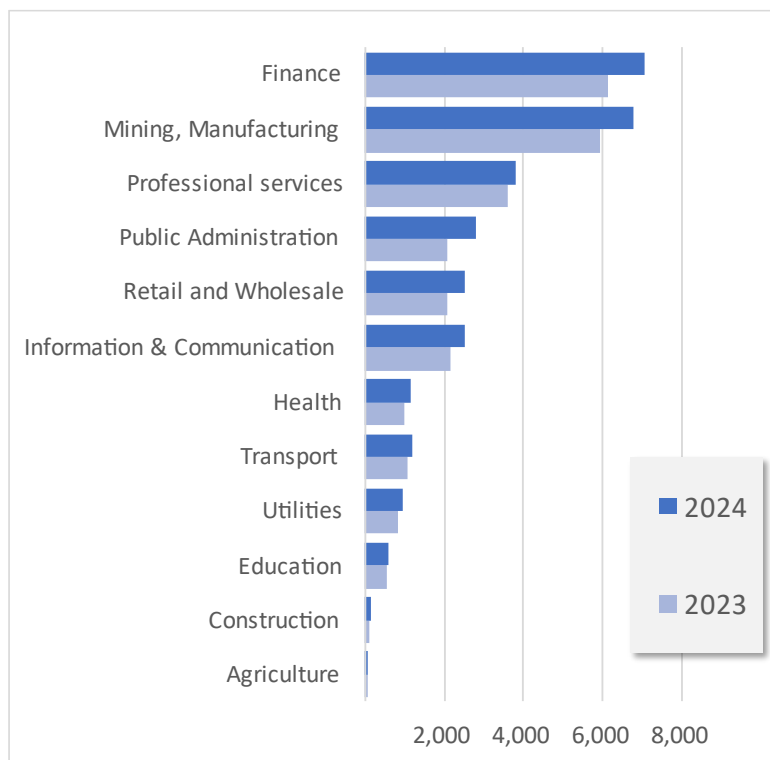


The industries best set to exploit data monetization are Finance and Manufacturing – as seen in Figure 49. The finance and manufacturing sectors are particularly well-positioned to capitalize on data monetization due to their extensive data generation and the high value of their data assets.

Financial institutions, including banks, credit card companies, and payment processors, collect vast amounts of data on customer transactions, investment behaviors, and market trends. Aggregated and anonymized financial data can be sold to third parties, such as market research firms and retail companies, interested in consumer spending habits and economic indicators. For instance, banks can provide insights into consumer spending trends to retailers aiming to refine their marketing strategies. Also, analysing transaction patterns helps in identifying fraudulent activities and assessing credit risks.

Manufacturers generate substantial data through production processes, supply chain operations, and product usage. Data from machinery can predict failures, allowing for timely maintenance and minimizing downtime. Manufacturers can offer data-driven services to customers, such as performance analytics or usage optimization recommendations.

Figure 49 – Data Monetization by Industry 2023-2024 (€ M)



7.7 Forecasting the Data Market

The forecast for the data market to 2025 and the three scenarios for 2030 is summarised in the table below. The EU27 data market will grow to €126 Billion in 2030 (Baseline), representing a compound growth of 4.6% over the period 2025 to 2030.

Table 50 – Data Market Forecast 2025, 2030 three scenarios (€M) and compound growth (%)

	2025 (Forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR: 2025– 2030, Challenge	CAGR: 2025– 2030, Baseline	CAGR: 2025– 2030, High Growth
Total EU27	100,040	120,948	125,502	141,882	3.9%	4.6%	7.2%
Total EU27 + U.K.	129,923	156,042	160,998	180,205	3.7%	4.4%	6.8%
Total All Countries	139,740	167,949	173,764	194,987	3.7%	4.5%	6.9%

7.7.1 *The Data Market Forecast by Country*

The table below shows the EU27 countries' data market outlook for 2025 and 2030 three scenarios. Germany currently holds the largest share of the EU data market, accounting for approximately 25% of its total value. Projections indicate that Germany's data market will continue to expand, with an estimated compound annual growth rate (CAGR) of 3% under the baseline scenario through 2030, slightly below the EU average. The top five countries in the EU27's data market—Germany, France, Netherlands, Italy, and Spain—are expected to maintain their leading positions in 2030.

Table 51 – European Data Market forecast by country 2025 forecast, 2030 three scenarios and compound growth (%)

	2025 (Forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
Austria	2,417	2,820	2,935	3,154	3.1%	4.0%	5.5%
Belgium	3,422	4,593	5,013	5,605	6.1%	7.9%	10.4%
Bulgaria	634	809	885	995	5.0%	6.9%	9.4%
Croatia	444	555	585	616	4.6%	5.7%	6.8%
Cyprus	329	434	442	451	5.7%	6.1%	6.5%
Czechia	922	1,122	1,133	1,354	4.0%	4.2%	8.0%
Denmark	2,736	3,264	3,357	3,931	3.6%	4.2%	7.5%
Estonia	606	755	784	1,042	4.5%	5.3%	11.4%
Finland	2,160	2,390	2,453	3,028	2.0%	2.6%	7.0%
France	17,811	20,617	20,954	23,762	3.0%	3.3%	5.9%
Germany	26,497	30,509	30,735	34,752	2.9%	3.0%	5.6%
Greece	815	964	1,039	1,157	3.4%	5.0%	7.2%
Hungary	911	1,154	1,255	1,544	4.8%	6.6%	11.1%
Ireland	2,437	3,157	3,210	3,754	5.3%	5.7%	9.0%
Italy	9,505	11,707	11,730	12,559	4.3%	4.3%	5.7%
Latvia	323	394	417	420	4.0%	5.2%	5.3%
Lithuania	499	611	668	716	4.1%	6.0%	7.5%
Luxembourg	313	408	423	509	5.4%	6.2%	10.2%
Malta	121	178	182	223	8.0%	8.5%	13.0%
Netherlands	7,337	9,190	9,705	10,853	4.6%	5.8%	8.1%
Poland	3,505	4,796	5,504	6,356	6.5%	9.4%	12.6%
Portugal	1,557	1,894	2,033	2,380	4.0%	5.5%	8.9%
Romania	1,448	1,838	1,846	1,994	4.9%	5.0%	6.6%
Slovakia	887	1,228	1,267	1,510	6.7%	7.4%	11.2%
Slovenia	310	402	439	464	5.3%	7.2%	8.4%
Spain	6,608	8,325	9,033	9,777	4.7%	6.5%	8.2%
Sweden	5,485	6,834	7,475	8,976	4.5%	6.4%	10.4%
Switzerland	6,025	7,282	7,688	8,346	3.9%	5.0%	6.7%
United Kingdom	29,883	35,094	35,496	38,323	3.3%	3.5%	5.1%
Rest of EEA (NO, LI, IS)	3,792	4,625	5,077	6,436	4.0%	6.0%	11.2%
Total EU27	100,040	120,948	125,502	141,882	3.9%	4.6%	7.2%
Total EU27 + U.K.	129,923	156,042	160,998	180,205	3.7%	4.4%	6.8%
Total All Countries	139,740	167,949	173,764	194,987	3.7%	4.5%	6.9%

Figure 50 – European Data Market Forecast by Country 2025, 2030 three scenarios (€M)

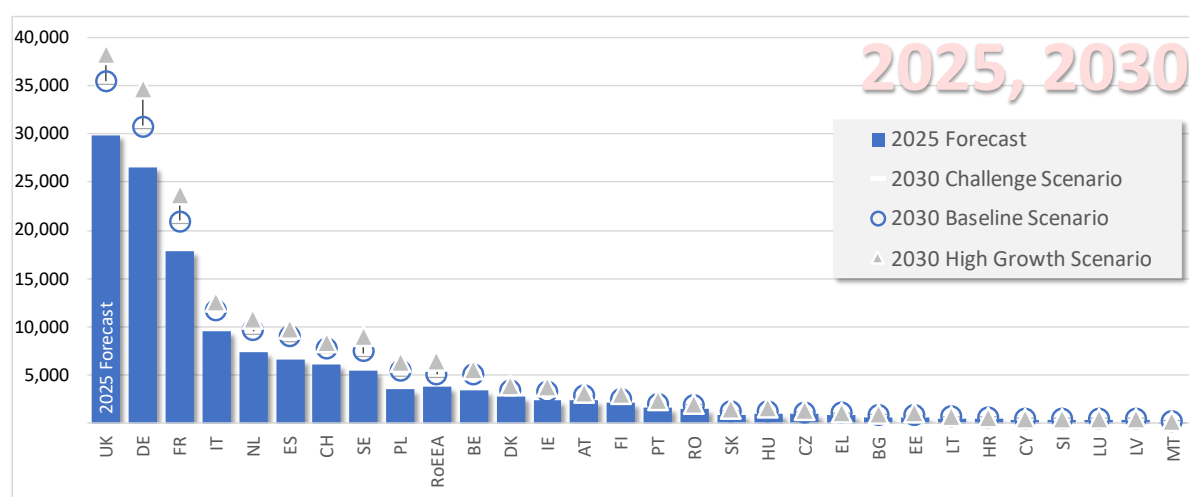


Figure 51 – Contribution to overall growth by Country 2025-2030 – top 10 contributors



7.7.2 The Data Market by Industry

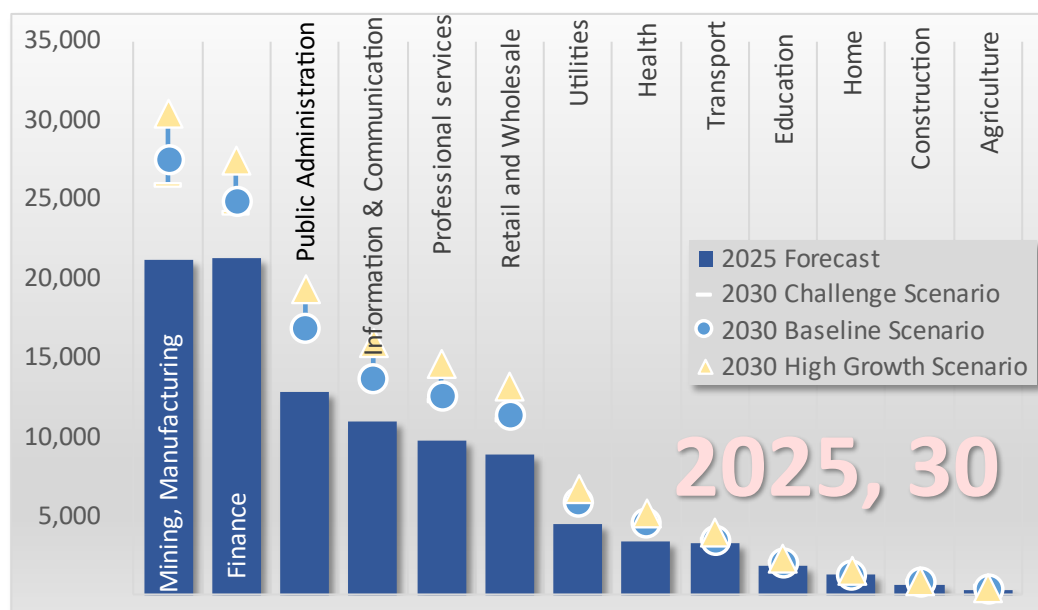
Table 52 and Figure 52 show the details for the data market by industry for 2025 and the three scenarios for 2030.

The leading industries in the data market are Finance and Manufacturing, with Manufacturing projected to surpass Finance by 2030 across all three scenarios. This shift underscores manufacturing's increasing reliance on data-driven strategies to enhance operational efficiency, product innovation, and supply chain management. The adoption of Industry 4.0 technologies, such as the Internet of Things (IoT), artificial intelligence (AI), and advanced analytics, is driving this transformation. These technologies enable manufacturers to collect and analyse vast amounts of data, leading to improved decision-making and competitiveness.

Table 52 – European Data Market by Industry 2025 forecast, 2030 three scenarios (€M) and CAGR (%)

	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025- 2030 Challenge	CAGR 2025- 2030 Baseline	CAGR 2025- 2030 High Growth
Agriculture	334	415	428	498	4.5%	5.1%	8.3%
Construction	599	792	817	882	5.7%	6.4%	8.0%
Education	1,840	1,953	2,015	2,283	1.2%	1.8%	4.4%
Finance	21,298	24,083	24,852	27,436	2.5%	3.1%	5.2%
Health	3,351	4,450	4,592	5,173	5.8%	6.5%	9.1%
Information & Communication	10,996	13,277	13,701	15,922	3.8%	4.5%	7.7%
Mining, Manufacturing	21,150	25,800	27,541	30,406	4.1%	5.4%	7.5%
Professional services	9,730	12,178	12,567	14,604	4.6%	5.2%	8.5%
Public Administration	12,850	16,724	16,842	19,331	5.4%	5.6%	8.5%
Retail and Wholesale	8,903	11,001	11,352	13,192	4.3%	5.0%	8.2%
Transport	3,209	3,406	3,515	3,917	1.2%	1.8%	4.1%
Utilities	4,497	5,577	5,946	6,687	4.4%	5.7%	8.3%
Home	1,282	1,292	1,333	1,550	0.2%	0.8%	3.9%

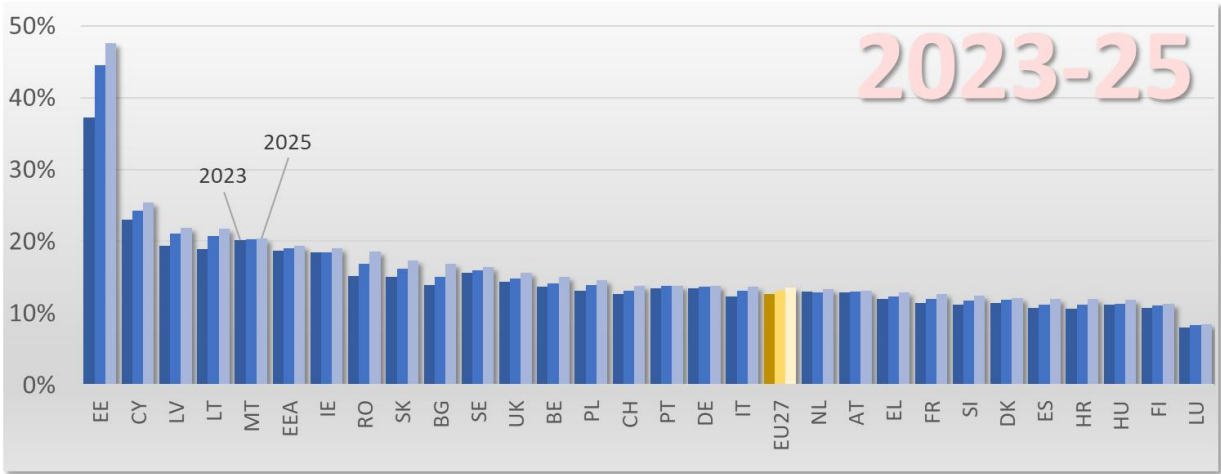
Figure 52 – European Data Market Forecast by Industry 2025 forecast, 2030 three scenarios (€M)



The data market is projected to account for 13.5% of ICT spending across the Member States in 2025, with some variation by Member State. As outlined in the previous study, Estonia continues to be an exception, in which the data market accounts for nearly 48% of its IT spending in 2025. This significant proportion underscores Estonia's commitment to integrating data-centric solutions across various sectors, reinforcing its position as a leader in digital innovation. The substantial allocation of IT

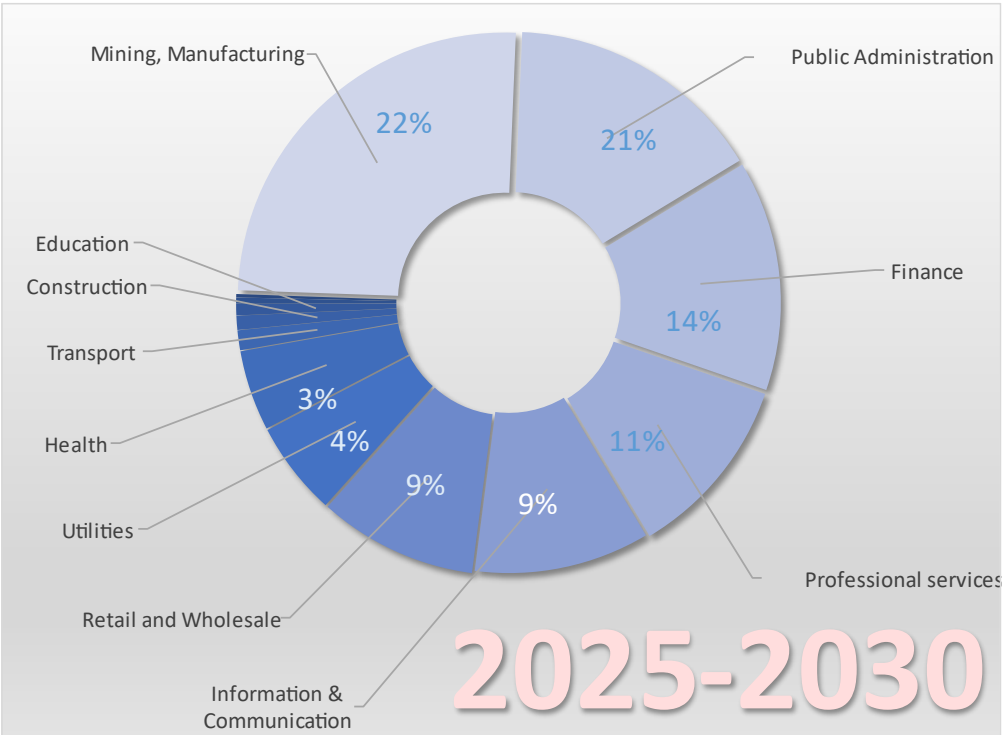
resources towards data initiatives reflects the nation's strategic focus on leveraging data to drive economic growth and enhance public services.

Figure 53 – Data Market Share of Total ICT Spending by Country 2023-2025 (%)



The analysis of industry contributions to the data market growth from 2025 to 2030, reveals that the top four—Finance, Manufacturing, Public Administration, and Professional Services—are projected to account for approximately two-thirds of the total market growth during this period. The Finance sector, with a more modest growth rate, is expected to be surpassed by Manufacturing and Public Administration in its contribution. This shift indicates that Manufacturing and Public Administration, mainly the last one, with their higher growth rates, will significantly enhance their contributions to the data market, reflecting a dynamic evolution in industry roles within the data economy.

Figure 54 – Industry Contribution to overall growth 2025-2030 (%)



7.8 Key Findings

KEY HIGHLIGHT FOR THE EU27

In 2024, the value of the data market in the EU27 reached €90 billion, reflecting a growth of 9.7% compared to 2023. The data market demonstrated strong growth, outpacing ICT spending, which increased by 6.3% over the same period. By 2025, it is forecasted that spending in the data market among the EU27 Member States will account for 13.1% of ICT spending, rising from 12.7% in 2023.

Germany led the market with €24.4 billion, followed by France at €15.6 billion, with growth rates of 8.8% and 11.2%, respectively. Italy (€8.5 billion) and Spain (€5.8 billion) also showed strong growth, while small-sized economies and low-income Member States like Estonia (23.6%), Romania (15.3%), and Bulgaria (14.3%) recorded the highest growth rates, driven by investments in digital infrastructure and innovation.

Data Market growth continues to be driven by increased consumption of data and data tools in the key industries of Finance, Manufacturing, Public Administration, and Information and Communications. Between 2025 and 2030 (Baseline) this share of growth for the four major industries falls to 65% of overall growth as other industries contribute more to the increase in size of the data market.

The size of the data market by Member State correlated well with the economic strength of each Member State, with the larger shares going to Germany, France, Italy, the Netherlands, and Spain. These five account for more than two-thirds (67.7%) of the data market in 2025 (Baseline)

Among the Member States, Germany will be the prime contributor to growth between 2025 and 2030 (Baseline), accounting for 16.6% of EU27 IT spending on data products and services in the interval. The UK will add a further 22% over the same period, casting a long shadow over Germany's contribution. France, Spain, The Netherlands, and Italy will all also actively participate to the EU27 Data Market growth, with the top 5 Member States adding nearly 57% to the EU27 Data Market.

Data Monetisation is not included when forecasting the European Data Market, but this adds a further 37% to the market through sales of data rather than data services and tools. Monetisation contributed little to the data market in the early years, (2013-2018) as shown by the S-curve displaying the share of data monetization on the data market from 2013 to 2030 (see Fig. 47). By 2020, data monetisation added a further 20% to spending on data and is forecast to grow to 37% of spending on data by 2030 (Baseline). This is expected to contribute €46.4 billion by 2030.

8 The Data Economy

8.1 Measuring the Data Economy: Definitions

The **data economy** measures the overall impact of the data market on the economy as a whole. It involves the generation, collection, storage, processing, distribution, analysis, elaboration, delivery, and exploitation of data enabled by digital technologies.

The data economy encompasses a broader concept than the data market, as it considers the overall value and wealth generated across the entire economy—not just within businesses—through the exploitation of data.

The data market, on the other hand, specifically measures the value of the marketplace where data-driven products and services are exchanged. This includes applications, IoT-based products, AI- and Gen-AI-enhanced services, and various offerings that rely heavily on data utilization. The data market reflects the aggregate value of demand for digital data and encompasses not only the value created by dedicated data players developing big data analytics (BDA) technologies but also that generated by data-related research, business operations, information services, and IT solutions. The digital data exchanged as "products" and "services" within the data market refers exclusively to data that is collected, processed, stored, and transmitted via digital information infrastructures and/or refined through digital technologies.

The data economy includes three sets of impacts on the economy: data companies' revenues in the form of direct impacts on the economy, to which we also add data monetisation as the revenue generated from providing access to data assets, indirect impacts (backward and forward) on the economy, and the induced impacts of the data market on the economy.

1. The **direct impacts** are the initial and immediate effects generated by the data supplier companies. The quantitative direct impacts will then be measured as the revenues from data products and services sold, i.e. the value of the data companies' revenues. Data monetisation is added as an integral part of direct impacts.
2. The **indirect impacts** are the economic activities generated along a company's supply chain by data supplier companies, considering input providers as well as customers of data supplier companies. And, for this reason, there are two different types of indirect impact: backward indirect impacts and forward indirect impacts.
 - **Backward indirect impacts** represent the revenues resulting from changes in sales from input providers to the data suppliers. In order to produce and deliver data products and services, data suppliers need inputs from other stakeholders.
 - The **forward indirect impacts** include the economic growth generated through the use of data products and services by the downstream industries, i.e. the data users.
3. **Induced impacts** include the economic activity generated in the whole economy as a secondary effect. Induced additional spending is generated by both new workers, who receive a new wage, and the increased wages of existing jobs. This spending induces new revenue creation in nearly all sectors of the economy. The additional consumption will support economic activity in various industries, such as retail, consumer goods, banks, and entertainment.

The difference between the data market (the exchange of data) and the broader Data Economy is represented in Figure 55 below. A concrete example is the following: a company either headquartered in EU or outside the EU, provides an IoT solution for shipping data at worldwide level. Another company (in EU or outside) using the solution provides location information (data provider) of its ships at sea, so that ports (data users) can schedule the arrivals. This exchange of data generates two streams of revenues:

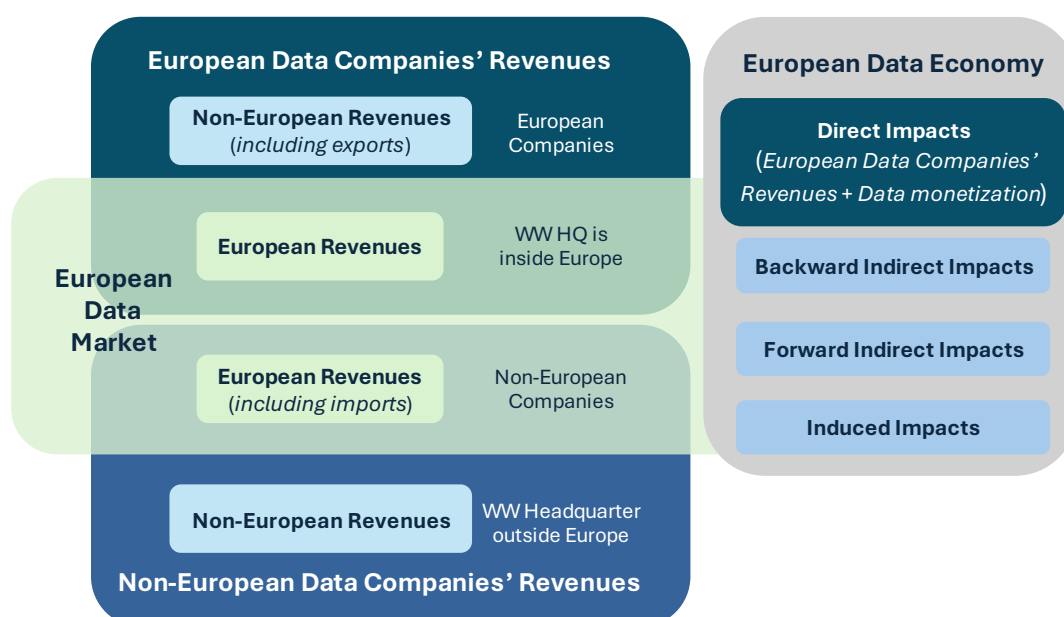
- The revenues generated at the European level (also through data imports) by this exchange of data represent the Data Market.
- The revenues generated by European companies (also through data exports) represent the European Data Companies' Revenues, which in turn represent the Direct Impacts of the broader Data Economy.

The Data Economy measures:

- the revenues generated by European data companies that sell and produce data products and services (measured by data companies' revenues)
- the value/revenues generated in their customer base by data companies' clients who will increase their revenues and employees thanks to the benefits deriving from the use of a specific solution
- the value/revenues generated in their supply chain by data companies' providers who provide all the components such as hardware, software, services, but also all procurement that enable the company to run and to build a specific solution
- and finally, as a secondary effect, the value/revenues generated in the whole economy as new jobs will be created thanks to the benefits deriving from the use of this data products and services, but not directly generated by the data exchange market

Figure 55 also shows the relationship between the Data Suppliers Companies' Revenues, the European Data Market, and the European Data Economy.

Figure 55 Relationship of Data Market, Data Revenues, Data Economy



8.2 Measuring the Data Economy

Since the beginning of 2021, the global economy has faced several challenges that have taken a heavy toll, particularly on Europe. Despite demonstrating resilience until the end of 2023 and a continued economic recovery, Europe remains far from reaching its full potential.

Inflation and geopolitical tensions have weighed heavily on the European economy. In 2023 and 2024, all major European Union countries, along with the UK, recorded growth of less than 1%, with Spain being the only exception. The short-term economic outlook remains constrained by persistently high core inflation, now largely driven by the services sector. Additionally, concerns over public debt and medium-term fiscal adjustments continue to shape economic policies across Europe. The region also struggles with low productivity growth and weak competitiveness due to a lack of capital, skilled labor, and the market scale necessary to achieve its full potential.

Germany serves as a key example of these challenges, particularly in the automotive sector, where fierce competition from China has led to a significant decline. Emerging Chinese manufacturers are making inroads into the European market by offering more affordable electric vehicles, putting pressure on established European automakers. The outlook for the automotive industry remains negative, with the long-term effects of high inflation and elevated interest rates in 2023 weighing on production and sales, creating unfavorable market conditions.

According to the European Commission's recent report, *The Future of European Competitiveness*²¹, multiple factors contribute to the EU's competitive gap. These include the availability of endogenous resources, infrastructure development, and market regulations. To address these challenges, European countries must invest in strategic technology sectors such as broadband network infrastructure, computing and AI, semiconductors, and clean technologies. Additionally, structural reforms in education and workforce training are essential to tackle the ongoing skills shortage and ensure long-term economic resilience.

From a broader technology perspective, although geopolitical tensions and the economic slowdown fuelled uncertainty for European businesses, the ICT market performed well in 2023, in line with expectations, driven by the double-digit growth of software market and the shift to cloud. Similarly in 2024, despite the continuous challenging international environment, ICT investments remained safe, and spending grew across all industries, for example in manufacturing, finance, healthcare, telecom and utilities, among others. The growth in ICT markets proved the resilience of technologies (such as cloud and 5Gs, artificial intelligence, robots and drones, IoT, security). to come up against tailwind forces, especially for their crucial role in digitally transform businesses and strategies.

For example, the data and analytics market fits into the accelerated drive to digitalization that Covid sparked. Covid showed us that uncertain and challenging times provide a boost to digitization initiatives and push technology spending. From an innovation perspective, access to data can unlock a great economic potential, from the adoption of technologies such as 5G connectivity, IoT and connected devices that can produce tons of data, to machine learning, artificial intelligence and analytics tools for data analysis. Moreover, a critical role has been played by artificial Intelligence, now

²¹ https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en

being more mature and more integrated into business processes and operations, although the expected benefits are taking more time to be seen, especially in terms of return on investments. Companies are realizing that more time is needed to get the full potential of technologies such as AI as well as GenAI, which had little impact as this is more an evolving market.

Multiple trends have been highlighted to be drivers or support of further investment in data and analytics technologies (some of them have been already highlighted in the previous publication) thus driving and sustaining the growth of the Data Economy impacts along the period up to 2025 and beyond. Moreover, the EU is building a legal framework to support a responsible, ethical and secure data usage environment, shaping the European economic and digital profile in the next years:

- **The single market for data:** The **European strategy for data** aims to create a single market for data that will ensure Europe's global competitiveness and data sovereignty. Common European data spaces will ensure that more data becomes available for use in the economy and society, while keeping the companies and individuals who generate the data in control. The EU is now pursuing the creation of a European data infrastructure – as well as other initiatives, such as enhancing data security – to ensure the EU's leadership in the global data economy and support the growth of the European data economy in the future. A key pillar of the European strategy for data is the **Data Governance Act** that seeks to increase trust in data sharing, strengthen mechanisms to increase data availability and overcome technical obstacles to the reuse of data. The Regulation on data governance will be a powerful engine for innovation and new jobs. On the society side, there will be benefits from more evidence-based policies and better solutions to societal challenges. On the business side, benefits will arrive from a reduction in costs for acquiring, integrating and processing data, and from lower barriers to enter markets. The next logic step led to the **European Data Act**, which will ensure fairness by setting up rules regarding the use of data generated by Internet of Things (IoT) devices. While the Data Governance Regulation creates the processes and structures to facilitate data, the Data Act clarifies who can create value from data and under which conditions.
- **Artificial intelligence and Generative AI:** The rising interest in and use of AI is driving a continually growing need for data on which to base AI and machine learning algorithms. In general, data being generated by businesses continues to grow. The need for sophisticated tools to analyse this much business data — and gain better value from it — is contributing to the further consolidation of the Data Economy.
- **Data Regulation and the AI Act:** another example of increasing attention on data deployment is the Artificial Intelligence Act to regulate artificial intelligence development and use in Europe, adopted in November 2022. As every regulation, it implies costs, which will be heavier for SMEs, and there might be limitations on the types of applications, industries, data, or algorithms used in AI systems. Nevertheless, regulation has the potential to enhance wider trust and confidence in AI systems, creates a framework of safety for businesses, public institutions and consumers and citizens, promoting responsible AI practices.
- Another important contribution to this growth of the data economy is the investment measures imbedded in the Next Generation EU (NGEU) fund and national Recovery and Resilience reforms. Indeed, the NGEU and national funds will play a crucial role in the next

three to five years, by enabling countries to put in place a series on investments around key technologies, from cloud to 5G, IoT and smart devices, edge, artificial intelligence, and digital infrastructure, among others. Behind the increasing adoption of innovative technologies, the value of data is the common denominator. Sustainability is also emerging prominently among the Data Economy-related: data is becoming increasingly essential in tracking different kind of information in relation with the European Green Deal, for example, such as the level of greenhouse gas emissions, the environmental impact of renovated, energy-efficient buildings or the life-expectancy of longer lasting products that can be repaired, recycled and re-used.

Cloud computing is the overarching trend affecting all different aspects of the Data Economy. The vast majority of new investments in the data and analytics markets are cloud-related: storage, retrieval, transformation, and analysis of cloud-based data with analytics software as well as data delivered as a service. Furthermore, the Cloud computing is continuing to witness unabated growth in Europe and elsewhere.

8.2.1 The Data Economy in 2024

We have taken all these trends into account, particularly the impact of inflation on the ICT market and investment, as well as the delayed effects expected in certain technology sectors. As a result, we have decided to slightly reduce the projected overall impact of the data economy. This adjustment amounts to a decrease of approximately 4% to nearly 5% for both 2024 and 2030. **The value of the data economy for the EU27 in 2024 is estimated to reach around €580 billion**, reflecting an annual growth rate of 9.2% compared to the previous year. We have also consistently emphasized the significance of intelligent analytics and data technologies as among the most resilient and dynamic technology segments. At this stage, enterprises are fully immersed in their business transformation, which is now intrinsically linked to the implementation of a data strategy. Business success increasingly depends on the effective use of data, which is progressively being regarded as a product in its own right. Meanwhile, the models supporting data are seen as commodities, essential for achieving high data quality, which is closely tied to transparency and trust. At the same time, this complex convergence of needs, combined with a shortage of digital skills, poses significant barriers to the full implementation of data, AI, and analytics strategies. Nevertheless, the markets for big data, analytics, artificial intelligence—including generative AI—cloud solutions, and broader digital transformation initiatives remain critical for companies aiming to grow and maintain their competitiveness. Recent economic and geopolitical disruptions have not led to a sustained decline in the data analytics market, which continues to thrive and remain at the forefront of business and technological advancements.

The estimated share of overall impacts on GDP in the EU27 in 2024 increases to 4.4% from 4.1% in 2023. The rest of EEA countries (NO, IS, LI) excluding Switzerland, reach a value of the data economy of over €23 billion in 2024, with an annual growth in 2024 of more than 6.7%, and a share on the regional GDP of 5.6% in 2024.

Table 53. Data Economy Value and Growth, 2023-2025 and impacts on GDP 2023-2025 (€, Million; %)

N.		Name	Description	2023	2024	2025 (forecast)	Growth Rate 2023–2024	Impact on GDP, 2023	Impact on GDP, 2024	Impact on GDP, 2025
5.1 5.2	EU27	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	530,547	579,155	630,843	9.2%	4.1%	4.4%	4.7%
5.1 5.2	EU27+UK	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	688,957	749,758	816,807	8.8%	4.5%	4.9%	5.2%
5.1 5.2	Total, all countries	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	748,271	814,544	885,858	8.9%	4.6%	5.0%	5.3%

Source: European Data Market Monitoring Tool, IDC 2024

8.2.2 The Data Economy by Impact Type: 2023-2024

Analysis of the data economy also provides an overview of the total effects by type of impact (direct, indirect, and induced). It is worth mentioning how the composition of impacts changes over time, from 2023 to 2024 but especially to 2030 (see next paragraph). Until 2024 direct impacts continued to increase slightly, showing a resilient data market revenue (including data monetization). Indirect impacts remained constant in the short term, and will decrease in the longer term, from 2025 to 2030 in favour of induced impacts. Overall, IDC estimated a gradual change in composition of effects on the economy (direct, indirect and induced) in the short-term, that will be more visible in the longer-term.

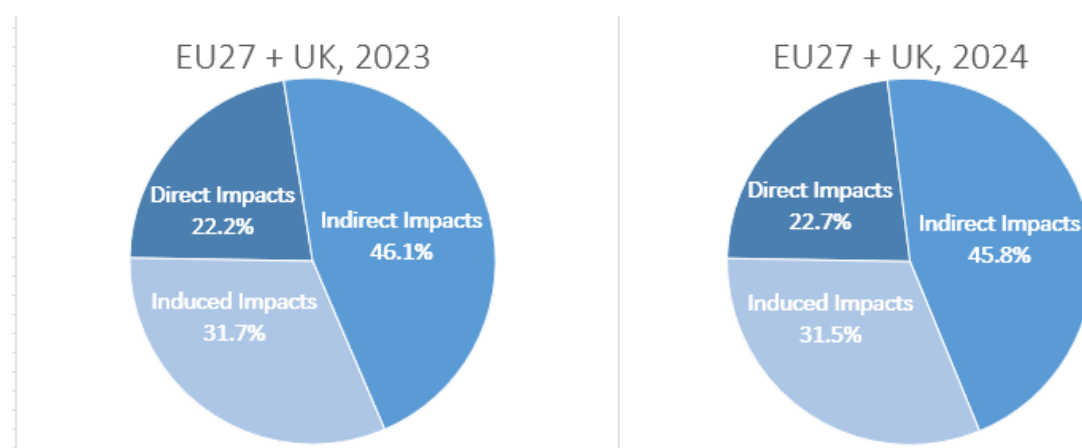


Figure 56 Data Economy by Impact Type: EU27 + the UK, 2023 and 2024 (%)

Source: European Data Market Monitoring Tool, IDC 2024

8.3 Forecasting the Data Economy in 2030

In 2030, the data economy for the EU27 is expected to remain slightly above €800 billion and we revised the impacts slightly downward (a decrease of less than 5%) to reflect a slower impact realization along the period, given the above-mentioned challenges European Union is facing and is expected to face in the next years. 2025–2030 CAGR is expected to remain stable at 5.3%. When we consider the UK, the data economy in 2030 is expected to reach the €1.06 trillion value and also adding Switzerland and the rest of EEA (NO, LI, IS) countries, the value will reach €1.15 trillion, with a 2025–2030 CAGR of 5.4%.

- The share of the data economy as a part of GDP in the EU27 in 2030 is expected to be 5.6%, growing nearly 1 percentage point from the base year. The data market is already growing at a healthy pace, the AI and generative-AI impacts will increase but will be balanced by the introduction of a regulatory framework, as previously highlighted. This is happening also in other countries, from US (the Executive Order on Safe, Secure, and Trustworthy AI), to Japan (National Strategy in the New Era of AI – 2023), and China (Administrative Measures for Generative AI Intelligence Services – 2023), among others.

- Direct impacts will slightly increase up to 2030, while indirect impacts will decrease in favour of induced impacts, thus revealing the effects of data access, data products and services exchange, and data value distribution in the economy. Indirect will be more mature in 2030, where supply chain effects and benefits for end users will materialize and normalize, being analytics products and services, but especially artificial intelligence solutions, more integrated into business. Induced impacts will increase but to a lesser extent than previously estimated, from 31% at the start of the forecast to nearly 32% in 2030 (the share of induced impacts is even higher when adding the UK to the view, 32.2%). This is due to the capability of economies to generate new jobs, new salaries and to spread the wealth thanks to more disposable income and willingness to spend money for additional non-analytics services (leisure, food, personal services, and more). Consumers and households can be affected by the economic effects of slower growth, increasing prices and interest rates, and these are reasons that also led IDC to slightly review (and not increase) the impacts on the short and long term. Despite these global economic turbulences, we remain optimistic in the capability of technology to spread wealth in the economy (constant induced impacts share), with the right economic, business and political approaches for the best use.

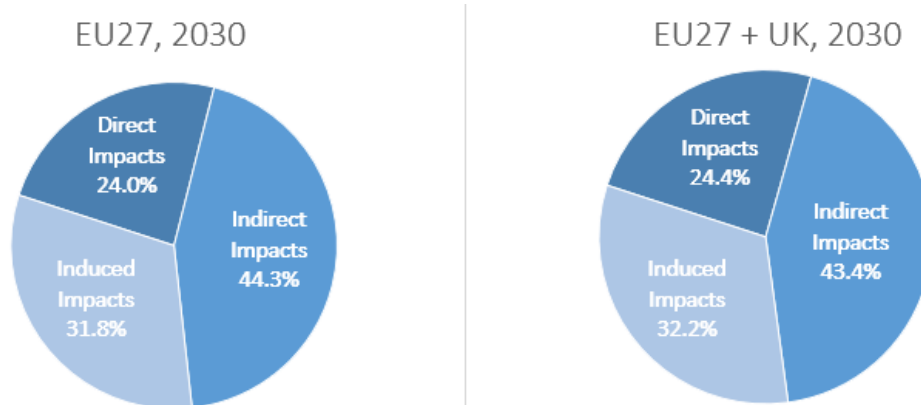


Figure 57 Data Economy by Impact Type: EU27 and EU27 + the UK, 2030 (%)

Source: European Data Market Monitoring Tool, IDC 2024

8.3.1 Scenarios in 2030

The two alternative scenarios will consider some factors that could differently shape the forecast:

- The dependence of AI from the semiconductor industry
- The energy requirements for data analytics and artificial intelligence tools
- The data regulation framework
- The analytics, data and AI integration into business
- The long-term data value realization
- The economic growth
- Protectionism and barriers to competition

The Challenge scenario takes into consideration a slower growth of the impacts in the overall economy in 2030, affected by a slower growth of GDP as well, where we could expect lower impacts caused a higher restrictions to data usage, posing barriers to widespread adoption, AI negatively affecting privacy and adoption because of the realization of some concerning behaviour such as low safeguard,

malicious data manipulation, unregulated use of data, production of biased results, as well as lower than expected productivity gains, dependance from an expensive semiconductor industry . This will translate into lower data economy value and low CAGR.

On the other hand, for a High Growth scenario we expect to have faster growth for data economy and GDP, lower barriers and challenges, dynamics in business adoption of data products and easier integration of data strategies into business, as well as delivering the expected ROI within the right timeframe, The pace of growth, measured as the compound annual growth rate (CAGR) in the period 2030–2025 for the EU27 in a Challenge scenario will be just slightly above 3% and the share of revenues of the total GDP amounts to 5.4% compared to the 5.3% CAGR of the Baseline scenario and a share of GDP of 5.6%. In the High Growth scenario 2025-2030 CAGR will be 7.6% and the share of the GDP will be 6%. A similar picture is expected when considering the EU27 plus the UK.

Table 54 Data Economy Value (€M); 2030 Challenge, Baseline, and High Growth Scenarios (€M); and Impact on GDP (%)

N.	Market	Name	Description	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	25-30 CAGR			Impacts on GDP		
							2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario
5.1 5.2	EU27	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	743,146	815,108	908,438	3.3%	5.3%	7.6%	5.4%	5.6%	6.0%
5.1 5.2	EU27+UK	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	964,470	1,060,324	1,172,028	3.4%	5.4%	7.5%	6.0%	6.3%	6.6%
5.1 5.2	Total, all countries	Value of the data economy and impacts on EU GDP	Value of total impacts on the EU economy and % of EU GDP	1,046,569	1,151,513	1,273,227	3.4%	5.4%	7.5%	6.0%	6.4%	6.7%

Source: European Data Market Monitoring Tool, IDC 2024

8.4 Data Economy by Industry

The industry split of the data economy over the 2023–2024 period follows that of the data revenues generated from the supply side and the adoption of technologies such as big data analytics, artificial intelligence, IoT, cloud, with revenues potentially being generated through data products and services at the different impact layers.

Table 55 Data Economy by Industry, 2023, 2024, 2025, Value (€M) and Distribution (%)

	2023	2024	2025 (forecast)	2023 Industry Distribution	2024 Industry Distribution	2025 Industry Distribution
Industry	€ (M)	€ (M)	€ (M)	%	%	%
Agriculture	2,566	2,667	2,767	0.5%	0.5%	0.4%
Construction	6,650	7,122	7,605	1.3%	1.2%	1.2%
Education	9,977	10,459	10,989	1.9%	1.8%	1.7%
Finance	123,796	136,699	151,231	23.3%	23.6%	24.0%
Health	24,369	26,810	29,787	4.6%	4.6%	4.7%
Information & communications	51,325	56,585	62,044	9.7%	9.8%	9.8%
Mining & manufacturing	120,644	130,486	141,345	22.7%	22.5%	22.4%
Professional services	60,222	65,979	70,981	11.4%	11.4%	11.3%
Public administration	47,635	50,946	54,104	9.0%	8.8%	8.6%
Retail & wholesale	48,312	53,055	58,194	9.1%	9.2%	9.2%
Transport	15,151	16,559	18,094	2.9%	2.9%	2.9%
Utilities	19,898	21,788	23,702	3.8%	3.8%	3.8%
Total EU27	530,547	579,155	630,843	100%	100%	100%

Source: European Data Market Monitoring Tool, IDC 2024

The highest share of the data economy's value is generated in the financial sector (from 23.3% in 2023 to 23.6% in 2024), where great focus is placed on open banking, digital payments, augmented fraud analysis and threat intelligence and prevention, and in general on optimizing existing systems (particularly modernizing the existing stack) that will help to ensure compliance and maximize the go-to-market speed, enabling the introduction of new products to increase revenue streams.

The second largest market in terms of impacts is the mining and manufacturing sector (maintaining almost the same share, from 22.7% in 2023 to 22.5% in 2024), in which several segments such as automotive, aerospace, high tech and electronics components despite being particularly volatile this year, nonetheless, spending will continue to grow to redefine design, manufacture, assembly and distribution processes through digital transformation, helping the industry step up its resilience. The data economy value is driven by a focus on augmented quality management, automate preventative maintenance, remote collaboration, and agility needs automation involving robotic systems, AI and

machine learning will be key to increase supply chain resilience and optimize logistics. Here generative-AI can have a significant medium-term impact on various aspects of their operations, such as production planning, quality control, AI-driven maintenance, code generation for programmable logic controllers, product development, design, and sales.

Professional services, Information and Communications followed by Retail and Wholesale are the following largest industries in terms of impacts. Professional services are increasingly adopting AI and Gen-AI technologies for different purposes given their different composition (consulting, engineering, architecture, marketing). A strong focus for accountants will be on data security, customers, and third parties against external access and data breaches. AI integration to human capabilities is on the rise and will help professional services firms streamline operations while automating routine tasks. Among professional services, major cloud providers show sustained growth in AI investments, which will fuel further growth in the software and information services industry through 2024. And tech giants are committing significant resources towards bolstering AI infrastructure. The retail & wholesale is highly dependent on global supply chains. Disruptions in manufacturing, transportation, or raw material sourcing can significantly impact the market. Overall, the business outlook remains marginally positive. The intersection of intelligence technologies such as AI and GenAI, with next-gen connectivity through IoT and edge computing, combined with the recent advancements in immersive technologies such as augmented reality (AR), virtual reality (VR), and spatial computing, is giving rise to a novel ecosystem. This ecosystem blurs the boundaries between physical and digital retail, fostering innovative and efficient approaches to meeting customer needs. Public Administration continues to invest: central governments are using technology to minimize physical interactions with citizens, while defense departments are combining spatial computing, data, and AI to build immersive military training and simulations; investments in hyper-automated digital services will continue to spur investments in tech, while automation of admin and billing costs will support spend in techs such as AI and RPA. Nevertheless, we revised slightly downward the share of impacts for public administration to reflect a lower-than-expected capability to quickly generate value across the economy.

8.5 Data Economy by Country

In terms of countries' contributions to the data economy, Germany, France, Italy, followed by Spain, and the Netherlands will contribute the most from 2023 to 2024. We already highlighted the crucial role played by the NGEU, with around 50% of total resources distributed across the four biggest countries in the EU27, thus making a significant difference in the next three years. Nevertheless, some countries such as Italy, are not implementing NGEU at the speed they have been requested, thus delaying any impacts in the shorter term. Looking at 2024 growth, Baltics (Estonia and Latvia), Central European countries (Poland and Romania) and Nordics (Denmark and Finland) are among the fastest growing markets (growing above EU27 average). Looking the 5 years CAGR 2030/2025, smaller countries (Lithuania, Malta, Slovakia and Slovenia, among others) appear more dynamic as they start from a small revenue impact and increase in the longer term.

In order to understand the progress in digitalization, IDC also looked at the Digital Economy and Society Index (DESI), which captures the progress in key digital policy areas.

The Decision establishing the Digital Decade Policy Programme 2030, adopted by the Council and the Parliament in December 2022, assigns DESI a new and important role for monitoring the progress

made by the EU in the context of the Digital Decade. According to the Decision, “*DESI should be integrated into the report on the state of the Digital Decade (the ‘Report on the Digital Decade’) and should be used to monitor progress towards the digital targets*”²².

In 2022, the Commission highlighted that “*To date, digitalisation in the EU is uneven, although there are signs of convergence. While the frontrunners have remained unchanged, there is a substantial group of Member States that cluster around the EU average. Importantly, the majority of Member States that had a lower level of digitalisation 5 years ago, are progressing at a faster pace than the rest, indicating an overall convergence in digital in the EU.*”

We looked at the “**Digital transformation of businesses**” dimension, which gives an idea of the adoption of technologies such as artificial intelligence, big data, social media, cloud, or information on enterprises who have in use an enterprise resource planning (ERP) software package to share information between different functional areas, SMEs that carried out electronic sales to other EU countries or enterprises sending e-invoices, suitable for automated processing. This dimension provides an overview of the country position and ranking with respect to the broad digital transformation process, and so to the capability in generating value by the use of specific data-related technologies.

- In terms of enterprises using any Artificial Intelligence technology, Denmark, Luxembourg, Netherlands, Germany, Austria and Spain are above the average.
- The Data analytics adoption shows Hungary, Denmark, Belgium, Lithuania, Spain and Ireland among the top-ranking countries.
- For the indicator of enterprises using AI technologies or buying sophisticated or intermediate cloud computing services or performing data analytics, Finland, Sweden, Malta, Hungary, Ireland Estonia and Germany are above the average.

We also looked at the “**Digitalisation of public services**” dimension, which measures, for example:

- the digital public services for businesses, measuring online provision of key public services for entrepreneurs: here Finland, Malta, Luxembourg, Lithuania, Belgium, Denmark and Netherlands have the highest score.
- Digital public services for citizens, measuring the online provision of key public services for citizens: here a similar picture as above appears, with Malta, Luxembourg, Finland, Lithuania, Denmark, Belgium and Ireland at the top.

IDC looked at the second assessment of the implementation of the digital principles, provided in the 2024 State of the Digital Decade report. In the report there’s a summary of the results achieved in 2023 in different areas of digital rights and principles. Overall, the EU continued to be quite active in promoting and applying its human-centric and fundamental-rights based approach to digital transformation. Member States have been most active on commitments related to facilitating digital education, training and skills, digitalising public services, and protecting children and young people in the digital environment, at least in terms of number of initiatives implemented. On the other hand,

²² <https://digital-strategy.ec.europa.eu/en/library/desi-methodological-note-digital-decade-report-2023>

Member States were less active on commitments in other areas, in particular regarding sustainable technologies, and the need to ensure a fair digital environment²³.

8.6 Key Findings

KEY HIGHLIGHT FOR THE EU27

The economic recovery in Europe continues, but it is still quite far from the full potential. Persistent inflation, geopolitical conflicts, low productivity and low growth weighted the European economy down. To keep the pace of global competitiveness, European countries need to invest in some strategic technology areas, such as broadband network infrastructure, compute and AI, semiconductors, as well as clean technologies, together with structural changes to educate and upskill workforce to address the skills shortage.

In 2024, although inflation and energy prices have been falling, geopolitical tensions and the economic slowdown fuelled uncertainty for European businesses, ICT investments remained safe, and spending grew across all industries. The ICT market proved to be crucial for a resilient business, together with digital and data-based strategies.

The value of the data economy for the EU27 in 2024 reached around €580 billion from approximately €530 billion in 2023 with an annual growth of 9.2% between 2023 and 2024. The estimated share of overall impacts on GDP in the EU27 increased from 4.1% in 2023 to 4.4% in 2024. In 2030, the data economy for the EU27 is expected to remain slightly above €800 billion, with a share on the GDP of 5.6%. IDC always highlighted the importance of intelligent analytics and data technologies as among the resilient and most dynamics technology segments, even if the expectations for the data economy size has been slightly revised downward, in the light of a more conservative view, as we are seeing a slower realization of impacts due to the time technology need to be fully integrated into business processes and operations.

Multiple trends have been highlighted to be drivers or support of further investment in data and analytics technologies: the aim of creating a European single market for data thanks to the European strategy for data, the Data Governance Act and the European Data act, the rising interest in and use of AI and Generative AI, and the increasing attention on data deployment due to the AI Act. A better use of the Next Generation EU funds remains of crucial importance.

The composition of impacts remained quite stable **in the short-term**, from 2023 to 2024. In the longer term **indirect** impacts will reduce more in favour of direct and induced impacts, revealing the healthy data market (reflected in the direct effects) and long-lasting strong effects of data access, data products and services exchange, and data value distribution in the economy (reflected in the induced part).

²³https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en

The highest share of the data economy's value is generated in the finance sector, where great focus is placed on optimizing existing systems digital payments, augmented fraud analysis and threat intelligence and prevention. The second largest share is represented by the manufacturing and mining industry, in which despite uncertainties in the market, spending will continue to grow at a healthy pace. Professional services are increasingly adopting AI and Gen-AI technologies for different purposes given their different composition (consulting, engineering, architecture, marketing). Public Administration continues to invest. nevertheless, we revised slightly downward the share of impacts for public administration to reflect a lower-than-expected capability to quickly generate value across the economy.

Germany, France, Italy, followed by Spain, and the Netherlands will contribute the most from 2023 to 2024. Looking at 2024 growth, Baltics (Estonia and Latvia), Central European countries (Poland and Romania) and Nordics (Denmark and Finland) are among the fastest growing markets (growing above EU27 average). Looking at the long-term growth (5-year CAGR 2030/2025), smaller countries, such as Lithuania, Malta, Slovakia and Slovenia, among others, appear more dynamic as they start from a small revenue impact and increase in the longer term.

9 Data Professionals Skills Gap

9.1 Definitions

The **data professionals skills gap** indicator captures the potential gap between the demand and supply of data professionals in Europe.

Monitoring the skills gap is critical, since lack of skills is a potential barrier to the development of the data industry, the adoption of data-driven innovation and the transformation of businesses and organizations. Monitoring of the data skills gap is based on a model that balances the main sources of data skills (the education system, retraining, and other contributors) with the estimated demand (from all data companies).

As in the previous rounds of measurement of the European Data Market Monitoring Tool, the data skills gap is provided for the five largest EU countries and the rest of EU 27 aggregated, mainly because of the difficulty in measuring job vacancies for data professionals for each individual Member State.

Table 56 Indicator 6 – Data Skills Gap

Indicator 6 – Description				
N.	Name	Description	Type and Time	Segmentation
6	Data Professionals Skills Gap	Gap between demand for and supply of data technical and data business professionals (not segmented)	Absolute number and % of total demand, 2023–2024. Forecast to 2025 (Baseline scenario). Forecast to 2030, 3 scenarios.	By Geography: 5 EU MS: DE, ES, FR, IT, PL Rest of EU27 Total EU 27 UK Switzerland Rest of EEA (NO, LI, IS)

9.2 Measuring the Data Professionals Skills Gap

The measurement of this indicator is based on a model that combines the separate estimates and forecasts of the demand for data technical and business professionals and the supply of corresponding data skills by the inflow from the education system and the upskilling and reskilling of the existing workforce. This includes balancing the main sources of data skills (from the education system and retraining to the profession from other careers) with the estimated demand for data skills (from all data companies).

More specifically, we use the following definitions:

- **The supply of data professionals** is equal to the data skills supply stock (the sum of employed data professionals and unemployed data professionals).
- **The demand for data professionals** is the sum of existing and open positions for data technical professionals and data business professionals – that is, the number of currently employed data professionals (indicator 1 in this study) plus the unfilled vacancies.
- **The indicator measures the difference between total demand and supply**; if demand is higher than supply, there is a data skills gap (excess demand). If supply is higher than demand, there is over supply and potentially unemployment.

To reach the final estimates on the potential skills gap by country and region, indicators on the supply side such as (but not limited to) immigration inflows/outflows, level of upskilling by industry, retirement of senior workers and level of proficiency of different courses to prepare professionals for data technical roles are all factored in.

The multi-variable approach enables the model to reach a more accurate mapping of worker flows, which is then compared against the calculated demand for this workforce across key industry sectors in the EU region. Calculations on the demand of data workers are based different indicators, such as (but not limited to) current number of data professionals in activity, level of technology adoption, size of industry by member state and the data sector growth potential in each of these sectors.

Data Sources

As is the case for the other indicators, the study team annually carries out ad-hoc desk research on data skills supply and demand dynamics. The main sources considered are (but not limited to):

- ILOSTAT (International Labour Organization) Statistics and Databases (2024)
- EUROSTAT Educational enrolment statistics (last update: October 2024)
- IDC's Technology Employment Impact Guide – updated on an annual basis with forecasts of employment across 40 technology job roles, including seven data management and analytics roles (last update: December 2022)
- Cedefop – Skills-OVATE data for vacancy estimations (most recent data collected Q4 2023 and Q4 2022)
- Cedefop – Skills Index and Skills forecast (last update: 2024)

Measurement of Demand

The total demand for data technical and business professionals is calculated for the years 2023 and 2024, moving forward one year for each measurement cycle. For the current year of the indicator (2024), to the number of data professionals sourced from Indicator 1 we have added an estimate of existing unfilled positions (vacancies).

To estimate the current vacancies, we have carried out additional data collection on job search portals such as LinkedIn to calculate the level of demand for data skills jobs, defined on the basis of the desks research and analysis calculated for Indicator 1 on data professionals. IDC's ongoing research on the demand for advanced ICT and data skills has been leveraged to support the forecasts. After a heated enterprise labour market during 2020-2022 with professionals in high demand and higher corporate turnover, 2023 and 2024 saw a different trend, with many companies curbing investments and announcing layoffs, particularly in the technology sector.

The layoff trend observed since 2023 across Europe, was, however, not equal across different job roles, with certain positions such as sales, marketing and HR suffering the biggest impact. For data workers, some impact in terms of open positions was observed but demand in the sector continues to be high as organisations become increasingly data centric. Although data employment continues to be in high demand, we are likely to see important changes on the underlying roles for data

professionals going forward, especially due to the influence of new AI tools replacing workers for increasingly complex tasks. The potentially higher maturity of AI use cases in data does not necessarily mean the end for data careers, but a shift towards more complex data skills that will be needed to operate and iterate these tools, as well as a potential change in the learning curve for data professionals when first starting their careers.

The forecast demand for data professionals to 2025 (Baseline scenario) and 2030 under the three scenarios calculated by Indicator 1 is considered the total potential demand (as it incorporates future potential vacancies).

Measurement of Supply

The estimation of supply of data professionals in the baseline year (2024) is calculated from the number of data professionals employed plus the number of unemployed data professionals (due to transitions between jobs and natural unemployment). To arrive at the forecast of supply of data professionals, the model considers inflows, such as entry of graduates in the relevant disciplines corresponding to the data skills identified in Indicator 1 and the level of inflows from other careers and upskilling. The model also considers outflows from the data skills market, such as retirements and career changes away from the data profession.

The relationship between skills demand and supply and the resulting skills gap or over-supply is illustrated in the below figure.



Figure 58 The Data Skills Demand-Supply Balance Model

Source: European Data Market Monitoring Tool, IDC 2024

With the proliferation of data as the basis for product and service development, customer support and in decision making processes, the view of what constitutes a data professional is broadening significantly from the traditional technology-related roles. Increasingly, the roles of business analyst, data scientist and even data analyst have become more related to business than to technology. Business professionals tend to develop skills in data science to manage emerging business models and products. Consequently, data professionals recruited from universities are therefore from broader fields of study than the traditional STEM programs, and organisations recruit data professionals into a wider range of roles – and from a wider scope of backgrounds with additional up- or reskilling efforts.

9.3 Data Professionals Skills Gap

The skills gap for data professionals keeps growing, and it will continue to expand in the 2024–2025 period (see below), albeit at a slower pace. Demand has already outgrown supply, and despite the advancements in data automation, increases are still expected between 2025-2030 in any of the scenarios and countries modelled. The following sections provide more details for the European Union and the rest of the European countries.

The table below shows the skills gap for the EU27 in 2024 as a base year and in 2030 for the three scenarios. It is clear that in all scenarios, there is expected to be a skills gap:

- In 2024, the data professionals' skills gap is estimated at 500,000 across the EU27, up of 10.9% year-on-year from 2023 and growing to 631,000 by 2030 in the Baseline scenario. This means that the gap will grow from 5.3% in 2023, to 5.7% in 2024, to 5.8% in 2030.
- For the Challenge scenario, the gap will reach 757,000 in 2030, or 7.2%, as graduates look for alternative careers and demand for human-centric data skills continues to rise.
- In the High Growth scenario, the gap will reach 839,000 in 2030 as the education system, reskilling, and upskilling programs will be unable to keep up with accelerating demand.
- The three figures below provide graphic representations of the data professionals skills gap for the three years by Member State.

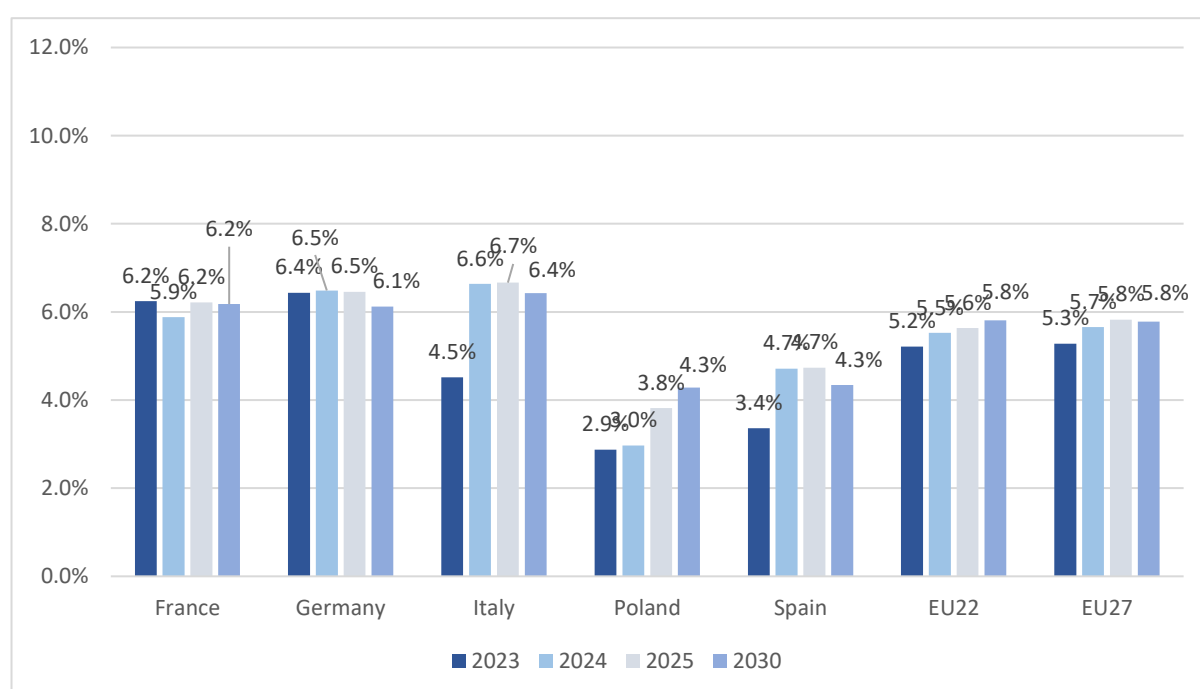


Figure 59 Data Professionals Skills Gap for the EU by Member State: 2023, 2024, 2025 Forecasting, and 2030 Baseline Scenario

Source: European Data Market Monitoring Tool, IDC 2023

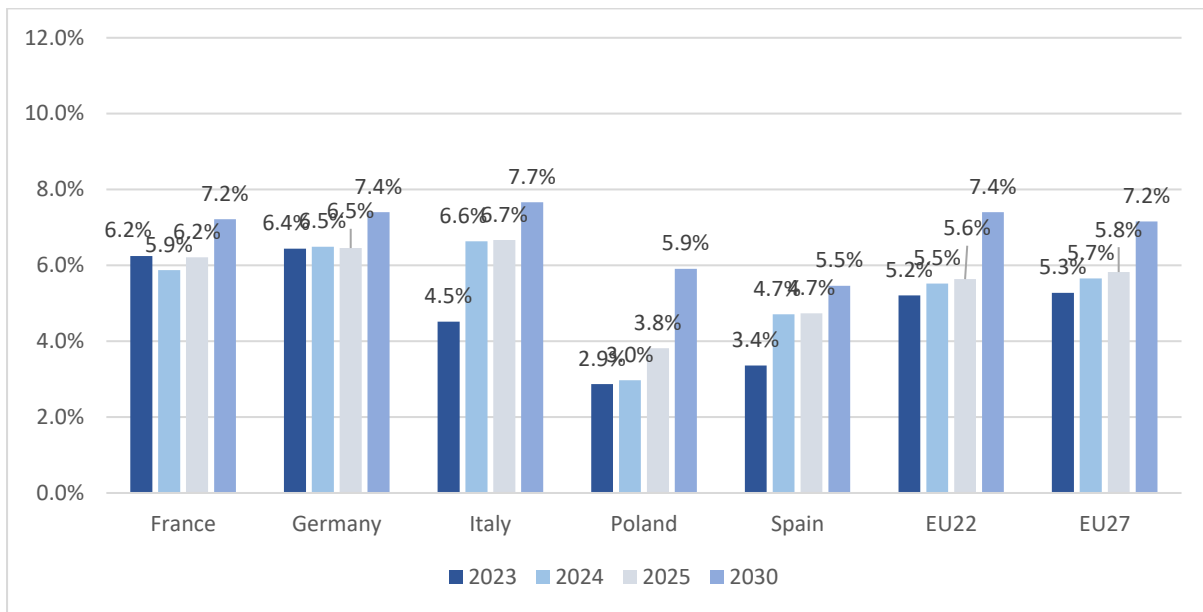


Figure 60 Data Professionals Skills Gap for the EU by Member State:2023, 2024, 2025 Forecasting, and 2030 Challenge Scenario

Source: European Data Market Monitoring Tool, IDC 2023

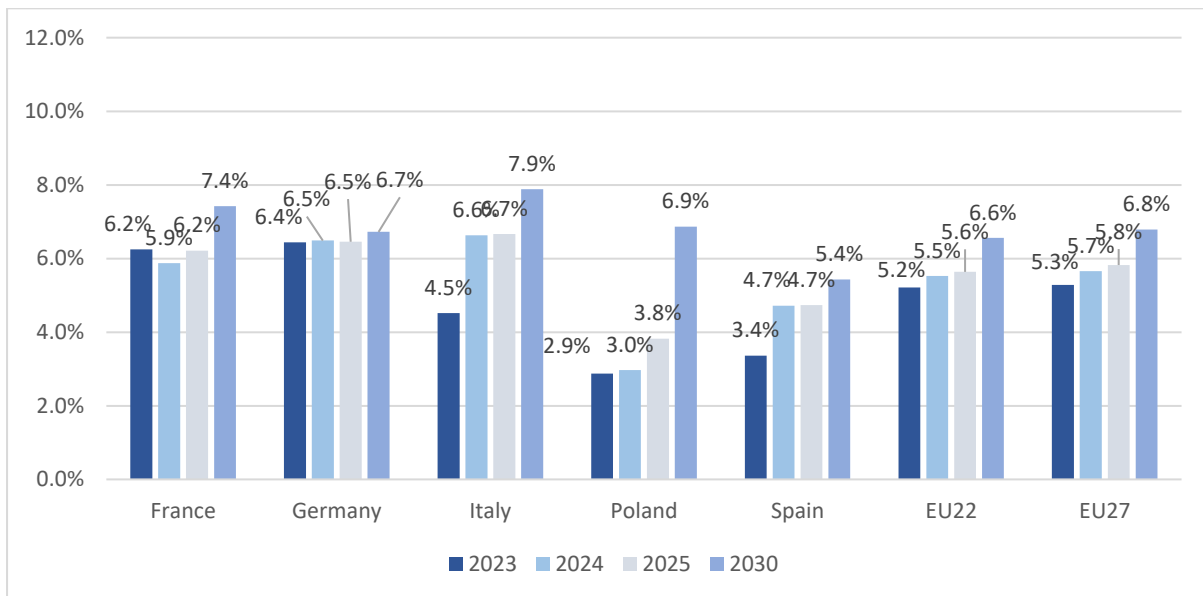


Figure 61 Data Professionals Skills Gap for the EU by Member State: 2023, 2024, 2025 Forecasting, and 2030 High Growth Scenario (%)

Source: European Data Market Monitoring Tool, IDC 2023

Table 57 The Data Professionals Skills Demand and Gap for the EU by Member State: 2023, 2024 and 2025 (forecast), and Three 2030 forecasting Scenarios (Thousands)

Member State		2023	2024	2025 (forecast)	2030 Challenge Scenario	2030 Baseline scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
France	Numbers	83	78	86	116	101	137	6.2%	3.3%	9.9%
	% Gap	6.2%	5.9%	6.2%	7.2%	6.2%	7.4%			
Germany	Numbers	139	147	154	212	177	220	6.7%	2.8%	7.4%
	% Gap	6.4%	6.5%	6.5%	7.4%	6.1%	6.7%			
Italy	Numbers	37	56	58	75	63	83	5.1%	1.5%	7.2%
	% Gap	4.5%	6.6%	6.7%	7.7%	6.4%	7.9%			
Poland	Numbers	21	22	28	46	36	66	10.6%	5.2%	19.0%
	% Gap	2.9%	3.0%	3.8%	5.9%	4.3%	6.9%			
Spain	Numbers	21	30	31	39	33	45	4.3%	1.1%	7.4%
	% Gap	3.4%	4.7%	4.7%	5.5%	4.3%	5.4%			
EU22	Numbers	150	167	178	269	221	288	8.6%	4.4%	10.1%
	% Gap	5.2%	5.5%	5.6%	7.4%	5.8%	6.6%			
EU27	Numbers	451	500	535	757	631	839	7.2%	3.3%	9.4%
	% Gap	5.3%	5.7%	5.8%	7.2%	5.8%	6.8%			

9.3.1 Data Professionals Skills Gap – the Rest of Europe

Similar to the observations for the EU27, the other European countries (the UK, Switzerland, and the rest of the EEA) are also experiencing a skills gap amongst data professionals and will continue to do so in all scenarios (as shown in Table 47) – specifically:

- In 2024, the data professionals' skills gap is estimated at 129,000 across the rest of Europe (outside the EU), up of 26,000 units from 2023 and growing to 180,000 in 2030 in the Baseline scenario. This means that the gap will grow from 4.7% in 2024 to 5.5% in 2030.
- For the Challenge scenario, the gap will reach 205,000 in 2030, i.e. a gap of 6.4%. The UK represents the largest share of this country group, with a gap of 174,000 data professionals in 2030 (a gap of 6.5%). The UK estimates were reviewed to reflect the country's current economic situation, workforce attraction capacity and technology investments.
- In the High Growth scenario, the gap will reach 193,000 in 2030, representing a gap of 5.4%. Again, this is highly influenced by the gap in the UK, which will amount to 156,000 data professionals.

Table 58 The Data Professionals Skills Demand and Gap for the non-Member States (UK, Switzerland and the rest of EEA): 2023, 2024 and 2025, and Three 2030 Scenarios (Thousands)

Countries outside of the EU		2023	2024	2025 (forecast)	2030 Challenge Scenario	2030 Baseline Scenario	2030 High Growth Scenario	CAGR 2025-2030 Challenge	CAGR 2025-2030 Baseline	CAGR 2025-2030 High Growth
UK	Numbers	71	93	117	174	145	156	8.3%	4.4%	5.9%
	% Gap	3.3%	4.1%	5.0%	6.5%	5.4%	5.3%			
Switzerland	Numbers	15	16	14	11	15	17	-4.5%	2.3%	4.7%
	% Gap	5.9%	6.1%	4.9%	3.5%	4.7%	4.8%			
Rest of EEA (NO, LI, IS)	Numbers	17	20	21	20	20	21	-0.6%	-0.6%	-0.1%
	% Gap	8.7%	10%	9.8%	8.6%	8.1%	6.5%			

9.3.2 Measuring Skills Demand

In the different forecasts that are included in this study, the investments in products and technology, which feed the demand for data professionals, continue to show relatively steady growth with 3-8% annually in the period up to 2025, depending on industry and technology. The 2020/2021 pandemic also showed that the underlying strength of digital transformation was such that growth continued in that period, also in terms of demand for data professionals.

Growth in demand for data professionals does not follow directly the growth in demand for data-related technology; the model for data professionals is different and factors in the maturity of the technology investments and the relation between technology investment and the human resources required to implement and operate it. There are, however, elements of technology implementation that may directly impact on demand numbers for data professionals, such as automation and Generative AI tools that may replace certain data tasks within different lines of business. The impact of such technologies, especially given its high growth context from the end of 2022 onwards, were also accounted for this iteration of the Data Market project when looking at current and future demand.

Therefore, this study shows a continued significant growth in demand for data professionals, and this growth is robust even in the challenging scenario with a weakening world economy.

9.3.3 Measuring Skills Supply

The scarcity of data professionals is a reality for most organisations throughout the EU member countries, and IDC research has clearly shown that it is already impacting the digital transformation projects across EU. IDC measured the impact of skills shortages in larger European digital transformation programs in November 2023, and among the KPIs measured was the delay due to lack of skills and experience – on average this delay was 8.0 months. According to the same survey, the perceived impact on business and customer satisfaction is significant, and this has, in turn, led to significant investments in up-skilling and re-skilling of technology and business professionals to meet the demand. In 2023, it is estimated that reskilling added around 4.5% to the supply of data

professionals, especially in business analyst and data scientist roles, and comes from re-skilling of process-savvy business professionals. However, as organisations become more data driven, this is expected to increase. It is important to note that the level of reskilling/upskilling of employees tend to vary by each of the countries in the region, with some states such as Germany, France and the UK presenting a higher tendency for training, on average, also driven by a higher need of workforce to continue fuelling digital transformation.

On the organization level, only a small proportion of European companies²⁴ (6.4%) have a future-oriented approach to training and can map future skills, aligning desired business outcomes with upskilling of employees, according to IDC's MaturityScape study from 2022. Although companies are becoming more aware of the need of having a robust skill development strategy in place, changes may take time to surge effect and keep up pace with the growth in technology adoption. For organisations struggling to recruit outside the traditional target groups, and weaker re-skilling capabilities, this shortage will continue to be a bottleneck in their digitalisation and operational efficiency programs.

Unfortunately, 2023 presented a tighter job market across the EU, with significant waves of layoff impacting several companies, especially in the technology sector, which momentarily decreased the demand for data professionals. 2024 presented challenges of its own regarding cuts in budget and a tighter job market, albeit with historic lows in unemployment rates (5.9% in the EU in August 2024), meaning that work mobility has decreased despite the higher number of workers currently employed. When companies face a more challenging scenario, Learning & Development initiatives tend to be particularly affected as companies have a difficult time in evidencing ROI from such initiatives. Such short-sighted cuts may save money in a first moment but can considerably hurt the organisation's ability to fulfil key data roles in the future and create an inner-talent supply.

That said, another important factor to be considered, especially for the mid-long term of the data market is the replacement of certain data roles by the roll out of AI data tools which may help to stabilise part of the substantial skills gap observed in the continent. However, the emerging adoption of AI will also require a new mix of data skills and may also push certain functions (such as data analysts, scientists and architects) to be more specialised and deeply root the usage of new tools into their day to days. Therefore, increasing the awareness of having a robust skill development strategy is imperative for organisations across the EU to ensure enough data talent is being upskilled and reskilled to according to their upcoming needs.

Despite the emergence of AI, the Baseline scenario still indicates that even with increased recruitment and re-skilling, demand growth over the next four years will likely outpace supply unless more new professionals enter the market. As a result, organizations may continue to face talent shortages with an even bigger bottleneck for the most specialised emerging data skills related to areas such as (but not limited to) data science, LLMs and database management.

²⁴ IDC MaturityScape: Technology Skill Development 3.0, IDC #[US49054322](#), May 2022

9.4 Key Findings

KEY HIGHLIGHT FOR THE EU27

Key Findings – Skills Gap

The skills gap for data professionals continues to have significant business impact on organisations in Europe despite the tighter job market in 2023. Business and technology are in rapid development, largely due to ongoing digital transformation of enterprise and society, and new technologies such as Generative AI are emerging in the data space. Despite of the rise in data automation and potential replacement of certain roles/tasks with new AI tools, a transformation of this magnitude will continue to require large amounts of human capital and skills in the short/medium term before the process changes stabilize and become mainstream. The reported skills gap in data professionals is therefore impacting both existing and coming transformation initiatives and becomes one of the more serious challenges facing the European industries.

KEY HIGHLIGHT FOR THE EU27 According to the scenarios

The gap between supply and demand for data professionals continues to grow:

- In 2023, the gap for EU27 was estimated at 451.000 workers, or 5.3% of the total number of data professionals.
- In 2024, the gap increased by 10.9% to 500.000 data professionals (5.7% of the total demand)
- In 2025 the gap is expected to increase to 535.000 (5.8% of total demand)
- By 2030 (baseline scenario), the gap is expected to remain stable in percentage terms, albeit reaching 631.000 in absolute numbers. The increase represents a CAGR of 3.3% between 2025-2030.
- By 2030 (Challenge Scenario), the gap is expected to reach 757.000, or 7.2%, with a CAGR of 7.2% between 2025-2030.
- By 2030 (High Growth Scenario), the gap is expected to reach 839.000, or 6.8%, with a CAGR of 9.4% between 2025-2030

The key driver for the shortage continues to be the significant growth in technology investments fuelling digital transformation, while the number of new graduates entering the data market has not seen substantial increase over the past years, increasing the gap between demand and supply within the data workforce. This is especially relevant when factoring in the number of professionals retiring every year in the EU and the need to replace these with new talent. **Organisations** throughout Europe are attempting to remedy the situation by a combination of continuous training, re-skilling, and recruitment, but current efforts may not be enough to significantly reduce the gap by 2030. Therefore, other measures including re-skilling of additional business roles outside data analysis and ICT, strengthening the partnership with academia, as well as the roll out of more work

placements such as internships and apprenticeships will be suggested to mitigate the skills gap in the region.

10 Data Flows

10.1 Definition and Scope

Indicator 7 on data flows measures the flow of data into and out of Member States from enterprises buying cloud services used over the internet. Net flows are the result of subtracting data inflows from data outflows.

Cloud services include Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a service (IaaS). Infrastructure as a Service provides access to raw computing services, such as processing power, data storage capacity, or networking. Platform as a Service offers both infrastructure and a software framework that enables businesses to develop their own applications. Software as a Service delivers application-level services targeted at a wide range of business needs²⁵.

This data is limited to Member States and those countries included in the EEA, and the United Kingdom.

Table 59 Indicator 7 - volume of data flows

Indicator 7 - Description				
N.	Name	Description	Type and Time	Segmentation
7	Volume of data flows	Estimate of the volume of data flowing in and out of Member States in petabytes	petabytes, 2023-2024-2025, Forecast to 2030 - 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

Data Sources and Methodology

The foundation for measuring data flows is the Eurostat data: Cloud Computing Services (ISOC_CICCE_USE), which gives the percent of enterprises using cloud computing services. Tracking changes in data flows, aligned with data from the European Data Flow Monitoring study with its Cloud Data Flow Strategic Visualisation Tool ²⁶. The tool gives up to date indications of changes in data flows from and to the EU as a whole. The foundation for data flows is from the ITU data, published regularly by the ITU. Forecast values use the ITU historical data and an anticipated growth rate from the ITU – currently estimated at 22 percent per year.

Cloud use by enterprise – from Eurostat data – gives the share of enterprises that use cloud data. Multiplying this by data volume by member state from ITU data gives data volume per enterprise. For data volume per employee the data volume is divided by the total number of employees (again divided by the share of enterprises using cloud data) gives data volume per employee. Finally, multiplying this data volume per employee by the total number of employees in specific industries gives the data volume by industry within a member state.

Data Flows are evaluated as data from cloud services, including edge computing, driven by enterprises that are located inside the European Union. The origin of the data flow is the location of the enterprise that triggered the data flow, and the destination is the location of the cloud or edge data centre of the cloud provider. The flows published for each country include data where the destination cloud data

²⁵ Definition from: <https://ec.europa.eu/newsroom/dae/redirection/document/82796>

²⁶ <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

centre is located inside the trigger country, where the destination cloud data centre is located in another European country, and where the destination cloud data centre is located in a non-European country.

Data flows are only considered for enterprises that trigger the data flow while consumer triggers for data flows are not considered. Only cloud-based services are included, and general internet requests are excluded. Both cloud data centres and edge data centres are included. Data flows are measured from enterprises to cloud data centres while cloud to cloud data flows are excluded.

Historical data flows for 2023 will come from the Cloud Data Flow Strategic Visualisation Tool.

Table 60 Data Flows data sources

Data Source	Used in
New ad-hoc survey	Data Flows
Eurostat share of companies using the cloud (isoc_cicce_use)	Data Flows
Eurostat Business Demographic Statistics	Data Flows
Eurostat annual Structural Business Statistics	Data Flows
ITU Statistics - Study on Mapping DataFlows https://ec.europa.eu/newsroom/dae/redirection/document/82796	Data Flows
The European Data Flow Monitoring study with its Cloud Data Flow Strategic Visualisation Tool 27	Data Flows

10.2 Measuring Data Flows

In this study, data flows are added to estimate the petabytes (PB) of data that flow to the key cloud infrastructures inside and between EU member states²⁸. The primary source for these estimates is the *European Data Flow Monitoring*²⁹ with its *Cloud Data Flow Strategic Visualisation Tool*.

Relevant input is also included from the analytical framework described in the 2023 report of the Commission's study 'Economic Values of Data Flows'³⁰. The OECD study '*Measuring the value of data and data flows*'³¹ which focuses on data valuation, estimates of the value of data, and data flows serves as a fundamental reference when measuring data flows.

Measuring data flows is a pivotal aspect of the *European Data Strategy* and contributes to the measurement of the data uptake target outlined in the Digital Decade 2030 policy program. This policy specifically highlights low cloud uptake in Europe as a significant concern, and measuring data flows serves as a complementary tool to assess whether cloud uptake is improving, particularly by identifying cross-border data use among Member States.

Data flows are estimated and forecasted using data from the final report 'Study on Mapping Data Flows' and the Cloud Data Flow Strategic Visualization Tool. The percentage of companies utilizing

²⁷ <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

²⁸ Data Flows are measured in Petabytes per year and estimate the Enterprise Cloud-Based Data Flows (ECBDF's) generated in petabytes by each European Member state and reflect ECBDFs generated by the consumption of public cloud services by enterprises. A petabyte is 1,024 terabytes and an enterprise is a private sector organisation or a public sector organisation.

²⁹ <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

³⁰ <https://ec.europa.eu/newsroom/dae/redirection/document/103822>

³¹ https://www.oecd.org/en/publications/measuring-the-value-of-data-and-data-flows_923230a6-en.html

cloud services serves as a proxy for the volume of data flowing between Member States. Revisiting data flows from the monitoring tool with data from this proxy enables adjustments to the forecast, resulting in a more current estimate of data usage by organizations.

The European Data Flow Monitoring tool generates estimates of data flows based on ITU broadband traffic data, in conjunction with workforce data from Eurostat to estimate the number of employees in enterprises using cloud services, and Eurostat data indicating the share of enterprises utilizing cloud services. While the measured data in the tool indicates the total volume of data moving between Member States, the European Data Strategy identifies three key areas for examination:

- 1) government-to-business data flows (e.g., sharing health data in public databases for research purposes),
- 2) business-to-business data sharing (e.g., IoT data sharing),
- 3) business-to-government data sharing (e.g., data used by government for evidence-driven policymaking).

The methodology outlined in this document will model and evaluate the total data volumes used in cloud services for the initial round of indicator measurement.

10.3 Data Flows by Country

For the first time, data flows across European countries have been measured as part of the Data Market Study. The European data flows landscape in 2024 highlights significant differences in volume and growth across EU Member States, measured in petabytes per year.

In 2024, Germany led the EU27 with data flows of 10,995 PB/year, reflecting a significant increase of 55.9% from 7,052 PB/year in 2023. Italy followed with 6,500 PB/year, a growth of 52.8%, and Poland with 4,797 PB/year, marking a 55.7% increase. Other major contributors included France (4,376 PB/year, up 49.9%) and Spain (3,691 PB/year, up 49.7%). These figures underscore the rapid expansion of data flows in key European economies, driven by ongoing digital transformation efforts.

Smaller countries demonstrated some of the fastest growth rates in the region between 2023 and 2024. Austria saw a remarkable increase of 66.1%, reaching 1,178 PB/year, while Estonia and Latvia experienced growth rates of 63.6% and 62.8%, respectively. This highlights the accelerating development of digital infrastructure and data-driven activities in emerging EU economies.

The United Kingdom also remained a major player in the broader European data flows ecosystem. In 2024, its data flows rose to 16,517 PB/year, a 49.6% increase from 11,044 PB/year in 2023. Despite being outside the EU, the UK continues to play a pivotal role in the regional digital economy, benefiting from substantial investments in data infrastructure and its position as a global data hub.

By 2025, data flows are forecasted to continue rising significantly. Germany is expected to maintain its position as the largest data flow contributor within the EU27, with flows reaching 16,861 PB/year. Italy and Poland are forecasted to grow further to 9,915 PB/year and 7,418 PB/year, respectively. These projections highlight the ongoing momentum of data-driven economies across Europe.

Table 61 Volume of Data Flows by MS 2023-2024, 2025 Forecast, 2024-2023 Growth

Member States	2023 PB/Year	2024 PB/Year	2025 Forecast PB/Year	Growth 2024/2023 %
Austria	709	1,178	1,932	66.1%
Belgium	921	1,398	2,119	51.8%
Bulgaria	168	260	402	54.8%
Croatia	215	333	518	54.9%
Cyprus	72	108	163	50.0%
Czechia	826	1,301	2,026	57.5%
Denmark	1,060	1,592	2,392	50.2%
Estonia	132	216	354	63.6%
Finland	632	1,015	1,642	60.6%
France	2,920	4,376	6,590	49.9%
Germany	7,052	10,995	16,861	55.9%
Greece	333	505	769	51.7%
Hungary	445	707	1,106	58.9%
Ireland	188	285	434	51.6%
Italy	4,254	6,500	9,915	52.8%
Latvia	172	280	457	62.8%
Lithuania	181	287	458	58.6%
Luxembourg	29	43	64	48.3%
Malta	45	69	107	53.3%
Netherlands	1,373	2,063	3,084	50.3%
Poland	3,080	4,797	7,418	55.7%
Portugal	728	1,098	1,658	50.8%
Romania	433	683	1,080	57.7%
Slovakia	211	318	482	50.7%
Slovenia	125	194	303	55.2%
Spain	2,465	3,691	5,539	49.7%
Sweden	1,055	1,599	2,428	51.6%
Switzerland	540	817	1,239	51.3%
United Kingdom	11,044	16,517	24,604	49.6%
Rest of EEA (NO, LI, IS)	613	908	1,346	48.1%
Total EU27	29,824	45,891	70,301	53.9%
Total EU27 + U.K.	40,868	62,408	94,905	52.7%
Total All Countries	42,021	64,133	97,490	52.6%

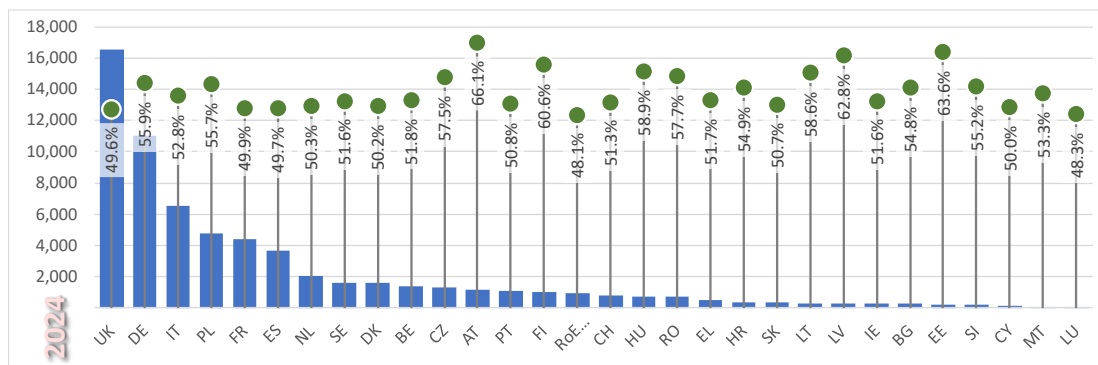


Figure 62 Data Flows by Country 2024 (PetaBytes), 2024-2023 growth (%)

10.4 Forecasting the Data Flows in 2025, 2030 Scenarios

In 2025, total data flows across the EU27 are projected to reach 70,301 PB/year, marking a crucial step in the region's accelerating digital transformation. This rapid expansion lays the foundation for the significant increases expected by 2030, when total data flows are projected to reach 588,953 PB/year under the Baseline scenario, reflecting growth of over 500% in just five years.

Under the High Growth scenario, EU27 flows could reach 664,496 PB/year by 2030, while the more cautious Challenge scenario projects flows at 573,815 PB/year, still showcasing substantial expansion compared to 2025. These projections underline the growing importance of digital infrastructure and the expanding role of data flows in driving economic growth and innovation.

Germany continues to lead among EU27 countries, with data flows reaching 127,712 PB/year in the Baseline scenario and 144,404 PB/year in High Growth, surpassing the 2025 projection of 16,861 PB/year. Italy also experiences a dramatic increase, from 9,915 PB/year in 2025 to 84,180 PB/year in 2030 under the Baseline scenario. Similarly, Poland's flows rise sharply from 7,418 PB/year in 2025 to 64,501 PB/year in 2030, reflecting its rapid digital integration. France, despite its slower growth trajectory, sees data flows grow from 6,590 PB/year in 2025 to 54,576 PB/year by 2030.

Austria and Finland display impressive growth in 2030, with Austria reaching 21,048 PB/year in the Baseline Scenario and 23,616 PB/year under High Growth, compared to its 2025 projection of 1,932 PB/year. Finland is expected to grow from 1,642 PB/year in 2025 to 20,912 PB/year in the Baseline Scenario and 23,515 PB/year under the High Growth Scenario.

The United Kingdom, while no longer part of the EU, demonstrates its enduring dominance in the European data ecosystem. Its flows grow from 24,604 PB/year in 2025 to 178,243 PB/year in 2030 under the Baseline scenario, emphasizing its role as a global digital leader with advanced infrastructure and robust policy frameworks.

Table 62 Data Flow by MS Forecast 2025 and 2030 Scenarios

Member States	2025 Forecast	2030 Challenge Scenario (PB/Year)	2030 Baseline Scenario (PB/Year)	2030 High Growth Scenario (PB/Year)
Austria	1,932	20,028	21,972	23,616
Belgium	2,119	16,036	16,898	18,893
Bulgaria	402	4,121	3,550	3,992
Croatia	518	4,718	4,974	5,235
Cyprus	163	1,138	1,160	1,184
Czechia	2,026	16,012	17,428	20,830
Denmark	2,392	17,056	18,876	22,103
Estonia	354	3,730	4,139	5,501
Finland	1,642	16,630	19,052	23,515
France	6,590	72,095	54,576	61,889
Germany	16,861	118,742	127,712	144,404
Greece	769	6,103	6,485	7,223
Hungary	1,106	8,496	9,620	11,831
Ireland	434	3,638	3,699	4,325
Italy	9,915	75,005	84,180	90,132
Latvia	457	5,142	5,442	5,472
Lithuania	458	5,118	5,063	5,432
Luxembourg	64	471	489	588
Malta	107	955	975	1,198
Netherlands	3,084	19,777	22,559	25,228
Poland	7,418	59,867	64,501	74,492
Portugal	1,658	11,765	13,076	15,305
Romania	1,080	12,654	11,158	12,049
Slovakia	482	3,957	4,083	4,863
Slovenia	303	2,699	2,948	3,114
Spain	5,539	49,026	43,732	47,337
Sweden	2,428	18,839	20,606	24,743
Switzerland	1,239	9,936	10,138	11,005
United Kingdom	24,604	157,503	178,243	192,442
Rest of EEA (NO, LI, IS)	1,346	9,061	10,173	11,835
Total EU27	70,301	573,815	588,953	664,496
Total EU27 + U.K.	94,905	731,318	767,196	856,938
Total All Countries	97,490	750,314	787,507	879,778

10.5 Key Findings

KEY HIGHLIGHT FOR THE EU27

In 2024, total data flows across the EU27 reached 45,891 PB/year, reflecting a substantial increase from 29,824 PB/year in 2023, showcasing the rapid expansion of the digital economy with a year-on-year growth rate of 53.9%. This significant growth underscores the increasing role of data as a key economic driver within the EU, fuelled by heightened investments in infrastructure and digital transformation initiatives. By 2025, these flows are forecasted to more than double compared to 2023, reaching 70,301 PB/year, further highlighting the accelerating demand for data across industries.

The volume of data flows across EU Member States varies significantly, with Germany consistently leading in data flows due to its robust infrastructure and economic scale, projected to reach 127,712 PB/year by 2030 under the Baseline scenario. Meanwhile, smaller nations such as Austria and Finland are emerging as fast-growing players, with Austria projected to reach 21,972 PB/year and Finland 19,052 PB/year under the same scenario. These trends underscore the disparity in digital readiness and growth potential across the EU27.

The 2030 projections vary widely across the Baseline, High Growth and Challenge scenarios, reflecting the importance of macroeconomic conditions and policy frameworks.

In the Baseline scenario, total EU27 data flows are projected to reach 588,953 PB/year by 2030, underscoring steady growth across all member states. Germany is set to maintain its leadership position with 127,712 PB/year, followed by France with 54,576 PB/year. Italy's data flows are expected to rise from 9,915 PB/year in 2025 to 84,180 PB/year in 2030, while Poland will see an increase from 7,418 PB/year in 2025 to 64,501 PB/year in 2030, reflecting rapid digital adoption in these economies.

Under the **High Growth scenario**, EU27 data flows could reach **664,496 PB/year**, significantly outpacing the Challenge scenario's 573,815 PB/year. The projections highlight the transformative potential of favourable conditions, especially for emerging economies like Poland, which could see data flows rise from 7,418 PB/year in 2025 to 74,492 PB/year by 2030 under High Growth. These forecasts emphasize the pivotal role of supportive policies and investments in maximizing digital transformation across Europe.

Under the **Challenge scenario**, total EU27 data flows are expected to reach **573,815 PB/year** by 2030, demonstrating significant growth despite a more cautious economic outlook. Even under this scenario, major economies such as **Germany (118,742 PB/year)** and **France (72,095 PB/year)** will continue to lead in data flows, while other economies like Finland (16,630 PB/year) and Austria (20,028 PB/year) will still see substantial expansion.

11 Data Maturity

11.1 Definition and Scope

Data Maturity is the assessment of the level of engagement of an organization in its use of data in key digital areas. It is measured for each Member State and for each industry relative to all Member States and all industries. Key indicators give a measure of the share of companies in each Member State or industry. For each Member State, the specific measures are weighed and added to give a total adoption level across all measures. For all Member States, the range for any specific measure is divided into six bands from the lowest to the highest measure, and the relative maturity level is given by whichever band the specific measure falls into for the Member State.

The key digital areas are:

- Businesses receiving orders through the internet.
- Businesses using Artificial Intelligence.
- Businesses purchasing cloud computing services.
- Businesses having performed big data analysis.
- Businesses using IoT.

These digital areas have weights attached to them – totaling 100%. For each industry, the percentage of organizations associated with each key area is multiplied by the corresponding weight. The result is summed up to give a **non-dimensional³² value of maturity**. Industries within a Member State can be compared to give relative maturity, and selection is done on company size band in addition to by industry to give a profile of maturity by company size, and by industry.

This maturity level by industry and size band gives a reference point against which organizations can measure themselves and understand where to invest for improved digital maturity. Member States will use these measures of maturity by industry to establish where to focus investments to raise the maturity of their organizations.

Table 63 Indicator 8 - Data Maturity

Indicator 8 - Description				
N.	Name	Description	Type and Time	Segmentation
8	Data Maturity	Model of the maturity of data Use	Dimensionless, 2023-2024-2025 Forecast to 2030 - 3 scenarios	By geography EU27 MS. By industry for each specific Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

11.2 Data Sources and Methodology

The model uses Eurostat sources from the E-business section of the data tree and from the ICT usage in enterprises section of the data tree, both under science, technology, and digital society. The specific indicators used are:

³² Thus, not expressed in, or representing terms of any particular unit (as of mass, length, or time)

- share of enterprises using Big Data Analytics
- share of enterprises using IoT
- Share of enterprises using Artificial Intelligence
- Share of enterprises using cloud computing
- Share of enterprises receiving orders online.

These values are selected for a specific industry in a Member State, and a weighted sum gives the overall data maturity for that industry in the Member State. Reviewing the relative values of industries in a specific Member State enables the Member State to assess the digital maturity for each industry and to act accordingly to support industries that are less adept in the adoption of digital technologies.

For example, for the measure Enterprises with e-commerce sales, the range of values is between 9.7% and 27.6% of companies that have enterprises with e-commerce sales across the Member States. Austria has 21.0% of enterprises with e-commerce sales, so the Member State falls into maturity band 3, as seen below:

Table 64 Data Maturity Levels

Enterprises with e-commerce sales	Min					Max
	9.7%					27.6%
Maturity Bands	0	1	2	3	4	5
Maturity bands Thresholds	9.7%	13.2%	16.8%	20.4%	24.0%	27.6%

For instance, Austria falls into **Maturity Band 3** with 21.0% of enterprises having e-commerce sales.

The weights used for each of the measures are:

Table 65 Data Maturity Weights

Measure	Weight
Buys Cloud Computing Services and uses Data Analytics	15.0%
Uses AI for data analytics	15.0%
Uses AI for at least one business unit	5.0%
Uses at least one AI technique	5.0%
Uses ML for Data Analysis	5.0%
has any e-commerce sales	5.0%
has e-commerce sales >1%	10.0%
has ecommerce sales to EU and ROW	10.0%
has EDI-type sales	5.0%
has web sales - B2B, B2G	5.0%
has web sales	10.0%
has web sales via e-commerce marketplaces	5.0%
Has web sales via own web site	5.0%

11.2.1.1 Thresholds and Interpretation

Maturity is measured relative to all the countries' measures. This gives the maturity of each country relative to its peers, not an absolute measure of maturity. For example, for some indicators where adoption rates are generally low across all Member States, all countries may fall into lower maturity bands (1 or 2). As adoption increases over time, thresholds for maturity levels will adjust dynamically.

Thresholds for the selected measures are calculated using the PERCENTILE.INC function, which divides the range of adoption rates into deciles. These thresholds are adjusted as new data becomes available to reflect changes in adoption rates across industries and Member States.

To interpret the chart, a Member State's overall data maturity level is the weighted sum of its maturity levels across all key digital areas. Each digital area contributes based on its assigned weight, and the overall level determines the Member State's position within one of the six maturity bands. For instance, in the figure provided, the EU27 Total Maturity Level is shown as 2.2, placing it within Level 3.

As new data emerges (2024–2025), maturity thresholds will continue to evolve. The methodology also forecasts maturity up to 2030 under three scenarios to help Member States and industries plan their investments. Additionally, industries within Member States can use these forecasts to identify priority areas for improvement and investment in digital technologies.

By providing a detailed and comparable measure of maturity across Member States and industries, the Data Maturity Model enables more targeted policy development and industry support initiatives, ensuring that all sectors can benefit from the digital transformation.

Table 66 Data Maturity data sources

Data Source	Used in
Eurostat isoc_eb_bdn share of enterprises using big data	Data Maturity
Eurostat isoc_eb_iot share of enterprises using IoT	Data Maturity
Eurostat isoc_eb_ai share of enterprises using AI	Data Maturity
Eurostat isoc_cicce_use share of enterprises using cloud computing	Data Maturity
Eurostat TIN00111 enterprises receiving orders online	Data Maturity

11.3 Data Maturity by Country

In 2024, the Data Companies Relative Maturity Index revealed persistent disparities in digital readiness across the EU27. While the overall EU27 average remained unchanged at 2.2, several countries experienced notable shifts compared to 2023, highlighting the uneven pace of digital transformation across the region.

High-performing countries such as Belgium and Sweden maintained strong positions, with Belgium rising from 3.6 in 2023 to 3.8 in 2024, while Sweden improved slightly from 3.8 to 3.9. In contrast, Denmark saw a significant decline from 4.5 to 4.0, underscoring potential challenges in sustaining its digital leadership. Similarly, Croatia dropped from 3.1 to 2.9, signalling setbacks in digital adoption.

Among emerging economies, Estonia showed modest progress, improving from 1.4 to 1.5, and Hungary maintained its position at 1.7, while Bulgaria stagnated at 0.1 in 2024. However, countries such as Czechia and Greece faced notable declines, with Czechia falling from 1.6 to 1.3 and Greece dropping from 1.0 to 0.6, reflecting challenges in advancing data-driven practices.

On the other hand, Germany showed steady improvement, increasing from 2.5 to 2.6, and Finland rose from 3.1 to 3.3, demonstrating consistent investments in digital infrastructure and innovation. Malta and the Netherlands held steady at 3.8 and 3.6, respectively, showcasing their mature digital ecosystems.

These results underscore the need for targeted interventions to address the widening gaps in data maturity. While Belgium, Sweden, and Finland exemplify the benefits of sustained investment in digital transformation, lagging countries such as Czechia, Greece, and Bulgaria require strategic support to enhance their digital capabilities. A unified approach across the EU27 remains critical to bridging these disparities and unlocking the full potential of the region's data economy.

Table 67 Data Maturity of data companies by MS 2023-2025

	2023 Index	2024 Index	2025 Forecast Index
Austria	2.5	2.4	2.4
Belgium	3.6	3.8	3.8
Bulgaria	0.1	0.1	0.5
Croatia	3.1	2.9	2.9
Cyprus	2.1	2.2	2.2
Czechia	1.6	1.3	1.2
Denmark	4.5	4.0	3.7
Estonia	1.4	1.5	1.7
Finland	3.1	3.3	3.4
France	2.3	2.3	2.3
Germany	2.5	2.6	2.7
Greece	1.0	0.6	0.6
Hungary	1.7	1.7	1.9
Ireland	3.2	3.2	2.9
Italy	1.3	1.4	1.3
Latvia	1.3	1.3	1.4
Lithuania	2.9	3.0	3.0
Luxembourg	1.4	1.4	1.4
Malta	3.8	3.8	3.8
Netherlands	3.5	3.6	3.6
Poland	0.8	0.9	0.8
Portugal	1.5	1.4	1.5
Romania	0.1	0.1	0.1
Slovakia	1.1	0.9	0.9
Slovenia	2.1	2.1	2.0
Spain	3.0	3.0	3.0
Sweden	3.8	3.9	3.9
Total EU27	2.2	2.2	2.2

The Data Companies Relative Maturity Index for 2024, illustrated in the chart, highlights a diverse range of maturity levels across the EU27 member states. The EU27 average maturity score remains at

2.2, reflecting the unweighted relative level of data maturity across member states. Countries are distributed across five levels, demonstrating significant disparities in data adoption and digital readiness.

High-performing countries are concentrated in Level 5, with Denmark (4.0) and Sweden (3.9) leading the index. They are joined by Belgium (3.8) and Malta (3.8), which maintain strong positions. These nations demonstrate advanced digital ecosystems and consistent adoption of data-driven practices, underpinned by robust infrastructure and supportive policy frameworks.

In Level 4, countries like Ireland (3.2), Netherlands (3.6), and Finland (3.3) highlight moderate-to-high maturity, showcasing steady progress in adopting data-driven solutions. Similarly, Spain (3.0) and Lithuania (3.0) maintain stable positions at this level, reflecting their continued investments in digital readiness.

In contrast, countries in Level 2 and Level 3 show varying degrees of digital maturity. Germany (2.6) and Austria (2.4) represent moderate performers in Level 3, while countries like Slovenia (2.1) and Hungary (1.7) lag in Level 2. Emerging economies like Estonia (1.5) and Poland (0.9) remain at the lower end, highlighting challenges in scaling data adoption and digital infrastructure.

Level 1 includes countries like Greece (0.6) and Romania (0.1), which face significant barriers to data adoption and are far below the EU average. These nations require substantial investments and policy interventions to enhance their digital capabilities.

The distribution of maturity levels underscores the disparities in data readiness across the EU27. While some countries lead with advanced capabilities, many lag, reflecting the need for targeted policies to bridge gaps and accelerate digital transformation across the region. Collaborative efforts and resource sharing will be critical to improving the overall maturity and enabling a more unified EU digital economy.

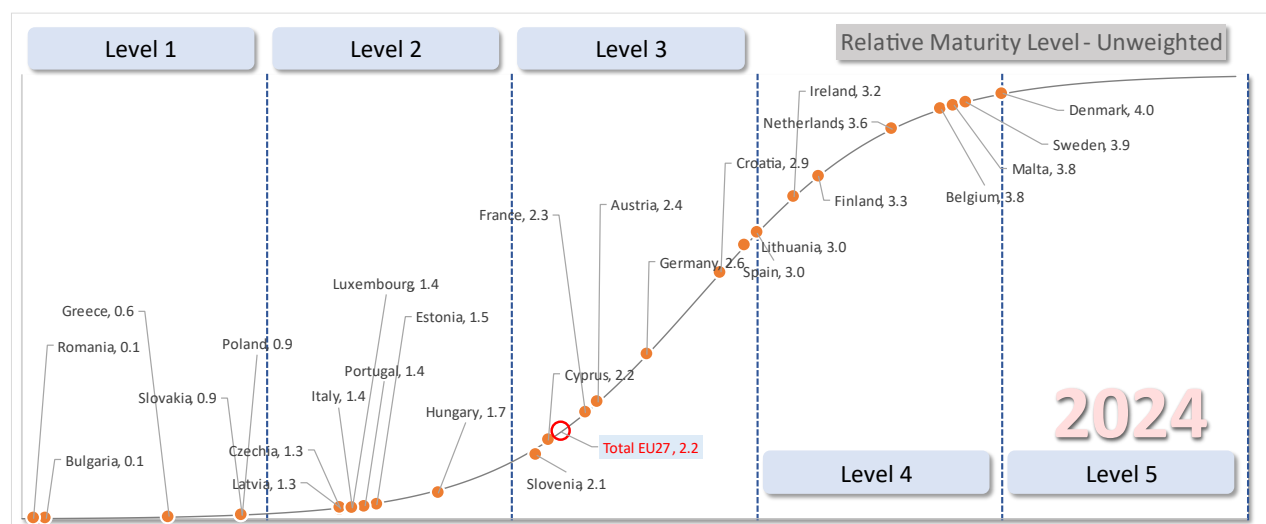


Figure 63 Data Maturity by Member State 2024

11.4 Data Maturity by Industry

The Data Companies Relative Maturity Index for 2024, segmented by industry, highlights significant disparities in data maturity across sectors within the EU27. The EU27 average maturity level is 2.2, reflecting an uneven distribution of data adoption capabilities across industries. The index categorizes industries into five levels, ranging from sectors with minimal adoption of data-driven practices to those that demonstrate advanced digital maturity.

Level 5 is led by the Information & Communications sector (4.0), which stands out as the most mature and digitally advanced industry. This sector benefits from its intrinsic reliance on data and technology, making it a key driver of innovation and digital transformation across the economy.

In Level 4, Retail and Wholesale (3.1) demonstrates strong adoption of data technologies, driven by its focus on optimizing supply chains, inventory management, and customer engagement through data analytics. Utilities (2.7) and Accommodation & Food (2.5) also feature prominently in this level, reflecting their increasing reliance on data for operational efficiency and customer-centric services.

Level 3 includes Mining and Manufacturing (2.0), which represents industries with moderate levels of data adoption. While manufacturing has made strides in integrating data for automation and predictive analytics, further progress is needed to reach higher maturity levels.

Level 2 features Professional Services (1.6), Real Estate (1.8), and Transport (1.1). These sectors demonstrate limited adoption of data technologies, indicating a need for strategic investments and digital upskilling to enhance their competitiveness.

At the bottom in Level 1 is the Construction sector (0.0), which exhibits no data maturity. This sector faces significant barriers to adopting data-driven practices, due to structural inefficiencies and a slower pace of technological integration.

These findings highlight stark disparities in data readiness across industries. While sectors like Information & Communications and Retail and Wholesale lead the way, industries such as Construction and Transport lag significantly behind, requiring targeted interventions to drive digital transformation. Improving cross-industry collaboration, fostering innovation, and supporting lagging sectors with tailored policies will be essential for enabling a more balanced and integrated digital economy across the EU27.

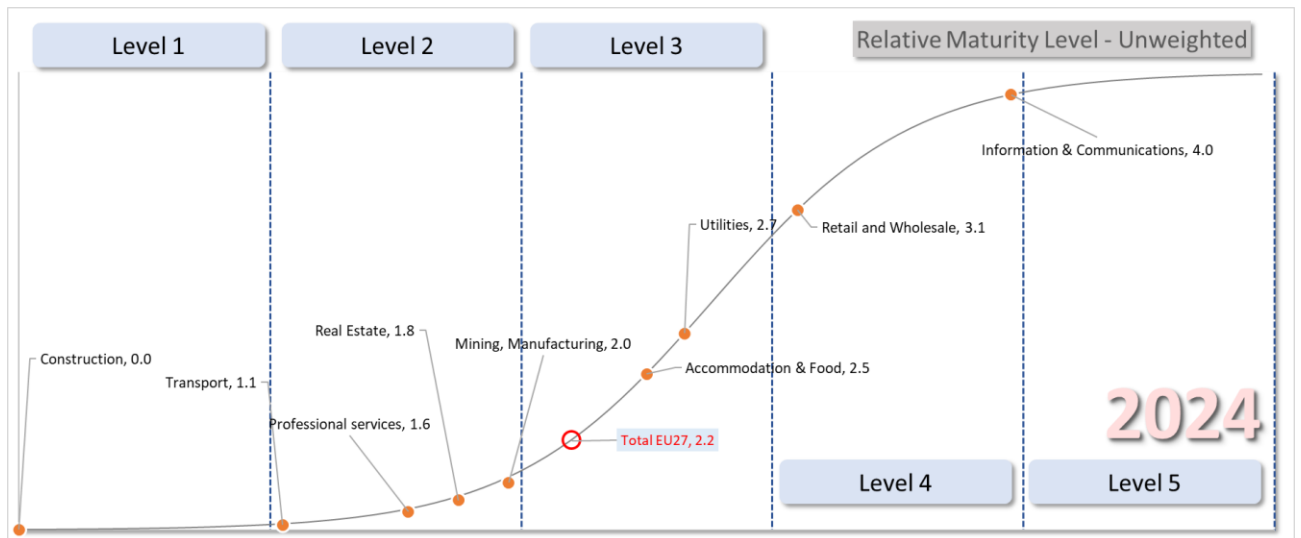


Figure 64 Data Maturity by Selected Industries 2024

11.5 Key Findings

KEY HIGHLIGHTS FOR THE EU27

Data Maturity is a model built to measure the relative rate of adoption of digital technologies through the actions of companies rather than through their promises. Key actions include the percentage of companies using cloud computing services, the use of AI for data analytics, the share of companies that have e-commerce sales, and the use of machine learning for data analysis. The most important factor to consider is that this is relative maturity – i.e., Member States and industries compared to each other, not an absolute measure of maturity. As data is updated the relative maturity will change.

Maturity is grouped into five levels, with the least mature at level one and the most mature at level 5. Each of the individual measures used is weighted to allow the importance of the measure to change over time. As an example, the use of AI or Machine learning has low adoption among companies in each member state when compared with the use of cloud computing services, and it is weighted lower because of its relative use.

Data maturity in the EU27 as measured by the Data Maturity Index is 2.2 for the whole period 2022-2024 and is expected to remain in the same region in 2025. The EU as a whole therefore reflects a level-3 of data maturity across according to our model. Countries are distributed across five levels, demonstrating significant disparities in data adoption and digital readiness.

At Member State level, however, the Data Maturity Index displays a widespread distribution across five levels, demonstrating significant disparities in data adoption and digital readiness. Overall, the median level for data maturity is relatively low with a median of just 1.6 in 2024. This gives many Member States the opportunity for improvement through greater adoption by companies of the technologies measured. **Among the Member States, the larger economies are surprisingly low in relative maturity, with Germany, France and Italy are all outpaced in 2024 by smaller economies such as Denmark (4.0), Sweden (3.9), Belgium (3.8) and the Netherlands (3.6).**

12 The International Dimension of the Data Economy

12.1 Measuring the Data Economy Beyond the EU

As in the First and Second Reports of Facts & Figures, this Final Report covers also the data economy beyond Europe; it includes a specific section on four additional non-European countries:

- **The United States:** The top trading partner of the EU27 and other European countries.
- **Brazil:** An upper-middle-income economy and a country with among the highest ICT Development Index (IDI) scores in Latin America.
- **Japan:** The largest high-income economy in the Asia/Pacific region, and the main Asia-EU trading partner after China. Japan is a mature ICT market with many similarities to the European market.
- **China:** An emerging world force in ICT, which extends to the data economy. The second largest economy in the world and the main Asia-EU trading partner. China represents a very large market opportunity in terms of data consumption, data tools, and data monetisation.
- **Israel:** a middle eastern country making considerable achievements in IT investments and offering some leadership in areas of digital design and artificial intelligence. Israel's proximity to Europe while not a member state of the EU makes it a good reference country with which to compare Member States.

For the international dimension, we kept the international focus on a restricted set of core indicators due to the wide disparity of the available statistical sources for these EU partners.

Specifically:

- Indicator 1.1: the number of data professionals
- Indicator 1.2: the employment share of data professionals
- Indicator 2.1: the number of data companies
- Indicator 3.1: the revenues of data companies
- Indicator 4.1: the value of the data market
- Indicator 4.2: the value of the data economy
- Indicator 4.3: the impact of the data economy on GDP

12.1.1 Definitions

The foundation for the international indicators is IDC's research and analysis on China, Brazil, Japan, Israel and the U.S. conducted by IDC Latin America (and its subsidiary in Sao Paulo), IDC Asia Pacific (and its subsidiary in Tokyo and Beijing), IDC Israel and IDC Headquarters in the US. The selected indicators for the five countries will leverage IDC databases available at worldwide level. Data such as ICT spending is available for most countries worldwide and is gathered with the same approach across the board – these data series are perfectly comparable at international level. This ensures comparability and consistency across the board both between the internationals and the EU27 indicators and across the international indicators.

The economic model used to define the direct and indirect impacts of the data market has been refreshed in 2021, resulting in a significantly higher value for indirect impacts. This is partially due to

the redefined model but also the extension of the perimeter for data suppliers. Increasing industry coverage from J & M segments to include A, C, E, G, H, J, K, M, and P added significantly to the number of companies included, even if the size of the data revenues was not notably increased. The indirect impacts were accelerated by the addition of these companies in the model.

IDC also used existing data and desk research to estimate the key metrics for the five countries, accepting that the categorisation of data professionals, data companies, and revenues of data companies might not be as current as for the EU27. We used IMF forecast data and available statistics to validate our estimates. This is coupled with IDC's existing data sources of IT spending in the IDC Black Book and IDC Spending Guides, both of which include spending for the four countries beyond the EU. The table below outlines the main sources used to estimate the international indicators in this report.

Table 68. Internationals – Main Data Sources

Data Source	Updated
IDC Core IT Spending Guide 2H2024	Aug 2024
IDC Worldwide Black Book (standard edition)	Sept 2024
IMF World Economic Outlook (Apr 2024)	Apr 2024
ILOSTAT statistics and databases	Sept 2024
IT Big Data and Analytics Spending Guide 2H2024	Aug 2024
China Statistical Yearbook 2023	Sept 2024
CIA World Factbook	Ongoing
World Economic Forum "Global Competitiveness Report" and "Global Information Technology Report"	Ongoing

12.2 The US

The United States continues to assert itself as the world's strongest data economy in 2024, leveraging its leadership in digital technologies and innovation. Its dominance is particularly evident in software, tools, and cloud technology, although the country also remains a significant player in hardware. Much of its hardware, however, is manufactured overseas—a dependency the US is actively working to reduce. The Biden Administration's CHIPS and Science Act of 2022, which allocated approximately \$39 billion (€36 billion) in subsidies and provided 25% investment tax credits for semiconductor manufacturing equipment, represents a cornerstone effort to onshore high-tech manufacturing (U.S. Department of Commerce, 2022). By fostering domestic production of critical technologies such as semiconductors, the US aims to bolster its strategic autonomy, reduce reliance on foreign trade partners like China, and shield its economy from geopolitical risks³³.

Artificial intelligence (AI) remains a key growth driver, fuelling exponential expansion in the global data market. The US has capitalized on its robust innovation ecosystem to lead in AI technologies, which are increasingly embedded across industries. With cloud technology serving as the backbone for data-driven solutions, US-based giants like Amazon Web Services (AWS), Microsoft Azure, and

³³ White House Briefing Room (2022). "Fact Sheet: Biden Administration's CHIPS and Science Act." <https://www.whitehouse.gov>

Google Cloud dominate the global market³⁴. Companies such as Meta and Alphabet further enhance the US's position, pushing advancements in areas like generative AI, machine learning, and the Internet of Things (IoT).

The financial performance of Big Tech highlights the scale of the US's digital economy. After navigating challenges in 2022, the sector experienced a strong recovery in 2023. In Q3 2023, the combined net income of Apple, Microsoft, Alphabet, Meta, and Amazon surged to \$86.5 billion (€80.4 billion), a 107% year-over-year increase³⁵. This resilience underscores the nation's ability to adapt and thrive in volatile economic conditions. The sheer volume of data generated in the US positions it as a global leader in data-driven innovation. Recent McKinsey research on digital competitiveness places the US ahead of all other nations in key metrics, including data volume exchanged, data accessibility, and the complexity of digital activities³⁶. This advantage enables the country to harness data for sustained economic growth, with the UK and China following behind.

As the Biden administration enters its final phase, the outlook for the US data economy is intertwined with the continuity or potential policy shifts that may accompany the next administration. The Biden administration has emphasized reshoring high-tech manufacturing, investing in infrastructure, and strengthening digital innovation as pillars of economic resilience³⁷. These efforts have set the stage for long-term growth, but sustained progress will depend on future political stability and bipartisan support for digital and technology initiatives. Should the Biden administration secure a second term, we can expect further consolidation of these policies, with continued investments in emerging technologies, AI, and domestic semiconductor production. This continuity would enhance the US's competitive edge in the global data economy and solidify its leadership in innovation.

Alternatively, the Trump administration could recalibrate priorities, potentially shifting focus toward deregulation or market-driven approaches to stimulate growth. While such changes could accelerate certain aspects of economic activity, they may also introduce uncertainty, particularly in international trade relations and environmental or data governance frameworks. Regardless of the political trajectory, the US remains poised to maintain its leadership in the global digital economy. The foundation laid by current investments in AI, semiconductors, and data technologies, combined with its unmatched innovation ecosystem, positions the nation to shape the future of the global data landscape for years to come.

The key indicators measured by the European Data Market Monitoring Tool, adjusted for the US for the period 2023-2024, are presented in the table and in the figure below.

³⁴ IDC Cloud Services Tracker (2024). "Cloud Services Market Insights and Projections."
<https://www.idc.com>

³⁵ Statista (2024). "Quarterly Net Income of GAFAM Companies, Q2 2024."
<https://www.statista.com>

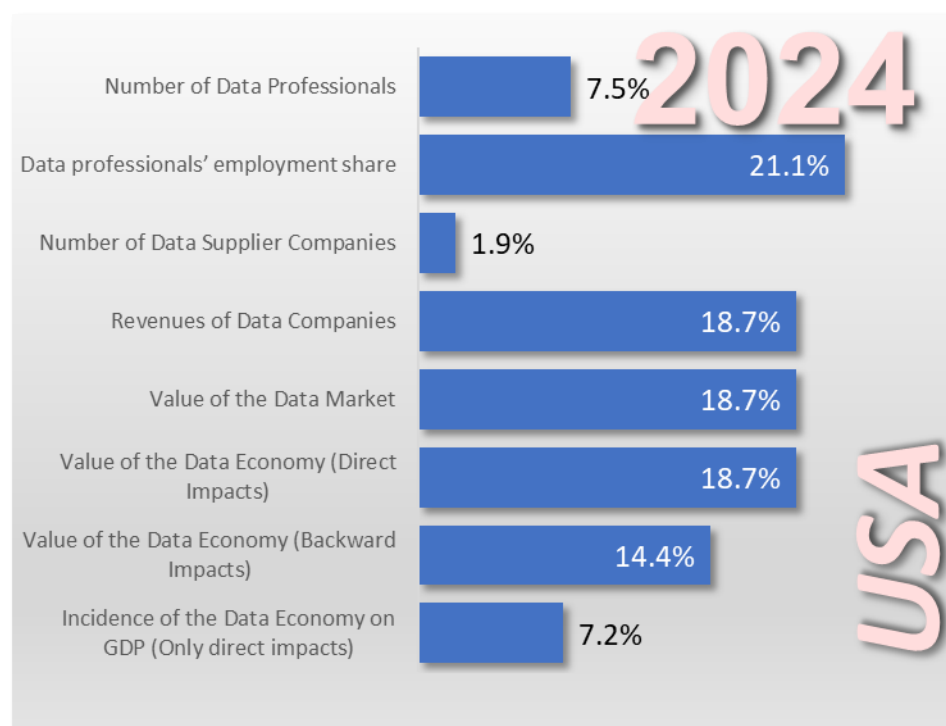
³⁶ McKinsey Global Institute (2024). "Digital Competitiveness and the Global Data Economy."
<https://www.mckinsey.com>

³⁷ Brookings Institution (2023). "The Future of US Industrial Policy in Technology."
<https://www.brookings.edu>

Table 69 - US Indicators 2023-2024 Overview

Name	Metrics	2023	2024	Growth 2024-2023
Number of Data professionals	Total Number of Data professionals (Thousands)	19,874	21,373	7.5%
Data professionals' employment share	% of Data professionals on total employment	12.6%	15.3%	21.1%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	335,374	341,586	1.9%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million Euro)	340,416	403,954	18.7%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	340,416	403,954	18.7%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	340,416	403,954	18.7%
Value of the Data Economy (Backward Impacts)	Backward Impacts (Million €)	306,540	350,760	14.4%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	1.54%	1.65%	7.2%

Figure 65 - US Annual Growth Rates 2024 - Key Metrics



The number of data professionals has experienced a notable increase of 7.5%, rising from 19.87 million to 21.37 million, with their share of total employment expanding from 12.6% to 15.3%, reflecting the

growing significance of data-driven roles in the labour market. The number of data supplier companies has also expanded, albeit at a more modest rate of 1.9%, reaching 341,586 in 2024. Despite the slower growth in the number of companies, the revenues generated by data suppliers have surged significantly, with an 18.7% increase, indicating substantial gains in productivity, demand, or market consolidation trends within the sector. This revenue expansion is mirrored in the overall value of the data market, which has also grown by 18.7%, underscoring the increasing economic weight of data-driven products and services. The data economy, measured in both direct and backward impacts, has followed a similar growth trajectory. Direct impacts—reflecting the immediate contribution of the data sector—expanded by 18.7%, while backward impacts—accounting for indirect effects on supply chains and related industries—grew by 14.4%, highlighting the broader economic influence of data-related activities. Finally, the incidence of the data economy on GDP, considering only direct impacts, has risen from 1.54% to 1.65%, marking a 7.2% increase. This trend underscores the deepening integration of data-centric technologies and services into the broader U.S. economy, reinforcing the critical role of data as a driver of economic growth and innovation.

12.3 China

The People's Republic of China remains a pivotal player in the global digital economy, with its investments in advanced technologies such as artificial intelligence (AI), 5G telecommunications, and high-performance computing positioning it as a formidable competitor to the US and the EU in the data market. These advancements underscore China's strategic focus on becoming a dominant supplier of data tools and services in the worldwide market, leveraging its vast population and increasingly sophisticated technology infrastructure.

In 2023, China's Gross Domestic Product (GDP) grew by 5.2%, rebounding from the previous year's 3% growth, which was impacted by stringent COVID-19 lockdowns. This recovery was driven by the easing of pandemic-related restrictions and increased government investment in infrastructure and technology. Looking ahead, the International Monetary Fund (IMF) projects China's GDP growth to stabilize at 5% in 2024 and moderate to 4.5% in 2025, reflecting structural challenges such as an aging population and a protracted property market correction³⁸. Over the medium term, growth is expected to moderate to around 3.5% annually by 2028, reflecting demographic challenges, persistent weaknesses in the property sector, and slower productivity growth³⁹.

Under President Xi Jinping's leadership, China has implemented policies to stimulate economic growth and technological innovation. The government has adopted a more proactive fiscal policy, including interest rate cuts and increased government borrowing, to support the economy amid external pressures and domestic challenges. Additionally, initiatives like the "Digital China" strategy aim to advance sectors such as AI, quantum computing, and next-generation telecommunications, aligning with global technological trends⁴⁰. In the next two years, China is expected to solidify its position in

³⁸https://www.imf.org/en/News/Articles/2024/05/28/pr24184-china-imf-staff-completes-2024-art-iv-mission?utm_source=chatgpt.com

³⁹ IMF (2023). World Economic Outlook: A Rocky Recovery. Available at: <https://www.imf.org>

⁴⁰https://www.wsj.com/world/china/china-moves-to-trump-proof-its-economy-13e83e9a?utm_source=chatgpt.com

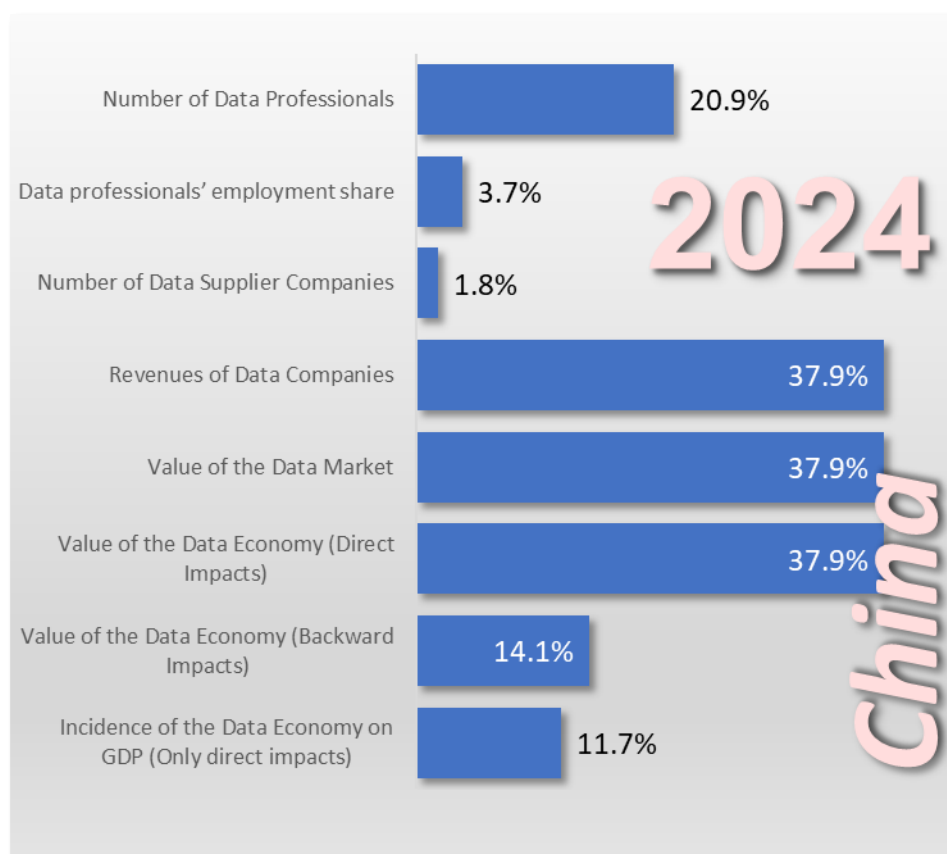
the global digital economy through continued investments in emerging technologies and efforts to reduce reliance on foreign technologies. The establishment of national data exchanges, such as the Shenzhen Data Exchange, is anticipated to enhance data accessibility and monetization, providing a robust framework for the country's growing data economy. However, economic growth may face headwinds from domestic imbalances, subdued external demand, and global trade uncertainties. Addressing these challenges will be crucial for China to fully realize its digital potential and maintain sustainable economic growth.

The table and figure below present the key indicators of the European Data Market Monitoring Tool, adjusted for China.

Table 70 - China indicators 2023-2024 Overview

Name	Metrics	2023	2024	Growth 2024-2023
Number of Data professionals	Total Number of Data professionals (Thousands)	9,550	11,545	20.9%
Data professionals' employment share	% of Data professionals on total employment	4.36%	4.53%	3.7%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	900,637	917,113	1.8%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million Euro)	49,422	68,157	37.9%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	49,422	68,157	37.9%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	49,422	68,157	37.9%
Value of the Data Economy (Backward Impacts)	Backward Indirect Impacts (Million €)	53,586	61,134	14.1%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	1.05%	0.9%	2.9%

Figure 66- Peoples Republic of China Annual Growth Rates 2024 - Key Metrics



The data economy and data market in China have exhibited significant growth in 2024 compared to the previous year, particularly in terms of workforce expansion and revenue generation. The number of data professionals has surged by 20.9%, increasing from 9.55 million to 11.55 million, with their share of total employment rising from 4.36% to 4.53%. This notable expansion underscores the growing reliance on data-driven expertise across industries and the increasing demand for skilled professionals in the sector. Similarly, the number of data supplier companies has seen a modest growth of 1.8%, reaching 917,113 companies in 2024. Despite this slow increase in the number of firms, revenues generated by data supplier companies have expanded sharply, growing by 37.9% to €68.16 billion. This significant rise in revenue suggests increased productivity, stronger market demand, or industry consolidation, leading to higher efficiency and profitability within the sector. The overall value of the data market has mirrored this growth, also increasing by 37.9%, reflecting the rising economic importance of data-related products and services. In parallel, the data economy's direct impact has followed the same trajectory, experiencing a 37.9% increase, while its backward impacts—capturing the indirect effects on related industries and supply chains—have grown by 14.1%, reinforcing the broader influence of data-centric economic activities.

Despite these positive trends, the incidence of the data economy on China's GDP—measured through direct impacts—has seen a more modest increase of 2.9%, moving from 1.05% to 1.09%. This suggests that while the data economy is growing at a remarkable pace, its relative contribution to the overall economy remains stable, likely due to the size and diversification of China's broader economic landscape. The sustained expansion of the data sector highlights its increasing role in shaping economic growth, driving technological innovation, and reinforcing China's position as a key player in the global data economy.

12.4 Brazil

Brazil has emerged as a pivotal player in the digital economy within Latin America, driven by robust domestic consumption, innovation in technology, and increasing adoption of digital tools across industries. Despite macroeconomic challenges, the nation has shown resilience and adaptability, leveraging its diversified economy to foster growth in its digital and data-driven sectors. In 2023, Brazil's GDP grew by 3.1%, exceeding earlier forecasts due to strong domestic consumption, trade surpluses, and easing inflation – this positive trend is expected to continue into 2024 and 2025. The Central Bank of Brazil began monetary policy easing in August 2023, a move aimed at stimulating investment and economic activity. Inflation fell to 4.7% by the end of the year, marking a decline from the double-digit levels seen during the pandemic. These developments have created a conducive environment for digital transformation initiatives⁴¹. However, structural challenges such as income inequality, a skills gap in the workforce, and infrastructure deficiencies continue to pose hurdles. Investments in digital infrastructure, education, and regulatory frameworks will be critical for sustaining the positive momentum in Brazil's digital economy.

Brazil's digital economy has grown steadily in the period 2022-2024. Among its growth drivers, Brazil's vibrant startups and venture capital ecosystem has played a prominent role. Brazil is home to 77% of Latin America's startups, with sectors such as fintech, health tech, and agritech witnessing significant growth. Startups like Nubank and Loggi have become regional leaders, driving innovation and transforming traditional industries. Venture capital investments in Brazilian startups reached \$6.4 billion in 2023, with notable contributions from U.S. and European investors⁴². Brazil's fintech sector is also prominent and continues to flourish, with companies like Nubank surpassing 80 million customers in 2024. The country has become a regional hub for digital banking and payment solutions, leveraging high smartphone penetration and growing internet access⁴³. Cloud computing and AI are also central to Brazil's digital transformation. Major players such as AWS, Google Cloud, and Alibaba Cloud have expanded their operations in Brazil, providing scalable solutions to businesses. AI applications in logistics, agriculture, and healthcare are also gaining traction, supported by government initiatives and private sector investments⁴⁴. Furthermore, Brazil has made strides in improving its digital infrastructure. The government's "Brazil Digital" initiative aims to expand broadband access to underserved regions, targeting an additional 10 million households by 2025. The General Data Protection Law (LGPD), enacted in 2020, has enhanced Brazil's regulatory alignment with global standards, fostering trust and enabling cross-border data flows⁴⁵.

However, challenges remain. Broadband penetration in rural areas lags urban centres, limiting equitable access to digital opportunities. Additionally, Brazil's high cost of capital and bureaucratic hurdles can deter investment in digital infrastructure projects. What is more, Brazil faces systemic

⁴¹ IMF (2024). World Economic Outlook 2024. International Monetary Fund.

<https://www.imf.org/en/Publications/WEO>; OECD (2023). OECD Economic Surveys: Brazil 2023. Organisation for Economic Co-operation and Development. <https://www.oecd.org/economy/>

⁴² Crunchbase (2024). Startup Ecosystem Reports: Latin America. Crunchbase. <https://www.crunchbase.com/>

⁴³ IDC Brazil (2024). Latin America Data Market Insights 2024. International Data Corporation. <https://www.idc.com/>

⁴⁴ OECD (2023). OECD Economic Surveys: Brazil 2023. Organisation for Economic Co-operation and Development. <https://www.oecd.org/economy/>

⁴⁵ Brazilian Ministry of Communications (2024). Brazil Digital Initiative Report. <https://www.gov.br/mcom/en>

challenges, including low productivity, a skills gap in STEM fields, and income inequality. The country ranks below the OECD average in student performance, highlighting the need for educational reforms. Despite these obstacles, Brazil's large consumer base, growing tech-savvy workforce, and strong startup ecosystem position it as a leader in Latin America's digital transformation⁴⁶.

The outlook for Brazil's digital economy in the short term is optimistic yet cautious. With an estimated GDP growth of 2.5% in 2024, supported by government investments in digital infrastructure and green energy, Brazil's digital sector is poised for incremental gains. Data-driven technologies are expected to underpin sectors such as fintech, logistics, and healthcare, with AI and cloud adoption driving efficiency gains⁴⁷. However, fiscal constraints and geopolitical uncertainties could pose risks to Brazil's digital ambitions. The Novo PAC's successful implementation and sustained foreign investment will be critical in ensuring that the digital economy remains a pillar of Brazil's broader economic strategy. By addressing systemic inefficiencies and fostering a skilled workforce, Brazil has the potential to solidify its position as a regional leader in the data economy while competing on a global stage.

Table 71 and Figure 67 summarise a positive 2024 for the country and the expectation is for further growth.

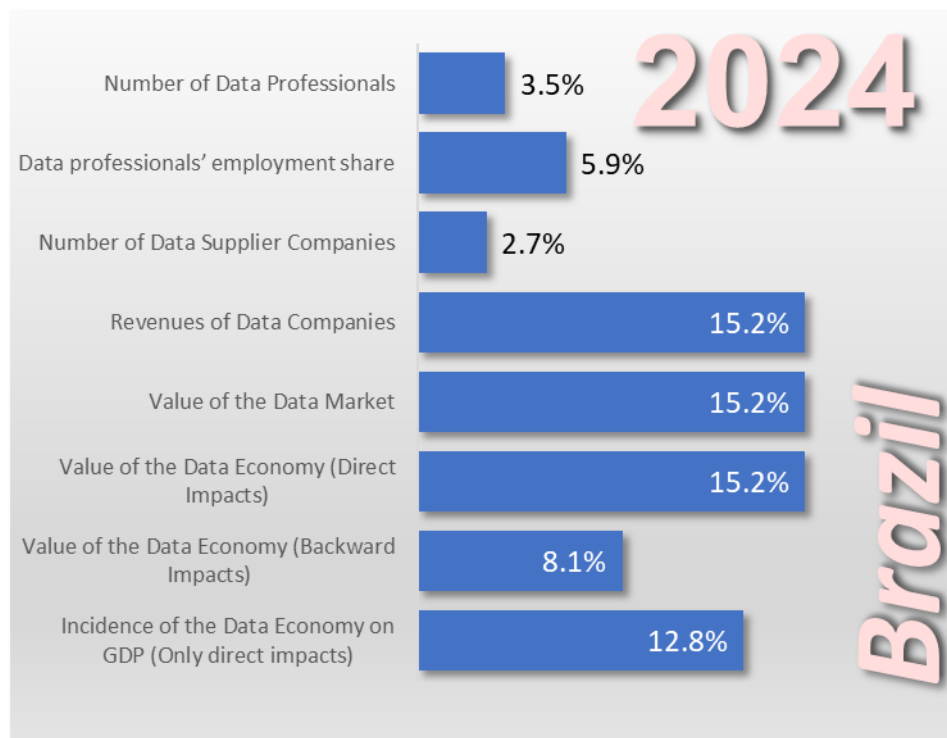
Table 71 - Brazil Indicators 2023-2024 Overview

Name	Metrics	2023	2024	Growth 2023-2024
Number of Data professionals	Total Number of Data professionals (Thousands)	1,478	1,529	3.5%
Data professionals' employment share	% of Data professionals on total employment	2.55%	2.70%	5.9%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	41,593	42,722	2.7%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million Euro)	11,005	12,682	15.2%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	11,005	12,682	15.2%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	11,005	12,682	15.2%
Value of the Data Economy (Backward Impacts)	Backward Impacts (Million €)	13,065	14,120	8.1%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	0.27%	0.30%	12.8%

⁴⁶ OECD (2023). OECD Economic Surveys: Brazil 2023. Organisation for Economic Co-operation and Development. <https://www.oecd.org/economy/>

⁴⁷ IMF (2024). World Economic Outlook 2024. International Monetary Fund. <https://www.imf.org/en/Publications/WEO>

Figure 67- Brazil Annual Growth Rates 2024 - Key Metrics



Brazil's data market has experienced significant expansion in recent years, marked by growth in both workforce participation and industry revenues. The number of data professionals increased from 1.48 million in 2023 to 1.53 million in 2024, reflecting a 3.5% rise. More notably, the employment share of data professionals within the total workforce grew from 2.55% to 2.70%, a 5.9% increase, indicating that data-driven roles are becoming an increasingly vital segment of the labour market. This trend highlights the growing demand for data-related skills, driven by the digitalization of businesses and the public sector. The higher relative increase in employment share compared to absolute job growth suggests that the data sector is gaining prominence within Brazil's overall employment landscape. At the same time, the number of companies supplying data-related products and services rose from 41,593 in 2023 to 42,722 in 2024, representing a 2.7% increase. While moderate, this growth signifies a steady expansion of the data supply sector, with firms either entering the market or scaling their operations. However, the relatively lower growth in the number of companies compared to overall market revenues suggests an ongoing trend of consolidation, where existing players are expanding their operations rather than an influx of numerous new entrants. The financial performance of the data sector also reflects robust growth, with total revenues rising from €11 billion in 2023 to €12.68 billion in 2024, an increase of 15.2%. This growth rate applies not only to total market value but also to the direct economic impact of the data economy, indicating that demand for data-driven solutions and services is accelerating. The adoption of big data analytics, AI-driven applications, cloud computing, and digital transformation initiatives across industries has likely contributed to this surge in revenue, reinforcing the increasing reliance on data as a driver of economic activity.

Beyond direct revenues, the broader economic impact of the data sector has also expanded, though at a more moderate pace. The indirect and induced effects—such as investments in digital

infrastructure, consulting, and IT services—grew by 8.1%, from €13.07 billion to €14.12 billion. This slower growth, compared to the 15.2% increase in direct impacts, suggests that while companies are monetizing data more effectively, the spillover benefits to related industries are developing at a steadier rate. The contribution of the data economy to Brazil's GDP, when considering only direct impacts, increased from 0.27% in 2023 to 0.30% in 2024, a 12.8% rise. Although this indicates a growing strategic importance of data-related industries in the country, Brazil's data economy still lags behind global leaders such as the U.S. and the EU in terms of its relative economic footprint.

12.5 Japan

Japan's economy continues its recovery trajectory in 2024, despite global uncertainties and domestic structural challenges. Real GDP growth is projected at 1.3% for 2024, slightly lower than the 1.5% achieved in 2023, reflecting subdued external demand and persistent inflationary pressures⁴⁸. The depreciation of the yen continues to support exports, particularly in high-tech sectors such as semiconductors and robotics. However, domestic consumption remains weak, partly due to sluggish wage growth and elevated prices. The Bank of Japan (BOJ) is expected to maintain its accommodative monetary policy in 2024, keeping interest rates near zero. This stance, while supporting borrowing and investment, has contributed to the yen's depreciation, currently trading at its weakest levels against the US dollar since 1990. Inflation is forecast at 2.7% for 2024, slightly moderating from 2023 levels but still above historical averages⁴⁹. Structural challenges such as an aging population, shrinking workforce, and geopolitical tensions in the Asia-Pacific region remain key risks to Japan's economic stability.

Japan's digital economy continues to grow in 2024, driven by sustained investments in emerging technologies and digital transformation initiatives. For example, Japan remains a global leader in AI and robotics, with its industrial robotics sector growing by 12% year-over-year in 2024⁵⁰. Companies like Fanuc, SoftBank Robotics, and Kawasaki continue to dominate the global market, with Japanese robotics accounting for 50% of global industrial robotics shipments in 2024. AI applications in healthcare and manufacturing are driving much of this growth⁵¹. Furthermore, Japan's cloud services market is forecast to grow by 20% in 2024, driven by demand for hybrid cloud solutions and the digitalization of supply chains. IoT spending is expected to exceed ¥10 trillion (€65 billion), with applications in smart cities, agriculture, and logistics playing a significant role⁵². The country is also at the forefront in cybersecurity and digital infrastructure: in response to increasing cyber threats, Japan has allocated ¥250 billion (€1.63 billion) for cybersecurity in 2024, up from ¥220 billion in 2023. The focus is on securing critical infrastructure, such as energy grids and healthcare systems, as well as implementing robust data protection measures⁵³. The Japanese government continues its efforts to enhance the country's digital performance. Japan's Digital Garden City Initiative, launched in 2022, is gaining momentum in 2024, with significant progress in digitalizing rural areas. Over 2,000 municipalities have adopted digital solutions to improve public services, from telemedicine to e-governance (Ministry of Internal Affairs and Communications, 2024). Additionally, investments in 5G

⁴⁸ IMF (2024). *World Economic Outlook*. Retrieved from [IMF](#)

⁴⁹ OECD (2024). *Economic Survey of Japan*. Retrieved from OECD

⁵⁰ IDC (2024). *Japan Data Economy Forecast 2024*. Retrieved from [IDC](#)

⁵¹ McKinsey (2024). *The Future of AI and Robotics in Japan*. Retrieved from [McKinsey](#)

⁵² <https://newsroom.accenture.it/it/news/2024/techvision-2024-110324>

⁵³ <https://www.cao.go.jp/index-e.html>

and 6G infrastructure are projected to reach ¥3.5 trillion (€22.7 billion) by the end of 2024, enhancing connectivity and enabling new digital use cases⁵⁴.

While Japan's digital economy shows robust growth, challenges remain. The country still faces issues in digital skills, with only 65% of SMEs adopting basic digital tools in 2024, compared to over 80% in the US and EU⁵⁵. STEM education reforms and upskilling initiatives are essential to bridge this gap. Additionally, Japan's aging population and labour shortages pose long-term risks to productivity and innovation. The outlook for Japan's digital economy in the next 1-2 years remains positive, with annual growth expected to stay above 15%. Emerging technologies such as quantum computing and AI are likely to play a transformative role in sectors like healthcare, manufacturing, and financial services. With continued investments in digital infrastructure and policy support, Japan is well-positioned to maintain its status as a global leader in technology and innovation while addressing structural challenges to ensure inclusive and sustainable growth.

Table 72 and Figure 68 summarise the key and up-to-date indicators for Japan's data economy and data market.

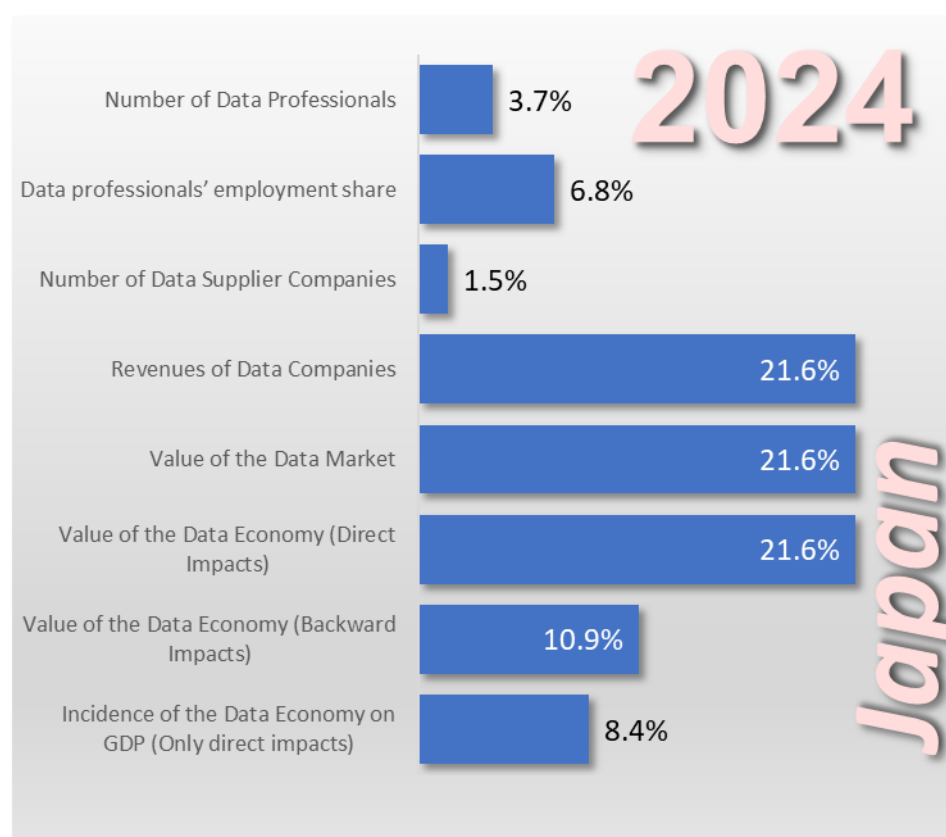
Table 72 - Japan Indicators 2023-2024 overview

Name	Metrics	2023	2024	Growth 2023-2024
Number of Data professionals	Total Number of Data professionals (Thousands)	4,628	4,801	3.7%
Data professionals' employment share	% of Data professionals on total employment	7.73%	8.25%	6.8%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	109,950	111,610	1.5%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million Euro)	54,026	65,703	21.6%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	54,026	65,703	21.6%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	54,026	65,703	21.6%
Value of the Data Economy (Backward Impacts)	Backward Indirect Impacts (Million €)	47,970	53,200	10.9%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	1.51%	1.63%	8.4%

⁵⁴ https://www.soumu.go.jp/main_sosiki/joho_tsusin/eng/pressrelease/2024/9/20_4.html

⁵⁵ <https://www.oecd.org/en/about/news/press-releases/2024/05/economic-outlook-steady-global-growth-expected-for-2024-and-2025.html#:~:text=The%20global%20economy%20is%20continuing%20growing%20at%20a,by%20a%20slight%20pick-up%20to%203.2%25%20in%202025.>

Figure 68- Japan Annual Growth Rates 2023 - Key Metrics



The Japanese data economy exhibited significant growth between 2023 and 2024, reflecting the increasing importance of data-driven industries in the country's broader economic landscape. The total number of data professionals increased by 3.7%, reaching approximately 4.8 million in 2024. However, the employment share of data professionals remained stable at 8.3% of the total workforce, suggesting that while the absolute number of professionals in this field is rising, their proportion within overall employment has plateaued. The number of data supplier companies also saw a modest increase of 1.5%, reaching over 111,000 firms in 2024. While this growth indicates steady expansion, the relatively slow pace suggests that market consolidation may be occurring, with larger, more established firms strengthening their positions rather than a proliferation of new entrants. A key highlight of this period was the substantial revenue growth of data companies, which surged by 21.6% to €65.7 billion. This remarkable expansion is mirrored in the value of the data market and direct impacts of the data economy, both of which also saw an identical 21.6% increase. Such growth underscores the expanding demand for data-driven solutions, analytics, and services across Japan's economy. Beyond direct contributions, the backward indirect impacts of the data economy, which account for spillover effects on supporting industries, also experienced solid growth of 10.9%, reaching €53.2 billion. This increase highlights the wider economic benefits of a thriving data market, as various sectors—including infrastructure, IT services, and research—reap gains from the expansion of data-centric business activities. The incidence of the data economy on GDP (considering only direct impacts) rose from 1.51% in 2023 to 1.63% in 2024, marking an 8.4% growth in its overall contribution to national economic output. This rise signals the growing role of data-related industries in Japan's economic framework, reinforcing the strategic importance of fostering policies that support data innovation, infrastructure, and workforce development.

12.6 Israel

Israel's macroeconomic status reflects a robust and resilient economy, though recent challenges, including geopolitical tensions and domestic political instability, have introduced uncertainty. In 2023, Israel's GDP growth slowed to 2.5% from the 6.5% recorded in 2021 due to global economic deceleration, inflationary pressures, and rising interest rates⁵⁶. However, unemployment remains low at around 4%, and public debt has stabilized at approximately 60% of GDP, showcasing prudent fiscal management⁵⁷. The war in Gaza has exacerbated economic uncertainty, with potential long-term impacts on foreign direct investment (FDI) and consumer confidence. Security concerns and political upheavals, such as controversies surrounding judicial reforms, have also led to protests and raised investor caution. However, the resilience of Israel's high-tech sector and government commitment to economic stability offer a buffer against these challenges. According to the Bank of Israel, the economic damage from conflict is expected to reduce 2024 growth forecasts by 1.5 percentage points, though a recovery trajectory is projected by 2025⁵⁸.

Notwithstanding this potential threat, Israel remains a global leader in the digital economy, contributing significantly to national economic growth. The country ranks high in the World Digital Competitiveness Index, with advanced capabilities in innovation, data-driven technologies, and a vibrant startup ecosystem⁵⁹. The country boasts a significantly high R&D expenditure, at 4.1% of GDP, which surpasses global averages and sustains its technological leadership⁶⁰.

Israel excels in several core sectors. In cybersecurity, the country accounts for 15% of global cybersecurity exports⁶¹, with companies like Check Point, CyberArk, and SentinelOne at the forefront. Global firms have established cybersecurity R&D centres in Israel, further enhancing its ecosystem. In Artificial Intelligence (AI), the country counts more than 1,300 Israeli enterprises focusing on applications in healthcare, automotive, and defence. AI startups attracted \$3.5 billion in investment in 2023 (approximately €3.3 Billion), representing nearly 50% of all tech investment in the country⁶². Israel is also at the forefront of digital health. The National Digital Health Initiative has propelled the country as a global hub for health innovation. Companies like Zebra Medical and Healthy.io are leveraging AI and data analytics for diagnostics and remote care solutions⁶³. Other technology areas see Israel in a prominent position: Israeli fintech startups, such as Pagaya and eToro, are driving financial innovation. The Bank of Israel is also piloting a digital shekel to explore the potential of blockchain for financial transactions⁶⁴. In semiconductors, Intel's development centres in Haifa, Petah Tikva and Jerusalem contribute significantly to global chip design, with the company adding a leading

⁵⁶ <https://www.imf.org/en/Publications/WEO>

⁵⁷ https://www.oecd.org/en/publications/oecd-economic-outlook/volume-2023/issue-1_ce188438-en.html

⁵⁸ <https://www.boi.org.il/en/>

⁵⁹ <https://www.boi.org.il/en/>

⁶⁰ https://www.oecd.org/en/publications/oecd-economic-outlook/volume-2023/issue-1_ce188438-en.html

⁶¹ [https://jewishbusinessnews.com/2022/12/21/israel-innovation-authority-allocates-millions-for-new-technology-trends-](https://jewishbusinessnews.com/2022/12/21/israel-innovation-authority-allocates-millions-for-new-technology-trends-2023/#:~:text=The%20Israel%20Innovation%20Authority%20has%20outlined%20areas%20of,metamaterials%20and%20metasurfaces%2C%20and%20black%20soldier%20fly%20farming.)

[2023/#:~:text=The%20Israel%20Innovation%20Authority%20has%20outlined%20areas%20of,metamaterials%20and%20metasurfaces%2C%20and%20black%20soldier%20fly%20farming.](https://jewishbusinessnews.com/2022/12/21/israel-innovation-authority-allocates-millions-for-new-technology-trends-2023/#:~:text=The%20Israel%20Innovation%20Authority%20has%20outlined%20areas%20of,metamaterials%20and%20metasurfaces%2C%20and%20black%20soldier%20fly%20farming.)

⁶² <https://startupnationcentral.org/>

⁶³ <https://www.gov.il/en/pages/about-national-digital-agency>

⁶⁴ <https://www.boi.org.il/en/>

manufacturing facility in Kiryat Gat. Startups like Tower Semiconductor and Mobileye are also advancing chip innovation for automotive and industrial applications⁶⁵.

Despite current geopolitical challenges, Israel's digital economy is poised for continued growth. Investments in emerging technologies, a well-established ecosystem for innovation, and strong global partnerships are expected to sustain its leadership position. The government's focus on digital transformation through initiatives like "Digital Israel" and its emphasis on fostering collaboration between academia and industry are crucial drivers. Notwithstanding the ongoing conflicts in the Middle East, the OECD estimated a GDP growth in Israel of 0.6% in 2024 over the previous year. GDP growth is projected to be 2.4% in 2025 and 4.6% in 2026, while military expenditure keeps government demand high. However, the economic outlook remains uncertain due to potential escalations in regional tensions and their impact on domestic and international markets⁶⁶.

The main indicators for Israel's data market and data economy are outlined in the table and in the graph below.

Table 73 Israel Indicators 2023-2024 overview

Name	Metrics	2023	2024	Growth 2023-2024
Number of Data professionals	Total Number of Data professionals (Thousands)	182	193	5.7%
Data professionals' employment share	% of Data professionals on total employment	5.12%	5.31%	3.7%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	42,930	54,320	26.5%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million Euro)	2,994	3,303	10.3%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	2,994	3,303	10.3%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	2,994	3,303	10.3%
Value of the Data Economy (Backward Impacts)	Backward Indirect Impacts (Million €)	3,461	3,630	4.9%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	0.61%	0.66%	9.1%

⁶⁵<https://www.nytimes.com/2023/12/27/world/middleeast/intel-israel-factory-expansion.html#:~:text=The%20semiconductor%20giant%20Intel%20confirmed%20on%20Wednesday%20that,major%20investment%20in%20a%20country%20currently%20at%20war.>

⁶⁶ https://www.oecd.org/en/publications/oecd-economic-outlook-volume-2024-issue-2_d8814e8b-en/full-report/israel_f19fef21.html

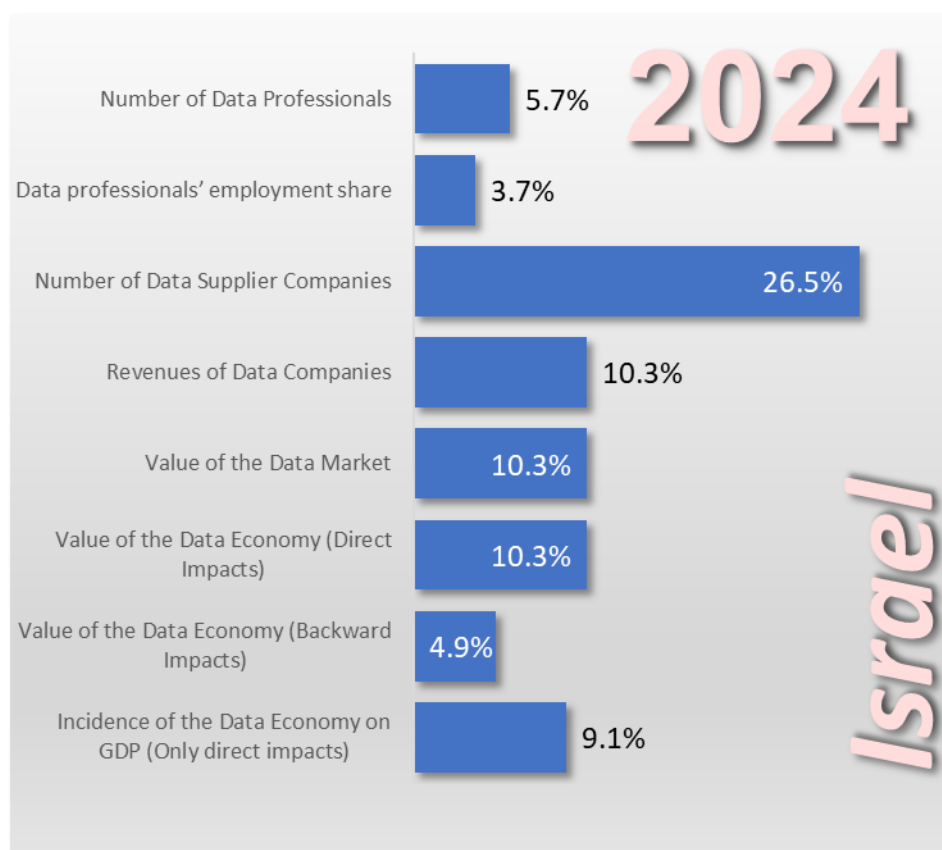


Figure 69 Israel Annual Growth Rates 2024 - Key Metrics

The number of data professionals in Israel has grown from 182,000 in 2023 to 193,000 in 2024, representing a 5.7% increase. This growth underscores the rising demand for data-related expertise across industries, reflecting the expanding role of data-driven decision-making in both private and public sectors. Similarly, the employment share of data professionals has risen from 5.12% to 5.31%, marking a 3.7% increase. This trend suggests that data-related roles are becoming a larger component of the national labour market, reinforcing the significance of data skills in the workforce. A particularly striking growth is observed in the number of data supplier companies, which has surged by 26.5%, from 42,930 in 2023 to 54,320 in 2024. This notable expansion indicates a highly dynamic and competitive data ecosystem, likely driven by increasing investments in digital technologies, innovation in data services, and government policies fostering the digital economy. The rise in data supplier companies suggests that Israel is experiencing rapid entrepreneurship and business development in the data sector, further strengthening its position as a global technology and data hub.

In terms of revenues generated by data companies, the data market's value has grown by 10.3%, from €2,994 million in 2023 to €3,303 million in 2024. This increase highlights sustained demand for data-related products and services, suggesting that businesses are increasingly leveraging data analytics, artificial intelligence, and other data-driven innovations to enhance efficiency, competitiveness, and profitability. The value of the Data Economy, which includes both direct and indirect impacts, has also increased. The direct impact of the data economy grew by 10.3%, in line with the expansion of data-driven business activities. Meanwhile, backward indirect impacts—which account for the ripple effects of data economy growth on other sectors—saw a 4.9% increase, indicating that data-driven

industries are positively influencing related economic activities such as cloud computing, cybersecurity, and digital infrastructure development. The overall incidence of the data economy on Israel's GDP has improved, rising from 0.61% in 2023 to 0.66% in 2024, reflecting a 9.1% growth. This trend signifies that data-driven activities are becoming a more substantial contributor to the national economy, reinforcing Israel's reputation as a digital leader. The increasing economic weight of data-related sectors suggests that investments in data infrastructure, innovation, and digital policies will continue to be crucial drivers of economic expansion.

12.7 Comparing the Internationals to the EU27

Following the challenges posed by the pandemic, energy crises, inflationary tensions and geopolitical upheavals, the European Union (EU27) finds itself at a critical juncture. While the EU has made significant strides in strengthening its digital economy, the global competitive landscape continues to evolve at a rapid pace, with the United States and China dominating the field. As inflationary pressures ease and economic activity stabilizes, the EU's commitment to fostering a resilient, green, and digital economy continues to strengthen its global standing. Indeed, despite structural hurdles, the EU's data market and broader digital economy remain robust, demonstrating steady growth and reflecting the impacts of targeted policy efforts like the Digital Decade Policy Programme and European Data Strategy.

The economic outlook for the European Union (EU27) remains cautiously optimistic despite ongoing global challenges, including geopolitical tensions, inflationary pressures, and structural transitions toward a green and digital economy. According to the European Commission's Spring 2024 Economic Forecast, the EU economy is poised for gradual recovery, with real GDP growth projected to rise to 1.0% in 2024 and further accelerate to 1.6% in 2025. This follows a period of slowdown in 2023, where growth was subdued at 0.8%, reflecting the lingering effects of energy price shocks, tighter monetary policies, and subdued consumer spending. The EU's growth trajectory aligns with a broader global economic deceleration. However, the region has shown resilience by navigating headwinds stemming from Russia's war in Ukraine, disruptions in global supply chains, and persistent inflation. Inflation, which peaked at 9.2% in 2022, is expected to continue its downward trend, reaching 3.0% in 2024 and 2.5% in 2025. This reflects a combination of falling energy prices, improved supply conditions, and the European Central Bank's (ECB) tight monetary stance. Core inflation, however, remains more persistent due to labour market strength and wage increases.

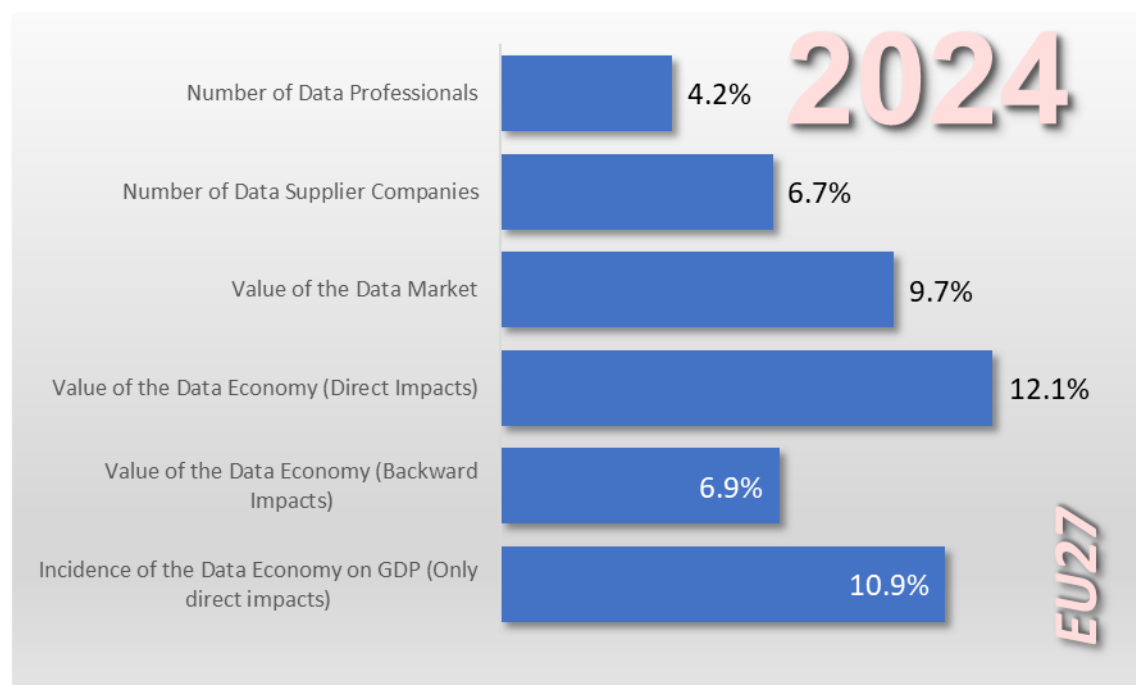
Amid this complicated context, the EU27 data market and data economy performed well in 2024. The data market marked a 9.7% annual increase reaching an absolute value of €90 billion. The data economy, measured in terms of direct impacts only, totalled €132,7 billion in the same year, with a direct contribution to GDP of more than 1%. While Europe lags behind the US in scale and speed, its focus on digital sovereignty, innovation, and cross-border collaboration sets a solid foundation for long-term competitiveness. To bridge the gap with global leaders, Europe must accelerate investments in digital skills, streamline its policy environment, and support SMEs in scaling digital transformation. The next decade will be crucial for determining whether Europe can harness its strengths to become a global leader in the digital and data economy.

The relevant EU27 indicators are re-posted in Table 74 and Figure 70 to give a reference for comparison with the other international countries covered in this chapter.

Table 74 - EU27 indicators 2023-2024 Overview

Name	Metrics	2023	2024	Growth 2024-2023
Number of Data professionals	Total Number of Data professionals (Thousands)	7,897	8,232	4.2%
Data professionals' employment share	% of Data professionals on total employment	4.4%	4.5%	2.2%
Number of Data Supplier Companies	Total number of data supplier companies (000s)	249,446	266,173	6.7%
Revenues of Data Companies	Total revenues generated by companies specialized in the supply of data-related products and services (Million €)	92,727	103,171	11.3%
Value of the Data Market	Estimate of the overall a value of the Data Market (Million €)	82,087	90,036	9.7%
Value of the Data Economy (Direct Impacts)	Direct Impacts (Million €)	118,364	132,718	12.1%
Value of the Data Economy (Backward Impacts)	Backward Indirect Impacts (Million €)	130,069	139,000	6.9%
Incidence of the Data Economy on GDP (Only direct impacts)	Ratio between value of the Data Economy and GDP (%)	0.9%	1.0%	11%

Figure 70- EU27 Annual Growth Rates 2024 - Key Metrics



In the EU27, the number of data professionals increased to 8.2 million in 2024, marking a 4.2% rise from the previous year. This expansion highlights the growing demand for data expertise across industries, reinforcing the central role of data-driven decision-making in the European labour market. Correspondingly, the share of data professionals in total employment expanded by 2.2%, suggesting

that more individuals are transitioning into data-related roles or that companies are investing in digital competencies. At the corporate level, the number of data supplier companies saw a substantial increase of 6.7% in 2024, rising to more than 266,000 firms. This signals a flourishing ecosystem of businesses dedicated to data production, management, and analytics, underlining the sector's dynamism. The growth of these companies correlates with the rising value of the data market, which has also expanded by 9.7% reaching €90 billion in 2024. This reflects the increasing economic significance of data as a commodity, with organizations leveraging data assets for strategic insights, innovation, and competitive advantage.

Beyond direct market value, the broader economic impact of data is evident in both direct and indirect contributions to the economy. The direct impact of the data economy grew by 12.1%, indicating its increasing weight in Europe's economic structure. Additionally, the backward indirect impacts—representing secondary effects on other sectors—rose by 6.9%, emphasizing the far-reaching influence of data-related activities in 2024. Finally, the incidence of the data economy on GDP, measuring direct contributions, has also seen growth, reinforcing the fact that data-driven activities are not only expanding in scale but also in their fundamental contribution to economic performance. Overall, these indicators point to a thriving and increasingly integrated data economy within the EU, characterized by workforce expansion, business growth, and a rising economic footprint across multiple sectors.

12.7.1 Data professionals

The European Union (EU27) continues to show steady growth in the number of data professionals, reaching 8.2 million in 2024 with a 4.2% year-on-year increase from 7.9 million in 2023. Despite this progress, the EU remains behind key international competitors, particularly the United States and China, both of which report significantly larger numbers and faster growth rates.

In absolute terms, the United States leads the comparison, with 21.4 million data professionals in 2024, marking an impressive 7.5% annual growth. This substantial figure reflects the continued dominance of the US in the global digital economy, driven by a thriving data market and sustained investments in advanced technologies such as AI, cloud computing, and big data analytics. The relative employment share of data professionals in the US also reflects its growing focus on digital transformation across all sectors.

China, while reporting a lower employment share due to its vast overall labour market, emerges as the fastest-growing country in this indicator. The total number of data professionals in China is projected to rise to 11.5 million in 2024, representing a remarkable 20.9% annual growth rate. This rapid increase underscores China's focus on upskilling its workforce, substantial investments in emerging technologies, and its efforts to position itself as a global leader in the data-driven economy. Nevertheless, China's large agricultural labour force continues to weigh on its overall employment share, a trend that differentiates it from other regions.

Japan, despite its strong technological base and digital infrastructure, shows slower growth in this indicator, with the number of data professionals increasing to 4.8 million in 2024, reflecting a modest 3.7% growth rate. Japan faces persistent challenges in addressing its long-standing productivity issues and the slow adoption of digital tools by small and medium enterprises (SMEs). The relatively slow growth in the number of data professionals highlights the need for intensified efforts in education, STEM training, and workforce re-skilling.

Israel, a relatively small economy, stands out for its robust digital and data-driven innovation ecosystem. The number of data professionals in Israel is expected to grow to 193,000 in 2024, representing a 5.7% increase. While the absolute number remains low compared to larger economies, Israel's high data professional employment share reflects its strong focus on technology, start-ups, and cutting-edge industries.

Brazil reports the smallest total number of data professionals among the regions under consideration, with 1.5 million expected in 2024 and a 3.5% annual growth rate. This slower growth highlights the ongoing structural challenges within Brazil's economy, including its relatively lower adoption of advanced digital technologies and limited STEM education pipeline.

In comparison, the EU27's performance places it firmly in the middle range of the analysed economies. While its 4.2% growth rate indicates moderate progress, the EU27 faces significant challenges in keeping pace with faster-growing competitors like China and maintaining its competitiveness vis-à-vis the United States. Structural barriers to digital transformation, such as fragmented policies, limited firm-level investments in digital skills, and workforce shortages, remain key hurdles. Addressing these issues will require a renewed focus on education and training programs to meet the rising demand for data professionals. In particular, the reskilling and upskilling of existing workers, especially in SMEs, will be essential to bridge the skills gap and support the EU's transition to a fully digitalized economy. The EU27's relative strengths lie in its ability to foster a sustainable, human-centric digital transformation that prioritizes collaborative innovation and inclusive workforce development. However, to close the gap with global leaders, the EU must accelerate initiatives under the Digital Decade Policy Programme and the European Skills Agenda to ensure a sufficient supply of highly skilled data professionals across all Member States.

Table 75 - Internationals: number of Data Professionals 2023-2024

	2023	2024	Growth 2024-2023
USA	19,874	21,373	7.5%
Brazil	1,478	1,529	3.5%
Israel	182	193	5.7%
Japan	4,628	4,801	3.7%
China	9,550	11,545	20.9%
EU27	7,897	8,232	4.2%

Figure 71 - Internationals: Number of Data Professionals 2023-2024

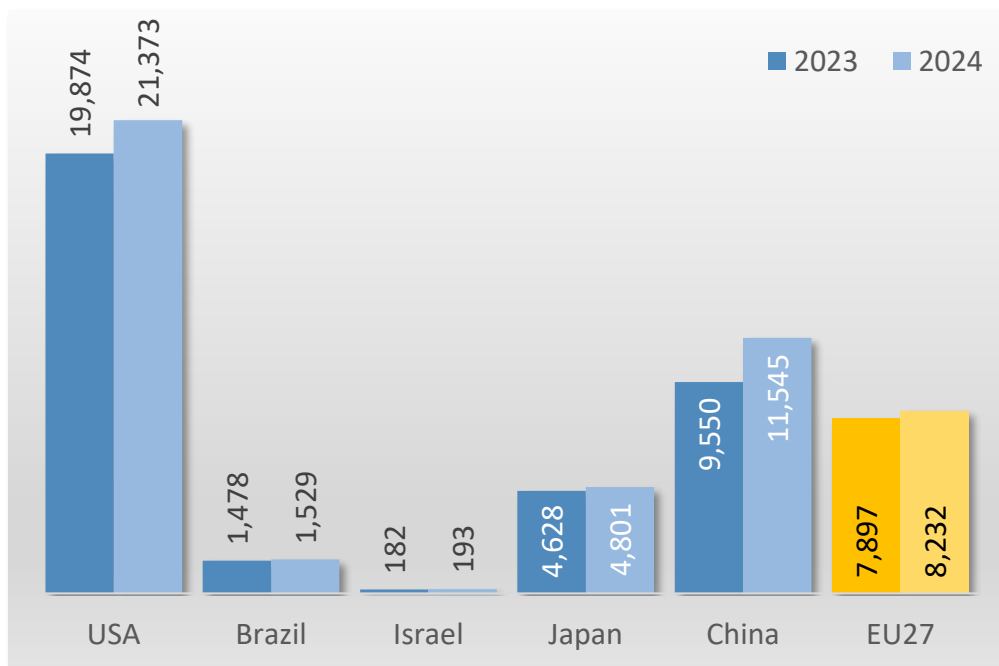


Table 76 – Internationals: Data Professionals - share of Total employment 2023-2024

	2022	2023	2024	Growth 2023-2024
Brazil	2.5%	2.6%	2.7%	5.9%
Japan	8.7%	8.8%	8.8%	-
United States	12.8%	13.4%	15.3%	2.1%
PRC	1.3%	1.6%	1.8%	1.17%
Israel	NA	5.1%	5.3%	1.0%
EU27	4.1%	4.2%	4.5%	1.1%

12.7.2 Data Supplier Companies

The EU27 demonstrates steady progress in the number of data supplier companies, with an estimated 266,173 companies in 2024, reflecting a 6.7% growth rate from 249,446 in 2023 (IDC, 2024). This growth positions the EU as a key player in the global data ecosystem, outperforming major international regions such as the United States, China, and Japan in terms of year-on-year growth. However, significant disparities remain when comparing absolute figures, particularly with China and the United States.

China leads the global stage in the number of data supplier companies, with 917,113 companies expected in 2024, representing two-thirds of the total global share. Although China's 1.8% growth rate is comparatively modest, its sheer scale is unmatched. The vast number of data companies reflects China's thriving digital economy, which is fuelled by its enormous domestic market, substantial investments in AI, cloud infrastructure, and big data solutions, as well as its dynamic start-up ecosystem. However, much of this expansion is driven by large state-backed initiatives and major players consolidating their market presence.

The United States follows with 341,586 data supplier companies forecasted for 2024, exhibiting a slower 1.9% growth rate. Despite its moderate growth, the US maintains a significant edge in terms of innovation, scale, and competitiveness. The dominance of Big Tech firms such as Amazon, Microsoft, Google, and Meta has led to a highly integrated market where smaller, specialized firms are often acquired to enhance the capabilities of larger platforms. While this model fosters innovation, it also contributes to market concentration, potentially slowing down the emergence of new independent data suppliers.

Japan, with 111,610 companies in 2024 and a marginal 1.5% growth rate, continues to lag behind in this indicator. The relatively slow increase highlights ongoing challenges within Japan's SME sector, where smaller firms struggle to adopt digital technologies due to limited resources and digital skills gaps. While Japan remains a global leader in robotics and industrial data solutions, more robust policies to support digitalization among its SMEs will be crucial to accelerating its data market expansion.

A particularly noteworthy development is seen in Israel, where the number of data supplier companies is forecasted to jump from 42,930 in 2023 to 54,320 in 2024, marking an impressive 26.5% growth rate—the highest among all regions analysed. Israel's exceptional performance underscores its strong innovation ecosystem, particularly in high-tech sectors such as cybersecurity, AI, and data analytics, which attract significant domestic and foreign investments. The country's vibrant start-up culture, bolstered by public-private collaborations, positions it as a leading hub for data-driven enterprises.

Brazil, while experiencing a slower 2.7% growth rate, shows a positive trend with 42,722 data supplier companies expected in 2024. Brazil's expanding digital economy, coupled with its growing start-up ecosystem, highlights opportunities for specialized data companies. However, structural challenges such as limited access to digital infrastructure and skills gaps in the workforce continue to constrain its full potential.

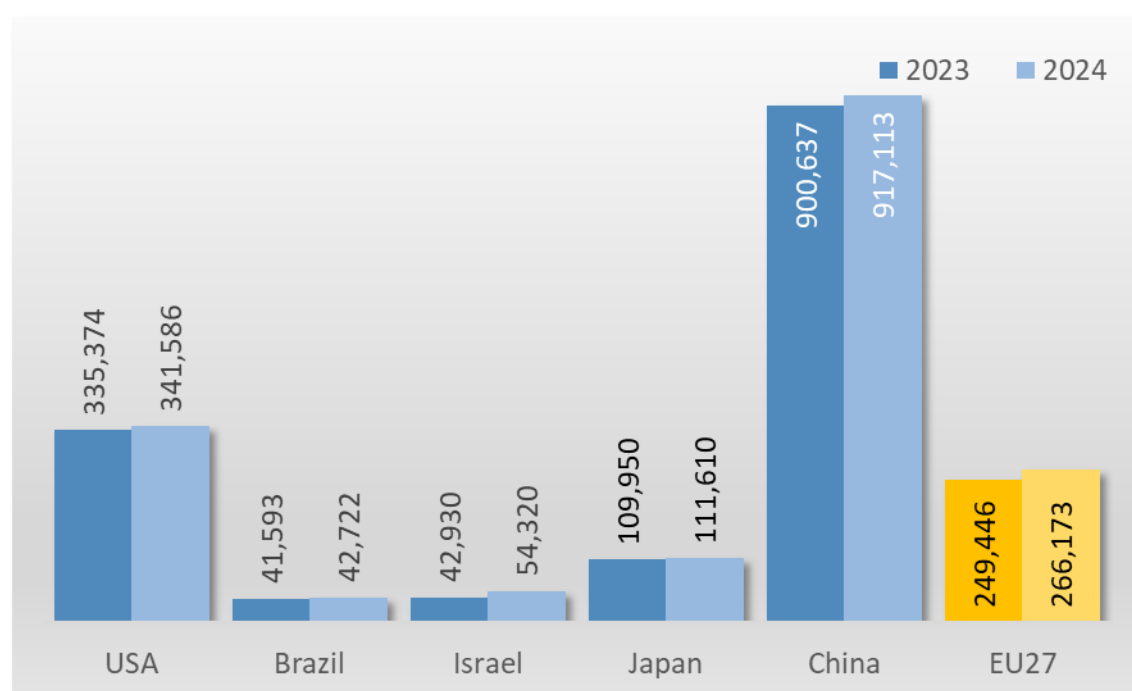
For the EU27, the strong 6.7% growth rate in the number of data supplier companies reflects an increasingly dynamic market. European firms are benefiting from specialized niches across industries, leveraging advances in AI, IoT, and big data analytics to provide tailored services. Emerging companies are often highly specialized, addressing specific needs such as demand forecasting, energy optimization, and precision healthcare. However, challenges remain, including fragmented digital markets, policy inconsistencies, and the need for further investment in SMEs to scale their operations across the Single Market.

To maintain its growth trajectory and competitiveness, the EU must continue fostering innovation and supporting its SMEs—a core driver of its data economy. Policies under the Digital Decade Strategy and initiatives such as the Digital Europe Programme are crucial to addressing barriers, promoting cross-border collaboration, and ensuring that the EU remains a fertile ground for data-driven businesses to thrive.

Table 77 - Internationals: Number of Data Supplier Companies 2023-2024, growth 2024-2023 (thousands; %)

	2023	2024	Growth 2022-2023
United States	335,374	341,586	1.9%
Brazil	41,593	42,722	2.7%
Israel	42,930	54,320	26.5%
Japan	109,950	111,610	1.5%
China	900,637	917,113	1.8%
EU27	249,446	266,173	6.7%

Figure 72 - Internationals: Number of Data Supplier Companies 2023-2024



12.7.3 Data Market

While the EU27's data market growth of 9.7% is encouraging, it lags behind competitors like the US, China, and Japan. The comparatively slower growth is indicative of structural challenges within the EU, including fragmented digital markets, inconsistent policies across Member States, and barriers to scaling innovations. Additionally, the smaller average company size compared to the US and China hampers the EU's ability to foster large-scale data enterprises.

However, the EU's performance remains notable when considering its strong policy frameworks and initiatives under the Digital Decade Strategy and the Digital Europe Programme. These efforts aim to address fragmentation and accelerate the adoption of advanced technologies such as cloud computing, AI, and IoT. Moreover, significant EU investments, including those under the European

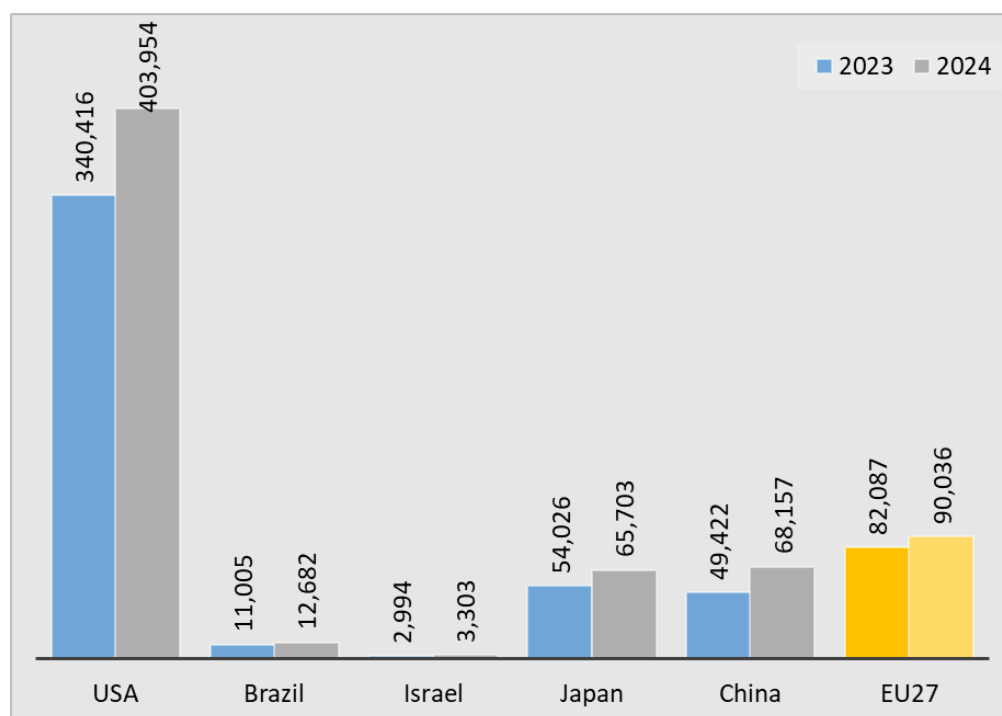
Data Strategy and the Common European Data Spaces, aim to position Europe as a leader in data-driven innovation.

For the EU to close the gap with global leaders, it will need to continue investing in digital infrastructure, cross-border data initiatives, and skills development. Strengthening support for SMEs, enhancing data-sharing mechanisms, and fostering a Single Market for data will be pivotal to boosting competitiveness and unlocking the full potential of the EU's data market.

Table 78 - Internationals: value of the data market 2023-2024 and growth 2024-2023 ((€M; %)

	2023	2024	Growth 2024-2023
United States	340,416	403,954	18.7%
Brazil	11,005	12,682	15.2%
Israel	2,994	3,303	10.3%
Japan	54,026	65,703	21.6%
China	49,422	68,157	37.9%
EU27	82,087	90,036	9.7%

Figure 73 - Internationals Data Market Value 2023-2024 (€M)



12.7.4 The Data Economy

While the EU27's data economy remains a critical driver of growth, contributing substantially to GDP and supporting millions of data professionals, its 10% growth in direct impacts falls behind the more dynamic performances of China (38%), Japan (22%), and the United States (19%). The slower growth reflects ongoing structural challenges, such as fragmented digital markets, inconsistent data policies, and barriers to scaling innovations across the Single Market.

The EU's Digital Decade Strategy and initiatives like the Common European Data Spaces aim to address these barriers by enhancing cross-border data flows, supporting SMEs, and fostering innovation. However, to remain competitive, the EU must accelerate investment in emerging technologies, such as AI, IoT, and cloud computing, while ensuring greater coordination among Member States to scale up the data economy. In particular, the EU's indirect impacts—which reached €139 billion in 2024—underscore the importance of the data value chain across multiple industries, including manufacturing, healthcare, and logistics. Still, the EU's reliance on smaller firms compared to US and Chinese counterparts limits its ability to leverage economies of scale.

Looking forward, the EU's ability to unlock the full potential of its data economy will depend on addressing skills shortages, supporting SMEs through investment and digital tools, and fostering a unified regulatory environment. The region's emphasis on data sovereignty, privacy, and trust under the General Data Protection Regulation (GDPR) remains a competitive advantage, but balancing these principles with innovation and scalability will be key to ensuring sustained growth in the coming years.

Table 79 - Internationals: Data economy - economic Impact (direct and backwards impacts) 2023-2024, growth 2023-2024 (€M; %)

		2023	2024	Growth 2024-2023
Brazil	Internationals - Direct impacts	11,005	12,682	15%
Brazil	Internationals - Backwards impacts	13,065	14,120	8%
Japan	Internationals - Direct impacts	54,026	65,703	22%
Japan	Internationals -Backwards impacts	47,970	53,200	11%
China	Internationals - Direct impacts	49,422	68,157	38%
China	Internationals -Backwards impacts	53,586	61,134	14%
Israel	Internationals - Direct impacts	2,994	3,303	10%
Isreal	Internationals - Backwards impacts	3,461	3,630	5%
United States	Internationals - Direct impacts	340,416	403,954	19%
United States	Internationals - Backwards impacts	306,540	350,760	14%
EU27	Internationals - Direct impacts	118,364	132,718	12%
EU27	Internationals - Backwards impacts	130,069	139,000	7%

Figure 74 - Internationals - Economic Impacts 2023-2024

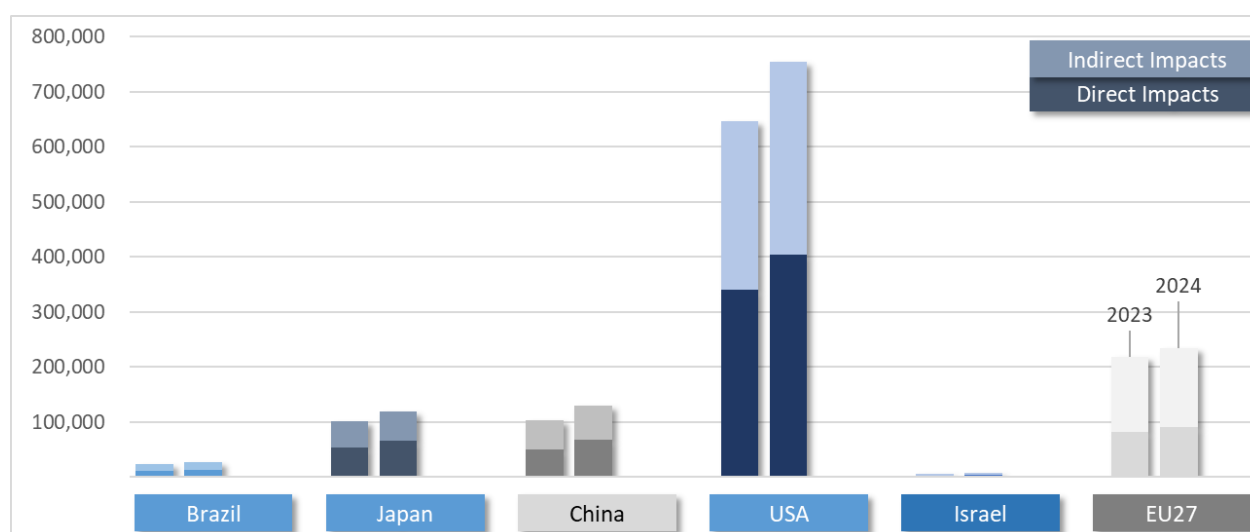
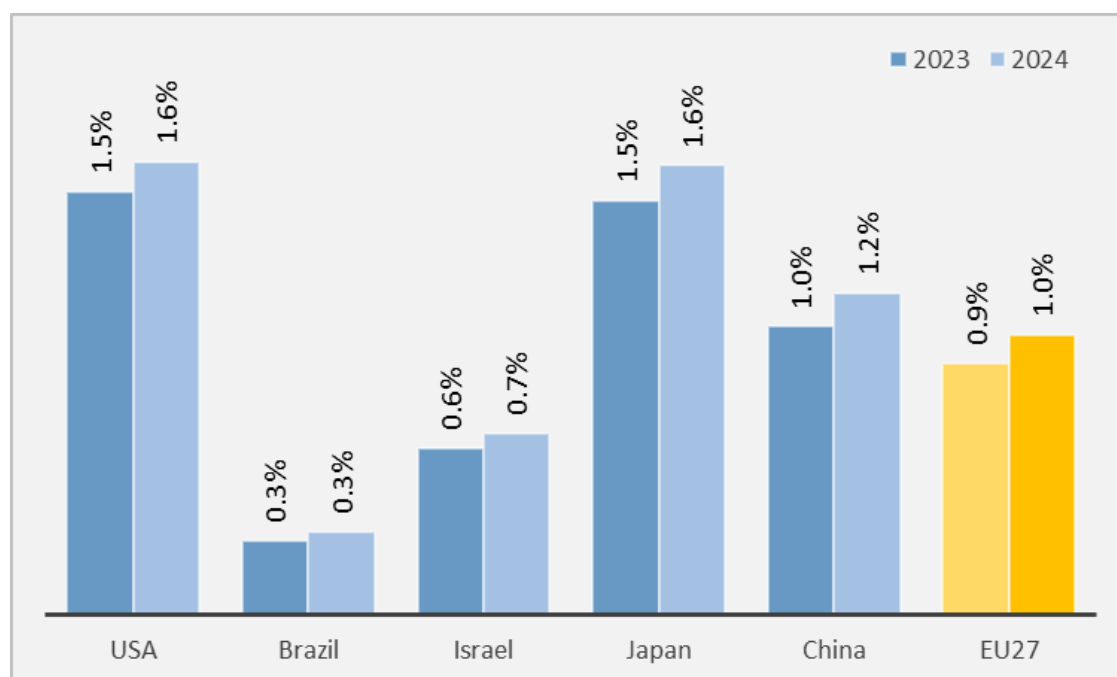


Table 80 and Figure 75 show the incidence of the data economy on the total economy, and the EU shows the highest growth for 2023, although the incidence of direct and indirect impacts is again among the lowest of the internationals.

Table 80 - Internationals: Impact of the Data Economy on GDP 2024-2023 (Direct and Indirect impacts)(thousands; %)

	2023	2024	Growth 2022- 2023
United States	646,956	754,714	16.7%
Brazil	24,070	26,802	11.4%
Israel	6,455	6,933	7.4%
Japan	101,996	118,903	16.6%
China	103,008	129,291	25.5%
EU27	217,377	234,468	7.9%

Figure 75 - Internationals - Impact of the Data Economy (direct impacts only) on GDP 2023-2024 and 2023-2024 Growth (%)



12.8 Key Findings

The European Data Market study continues to highlight the importance of the data economy and data market in shaping Europe's capacity to drive innovation, enhance competitiveness, and bolster its position in the global digital landscape. Indicators from the EU27 showcase steady progress across key dimensions, although challenges persist when compared to other major global players.

The number of data professionals in the EU27 reached 7.9 million in 2023 and is projected to grow by 4.2% to 8.2 million in 2024. While this growth underscores the EU's ongoing efforts to address the rising demand for digital skills, the region lags behind the United States, which boasted 19.9 million in 2023 and 21.4 million data professionals in 2024 (+7.5%). China, with its massive workforce, is rapidly expanding, achieving a 20.9% growth to 11.5 million professionals in 2024. Japan and Brazil exhibit slower growth rates of 3.7% and 3.5%, respectively, while Israel, although smaller in absolute terms, demonstrates a solid increase of 5.7% to 193,000 data professionals. These figures highlight the EU's progress but also underline the need for greater investments in education, training, and reskilling to compete effectively with global leaders.

The number of data supplier companies in the EU27 grew from 249,446 in 2023 to a projected 266,173 in 2024 (+6.7%). This rate outpaces the growth seen in other mature markets like the United States (+1.9%) and Japan (+1.5%), but China remains a dominant player with over 917,000 companies (+1.8%). Israel, a notable outlier, is expected to see an impressive 26.5% growth, reinforcing its reputation as a dynamic hub for digital innovation.

While the EU's ecosystem of data suppliers remains competitive, fragmentation and barriers to scale continue to impede its potential to rival global markets such as the US or China.

The value of the data market in the EU27 is projected to grow by 9.7%, from €82.1 billion in 2023 to more than €90 billion in 2024. Despite this steady growth, the EU lags significantly behind the United States, where the data market is expected to reach €404 billion (+18.7%) in 2024. China is also rapidly advancing, with an anticipated value of €68.2 billion (+37.9%), while Japan and Brazil exhibit strong growth rates of 21.6% and 15.2%, respectively. Israel, while smaller in scale, shows a notable 10.3% growth, reinforcing its strategic role in niche markets. These comparisons underline the EU's position as a leading data market globally but also highlight the need for further digital integration and investment to close the gap with the US and China.

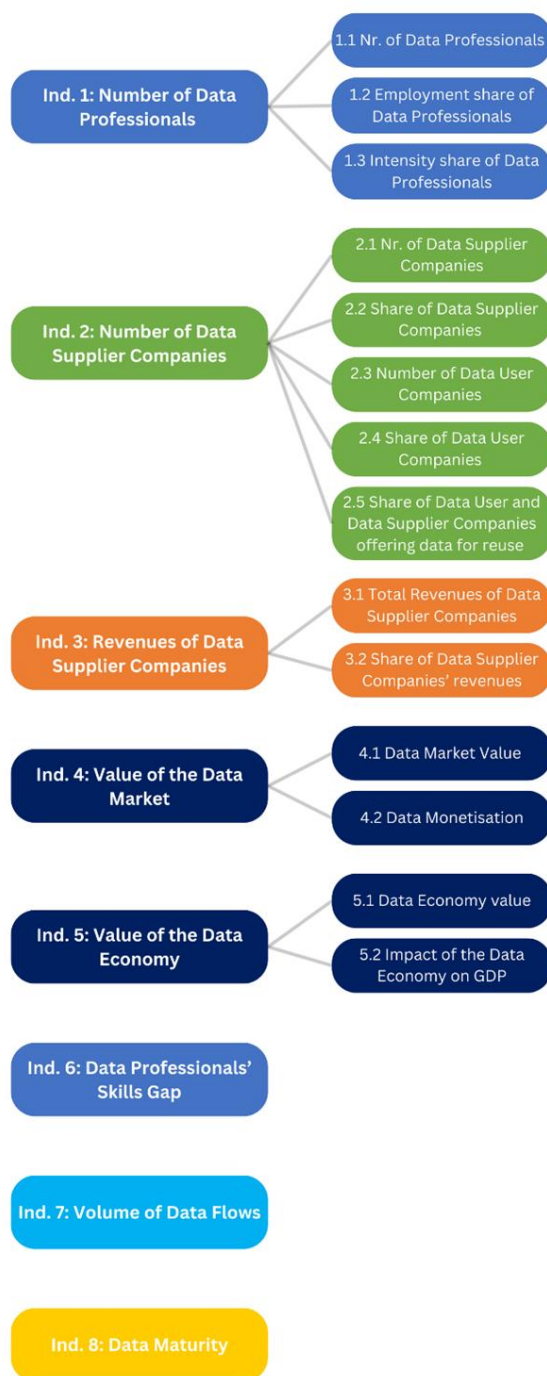
The data economy's direct and indirect impacts in the EU27 remain substantial, with direct contributions rising from €118.3 billion in 2023 to €132.7 billion in 2024 (+10%). Indirect backwards impacts also show steady growth, increasing from €130 billion to €139 billion (+6.9%). However, the EU's growth rates are outpaced by competitors such as the US (+19% direct impacts, +14% indirect impacts) and China (+38% direct impacts, +14% indirect impacts). Japan also demonstrates robust performance, with direct and indirect impacts increasing by 22% and 11%, respectively. Brazil and Israel contribute on a smaller scale but maintain consistent growth, reflecting their expanding roles in the global data economy.

Overall, the EU27's data market and data economy indicators reveal a stable trajectory of growth and development. However, the region faces significant challenges in catching up with global leaders like the United States and China. Addressing structural barriers, fostering digital skills, and promoting a unified data ecosystem are essential for the EU to fully realize its potential and strengthen its position in the global data-driven economy

13 Conclusions

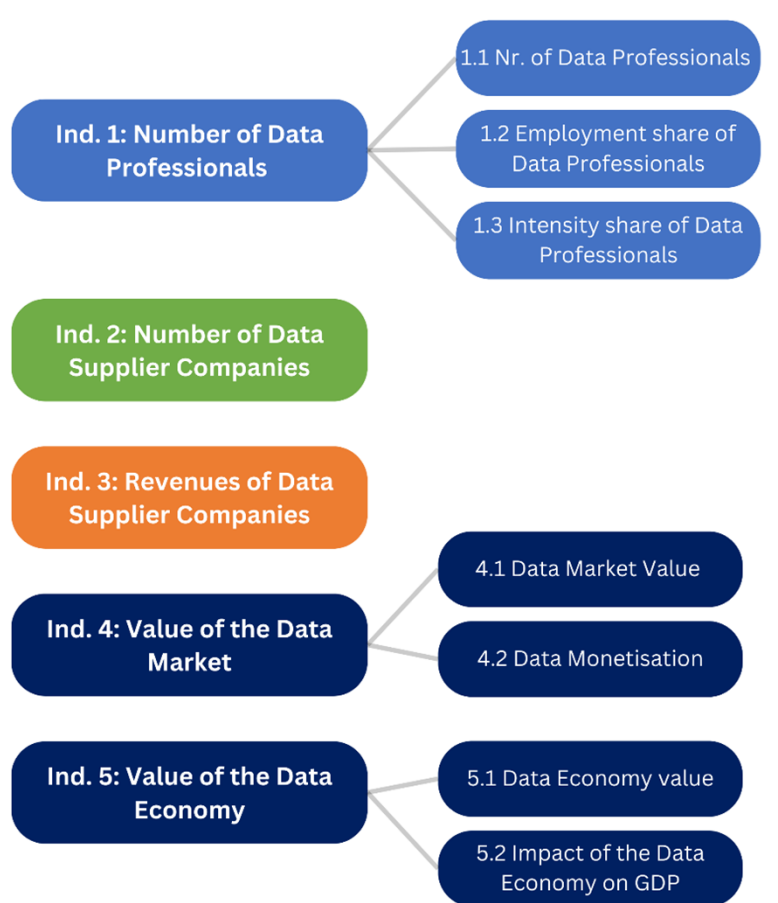
This First Report on Facts & Figures (Deliverable D2.1 of the European Data Market Study 2024-26, LUC/2023/OP 0043) has presented the results obtained through the first round of measurements of the European Data Market Monitoring Tool for the period 2023-2024 with forecasts for 2030 under three distinct scenarios.

The results pertained to the following set of indicators, as per the updated version of the European Data Market Monitoring Tool:



Each indicator has been measured for the total EU27 and for all the EU27 Member States when available and applicable; industry-specific and company-size views are also offered, with indicators

provided by industry sector and company size band when possible. The UK and Switzerland were measured separately in an aggregated way, as were the countries of the Rest of EEA (Norway, Iceland, and Lichtenstein). With a new additional country, a select number of indicators has been developed and updated this time, for five non-European countries: Brazil, Japan, the United States, China and Israel.



13.1 Data Professionals

KEY HIGHLIGHT FOR THE EU27

There is a rising demand for data professionals and the growth in the data market itself increases pressure on industry and education to deliver enough Data Professionals to not strangle growth of the data market over the next 5-6 years.

In 2024, the number of data professionals across EU Member States experienced steady growth, highlighting the increasing importance of data expertise throughout the region. **The total number of data professionals in the EU-27 grew from 7.897 million in 2023 to 8.232 million in 2024, marking a notable 4.27% increase. This rise reflects the expanding role of data-driven practices across industries and the growing demand for skilled professionals in the field.** Germany continued to lead as the largest contributor, followed by France and Italy, with Spain and Poland also playing significant roles in expanding the data workforce. Even smaller Member States, such as Malta, Cyprus, and Luxembourg, showed consistent growth, demonstrating the widespread demand for skilled data professionals across the European Union. This trend underscored the critical role of data expertise in driving innovation and supporting digital transformation efforts across Europe.

The number of Data User companies rises in line with the growth in the number of data professional. **The** more optimistic forecast for data user companies forecasts growth higher than that for Data Professionals, suggesting a possible shortfall in these professionals if growth is towards the more optimistic end of the overall data forecast.

There will be more than 10 million data professionals in the EU27 by 2030 (Baseline forecast), if Member States are able to put in place the training and education needed to develop these professionals- a growth of 3.5% per year between 2025 and 2030. Our most optimistic forecast sees the number of data professionals growing at 6.1% each year out to 2030.

Data Professionals' share of total employment continues rising up to 4.5% by 2024 from 4.4% in 2023. This reinforces the importance of the data economy within the Member States.

The Information & Communication, Finance, Health, and Education sectors continue to be among the top industries employing data professionals. According to the 2025 forecast, these four industries collectively account for more than 60% of all data professionals. The Finance sector is expected to see continued growth, reaching 23.4 data professionals per 1,000 user companies in 2025, while Information & Communication is forecasted to rise to 17.3 per 1,000 user companies.

While Professional Services remains a key sector, its share of data professionals is expected to slightly decline from 9.9 in 2023 to 9.7 in 2025. However, industries like Mining & Manufacturing and Utilities show a steady increase in their data workforce, signalling an expanding role of data expertise across traditionally less data-intensive sectors.

In 2024, the distribution of data professionals across sectors in the EU27 highlighted significant growth in areas critical to the economy and digital transformation. The professional services sector led the way, employing the largest number of data professionals, followed by retail and wholesale, and information and communication, which also showed notable increase. Other key sectors, such as finance, health, and mining and manufacturing, experienced steady growth, reflecting the expanding reliance on data-driven solutions across these industries.

13.2 Data Companies

KEY HIGHLIGHT FOR THE EU27

In the EU27, the number of data supplier companies grew significantly, rising from 249,446 in 2023 to 266,173 in 2024, with a 6.7% growth rate. This upward trend is expected to continue, reaching a forecasted 280,173 in 2025. Similarly, data user companies increased from 622,185 in 2023 to 644,075 in 2024, growing at a slower but steady rate of 3.5%. The forecast projects further expansion, with 674,180 data users by 2025. These trends highlight a dynamic data market in the EU27, with robust growth in data suppliers outpacing that of data users, reflecting the increasing importance of data-driven businesses.

Data Suppliers

In 2024, the **number of data supplier** companies grew, with Germany (48,326), France (24,536), and Italy (35,931) leading in absolute numbers. Spain and the Netherlands also showed notable increases, reflecting a broad expansion across member states.

By industry, Information & Communication remained the largest sector with 125,577 data suppliers in 2024, followed by Professional Services (104,824) and Retail and Wholesale (13,514). Other industries, such as Finance and Health, also experienced steady growth, highlighting the increasing demand for data-driven solutions.

According to the 2025 forecast, the number of data suppliers is expected to reach 280,173, continuing its upward trend. Looking further ahead, projections for 2030 suggest continued growth, with estimates ranging from 313,872 in Challenge Scenario to 350,813 in High Growth Scenario, reflecting varying economic and market conditions.

Data Users

In the EU27, the number of data user companies increased in 2024, with Germany (133,952), Italy (110,004), and France (91,073) leading in absolute numbers. Spain (87,916) and the Netherlands (33,749) also showed notable increases, reflecting a broad expansion of data-driven business adoption across member states.

By industry, Professional Services remained the dominant sector, increasing from 178,163 in 2023 to 187,727 in 2024, followed by Retail and Wholesale (109,034) and Information & Communication (64,732). The Finance and Health sectors also expanded, reaching 33,487 and 34,495 data users in 2024, respectively, demonstrating the increasing reliance on data-driven strategies in these fields.

According to the 2025 forecast, the number of data user companies is expected to reach 674,180, continuing its steady growth. Looking further ahead, projections for 2030 indicate continued expansion, with estimates ranging from 806,026 in the Challenge Scenario to 1,155,404 in the High Growth Scenario. Across industries, Professional Services is projected to remain the largest sector, potentially reaching 349,391 data user companies in the High Growth Scenario, while Retail and Wholesale could expand to 209,602. These projections highlight the growing importance of data across all industries and suggest that economic and technological developments will significantly influence future growth.

13.3 Data Supplier Companies

KEY HIGHLIGHT FOR THE EU27

In 2024, data companies' revenues among EU27 Member States reached €103 billion, reflecting steady growth in the European data economy with an average growth rate of 11.3% compared to 2023. France stands out with a significant 17.6% growth, reaching €19,5 billion, while Germany leads with €29,2 billion in revenues, growing by 9.4%. Countries such as Estonia (24.1%), Romania (21.1%), and Slovakia (18.8%) show the fastest growth, underscoring their rapid digital transformation and increasing focus on data-driven enterprises.

Across all countries measured (EU27, the UK, Switzerland and the rest of EEA) revenues exceeded €140 billion, underscoring the increasing adoption of data-driven technologies and services across the region.

Data Revenues differ from the data market – as data revenues reflect the global income for data companies based in the European Union, whereas the data market includes data revenues taken in Europe by all companies, irrespective of whether they are headquartered in the European Union or not. These two track each other as the data market is a global market, and the imports and exports of data tools, hardware, and services, and data are expected to track each other over the duration of this forecast.

Data Companies Revenues in this forecast are projected to reach €187.6 billion in 2025, reflecting steady expansion across industries as EU27 companies strengthen their position in the global digital economy. Looking ahead to 2030, revenues could grow further, reaching €214.4 billion in the Baseline Scenario, while the High Growth Scenario projects €246.5 billion, and the Challenge Scenario estimates a more conservative €202.6 billion.

Data technologies had a notable increase in development over the past 2-3 years, particularly with the roll-out of generative AI across various sectors.

These innovations contribute to the more optimistic outlook for data company revenues, with the CAGR (2025–2030) for the Baseline Scenario standing at approximately 2.7%.

The projections highlight the increasing role of digital transformation, AI adoption, and data-driven innovation in shaping the future of the EU27 data economy, reinforcing the sector's importance in driving competitiveness and economic growth.

Data Companies' revenues account for 0.34% of all EU27 companies' revenues in 2024, up from 0.31% in 2023. Data Revenues, demonstrating the growing importance of the data economy in the overall EU economy.

Larger companies are expected to account for more than 85% of data companies revenues in 2025, again unchanged from previous forecasts, although companies with more than 250 employees account for only 2% of all companies.

13.4 Data Market Value

KEY HIGHLIGHT FOR THE EU27

In 2024, the value of the data market in the EU27 reached €90 billion, reflecting a growth of 9.7% compared to 2023. The data market demonstrated strong growth, outpacing ICT spending, which increased by 6.3% over the same period. By 2025, it is forecasted that spending in the data market among the EU27 Member States will account for 13.1% of ICT spending, rising from 12.7% in 2023.

Germany led the market with €24.4 billion, followed by France at €15.6 billion, with growth rates of 8.8% and 11.2%, respectively. Italy (€8.5 billion) and Spain (€5.8 billion) also showed strong growth, while small-sized economies and low-income Member States like Estonia (23.6%), Romania (15.3%), and Bulgaria (14.3%) recorded the highest growth rates, driven by investments in digital infrastructure and innovation.

Data Market growth continues to be driven by increased consumption of data and data tools in the key industries of Finance, Manufacturing, Public Administration, and Information and Communications. Between 2025 and 2030 (Baseline) this share of growth for the four major industries falls to 65% of overall growth as other industries contribute more to the increase in size of the data market.

The size of the data market by Member State correlated well with the economic strength of each Member State, with the larger shares going to Germany, France, Italy, the Netherlands, and Spain. These five account for more than two-thirds (67.7%) of the data market in 2025 (Baseline)

Among the Member States, Germany will be the prime contributor to growth between 2025 and 2030 (Baseline), accounting for 16.6% of EU27 IT spending on data products and services in the interval. The UK will add a further 22% over the same period, casting a long shadow over Germany's contribution. France, Spain, The Netherlands, and Italy will all also actively participate to the EU27 Data Market growth, with the top 5 Member States adding nearly 57% to the EU27 Data Market.

Data Monetisation is not included when forecasting the European Data Market, but this adds a further 37% to the market through sales of data rather than data services and tools. Monetisation contributed little to the data market in the early years, (2013-2018) as shown by the S-curve displaying the share of data monetization on the data market from 2013 to 2030 (see Fig. 47). By 2020, data monetisation added a further 20% to spending on data and is forecast to grow to 37% of spending on data by 2030 (Baseline). This is expected to contribute €46.4 billion by 2030.

13.5 Data Economy

KEY HIGHLIGHT FOR THE EU27

The economic recovery in Europe continues, but it is still quite far from the full potential. Persistent inflation, geopolitical conflicts, low productivity and low growth weighted the European economy down. To keep the pace of global competitiveness, European countries need to invest in some strategic technology areas, such as broadband network infrastructure, compute and AI, semiconductors, as well as clean technologies, together with structural changes to educate and upskill workforce to address the skills shortage.

In 2024, although inflation and energy prices have been falling, geopolitical tensions and the economic slowdown fuelled uncertainty for European businesses, ICT investments remained safe, and spending grew across all industries. The ICT market proved to be crucial for a resilient business, together with digital and data-based strategies.

The value of the data economy for the EU27 in 2024 reached around €580 billion, and €630 billion in 2025, with an annual growth of 9.2% between 2023 and 2024. The estimated share of overall impacts on GDP in the EU27 increased from 4.1% in 2023 to 4.4% in 2024. In 2030, the data economy for the EU27 is expected to remain slightly above €800 billion, with a share on the GDP of 5.6%. IDC always highlighted the importance of intelligent analytics and data technologies as among the resilient and most dynamics technology segments, even if the expectations for the data economy size has been slightly revised downward, in the light of a more conservative view, as we are seeing a slower realization of impacts due to the time technology need to be fully integrated into business processes and operations.

Multiple trends have been highlighted to be drivers or support of further investment in data and analytics technologies: the aim of creating a European single market for data thanks to the European strategy for data, the Data Governance Act and the European Data act, the rising interest in and use of AI and Generative AI, and the increasing attention on data deployment due to the AI Act. A better use of the Next Generation EU funds remains of crucial importance.

The composition of impacts remained quite stable **in the short-term**, from 2023 to 2024. In the longer term indirect impacts will reduce more in favour of direct and induced impacts, revealing the healthy data market (reflected in the direct effects) and long-lasting strong effects of data access, data products and services exchange, and data value distribution in the economy (reflected in the induced part).

The highest share of the data economy's value is generated in the finance sector, where great focus is placed on optimizing existing systems digital payments, augmented fraud analysis and threat intelligence and prevention. The second largest share is represented by the manufacturing and mining industry, in which despite uncertainties in the market,

spending will continue to grow at a healthy pace. Professional services are increasingly adopting AI and Gen-AI technologies for different purposes given their different composition (consulting, engineering, architecture, marketing). Public Administration continues to invest, . nevertheless, we revised slightly downward the share of impacts for public administration to reflect a lower-than-expected capability to quickly generate value across the economy.

Germany, France, Italy, followed by Spain, and the Netherlands will contribute the most from 2023 to 2024. Looking at 2024 growth, Baltics (Estonia and Latvia), Central European countries (Poland and Romania) and Nordics (Denmark and Finland) are among the fastest growing markets (growing above EU27 average). Looking at the long-term growth (5-year CAGR 2030/2025), smaller countries, such as Lithuania, Malta, Slovakia and Slovenia, among others, appear more dynamic as they start from a small revenue impact and increase in the longer term.

13.6 Data Skills Gap

KEY HIGHLIGHT FOR THE EU27

Key Findings – Skills Gap

The skills gap for data professionals continues to have significant business impact on organisations in Europe despite the tighter job market in 2023. Business and technology are in rapid development, largely due to ongoing digital transformation of enterprise and society, and new technologies such as Generative AI are emerging in the data space. Despite of the rise in data automation and potential replacement of certain roles/tasks with new AI tools, a transformation of this magnitude will continue to require large amounts of human capital and skills in the short/medium term before the process changes stabilize and become mainstream. The reported skills gap in data professionals is therefore impacting both existing and coming transformation initiatives and becomes one of the more serious challenges facing the European industries.

KEY HIGHLIGHT FOR THE EU27 According to the scenarios

The gap between supply and demand for data professionals continues to grow:

- In 2023, the gap for EU27 was estimated at 451.000 workers, or 5.3% of the total number of data professionals.
- In 2024, the gap increased by 10.9% to 500.000 data professionals (5.7% of the total demand)
- In 2025 the gap is expected to increase to 535.000 (5.8% of total demand)
- By 2030 (baseline scenario), the gap is expected to remain stable in percentage terms, albeit reaching 631.000 in absolute numbers. The increase represents a CAGR of 3.3% between 2025-2030.

- **By 2030 (Challenge Scenario), the gap is expected to reach 757.000, or 7.2%, with a CAGR of 7.2% between 2025-2030.**
- **By 2030 (High Growth Scenario), the gap is expected to reach 839.000, or 6.8%, with a CAGR of 9.4% between 2025-2030**

The key driver for the shortage continues to be the significant growth in technology investments fuelling digital transformation, while the number of new graduates entering the data market has not seen substantial increase over the past years, increasing the gap between demand and supply within the data workforce. This is especially relevant when factoring in the number of professionals retiring every year in the EU and the need to replace these with new talent.

Organisations throughout Europe are attempting to remedy the situation by a combination of continuous training, re-skilling, and recruitment, but current efforts may not be enough to significantly reduce the gap by 2030. Therefore, other measures including re-skilling of additional business roles outside data analysis and ICT, strengthening the partnership with academia, as well as the roll out of more work placements such as internships and apprenticeships will be suggested to mitigate the skills gap in the region.

13.7 Data Flows

KEY HIGHLIGHT FOR THE EU27

In 2024, total data flows across the EU27 reached 45,891 PB/year, reflecting a substantial increase from 29,824 PB/year in 2023, showcasing the rapid expansion of the digital economy with a year-on-year growth rate of 53.9%. This significant growth underscores the increasing role of data as a key economic driver within the EU, fuelled by heightened investments in infrastructure and digital transformation initiatives. By 2025, these flows are forecasted to more than double compared to 2023, reaching 70,301 PB/year, further highlighting the accelerating demand for data across industries.

The volume of data flows across EU Member States varies significantly, with Germany consistently leading in data flows due to its robust infrastructure and economic scale, projected to reach 127,712 PB/year by 2030 under the Baseline scenario. Meanwhile, smaller nations such as Austria and Finland are emerging as fast-growing players, with Austria projected to reach 21,972 PB/year and Finland 19,052 PB/year under the same scenario. These trends underscore the disparity in digital readiness and growth potential across the EU27.

The 2030 projections vary widely across the Baseline, High Growth and Challenge scenarios, reflecting the importance of macroeconomic conditions and policy frameworks.

In the **Baseline scenario**, total EU27 data flows are projected to reach **588,953 PB/year** by 2030, underscoring steady growth across all member states. Germany is set to maintain its leadership position with **127,712 PB/year**, followed by France with **54,576 PB/year**. Italy's data flows are expected to rise from **9,915 PB/year** in 2025 to **84,180 PB/year**, while Poland will see an increase from **7,418 PB/year** to **64,501 PB/year**, reflecting rapid digital adoption in these economies.

Under the **High Growth scenario**, EU27 data flows could reach **664,496 PB/year**, significantly outpacing the Challenge scenario's **573,815 PB/year**. The projections highlight the transformative potential of favourable conditions, especially for emerging economies like Poland, which could see data flows rise from **7,418 PB/year** in 2025 to **74,492 PB/year** by 2030 under High Growth. These forecasts emphasize the pivotal role of supportive policies and investments in maximizing digital transformation across Europe.

Under the **Challenge scenario**, total EU27 data flows are expected to reach **573,815 PB/year** by 2030, demonstrating significant growth despite a more cautious economic outlook. Even under this scenario, major economies such as **Germany (118,742 PB/year)** and **France (72,095 PB/year)** will continue to lead in data flows, while other economies like Finland (**16,630 PB/year**) and Austria (**20,028 PB/year**) will still see substantial expansion.

13.8 Data Maturity

KEY HIGHLIGHTS FOR THE EU27

Data Maturity is a model built to measure the relative rate of adoption of digital technologies through the actions of companies rather than through their promises. Key actions include the percentage of companies using cloud computing services, the use of AI for data analytics, the share of companies that have e-commerce sales, and the use of machine learning for data analysis. The most important factor to consider is that this is relative maturity – i.e., Member States and industries compared to each other, not an absolute measure of maturity. As data is updated the relative maturity will change.

Maturity is grouped into five levels, with the least mature at level one and the most mature at level 5. Each of the individual measures used is weighted to allow the importance of the measure to change over time. As an example, the use of AI or Machine learning has low adoption among companies in each member state when compared with the use of cloud computing services, and it is weighted lower because of its relative use.

Data maturity in the EU27 as measured by the Data Maturity Index is 2.2 for the whole period 2022-2024 and is expected to remain in the same region in 2025. The EU as a whole therefore reflects a level-3 of data maturity across according to our model. Countries are distributed across five levels, demonstrating significant disparities in data adoption and digital readiness.

At Member State level, however, the Data Maturity Index displays a widespread distribution across five levels, demonstrating significant disparities in data adoption and digital readiness. Overall, the median level for data maturity is relatively low with a median of just 1.6 in 2024. This gives many Member States the opportunity for improvement through greater adoption by companies of the technologies measured. **Among the Member States, the larger economies are surprisingly low in relative maturity, with Germany, France and Italy are all outpaced in 2024 by smaller economies such as Denmark (4.0), Sweden (3.9), Belgium (3.8) and the Netherlands (3.6).** ,

13.9 Data Economy Beyond the EU: the US, Brazil, Japan, China and Israel

The European Data Market study continues to highlight the importance of the data economy and data market in shaping Europe's capacity to drive innovation, enhance competitiveness, and bolster its position in the global digital landscape. Indicators from the EU27 showcase steady progress across key dimensions, although challenges persist when compared to other major global players.

The number of data professionals in the EU27 reached 7.9 million in 2023 and is projected to grow by 4.2% to 8.2 million in 2024. While this growth underscores the EU's ongoing efforts to address the rising demand for digital skills, the region lags behind the United States, which boasted 19.9 million in 2023 and 21.4 million data professionals in 2024 (+7.5%). China, with its massive workforce, is rapidly expanding, achieving a 20.9% growth

to 11.5 million professionals in 2024. Japan and Brazil exhibit slower growth rates of 3.7% and 3.5%, respectively, while Israel, although smaller in absolute terms, demonstrates a solid increase of 5.7% to 193,000 data professionals. These figures highlight the EU's progress but also underline the need for greater investments in education, training, and reskilling to compete effectively with global leaders.

The number of data supplier companies in the EU27 grew from 249,446 in 2023 to a projected 266,173 in 2024 (+6.7%). This rate outpaces the growth seen in other mature markets like the United States (+1.9%) and Japan (+1.5%), but China remains a dominant player with over 917,000 companies (+1.8%). Israel, a notable outlier, is expected to see an impressive 26.5% growth, reinforcing its reputation as a dynamic hub for digital innovation. While the EU's ecosystem of data suppliers remains competitive, fragmentation and barriers to scale continue to impede its potential to rival global markets such as the US or China.

The value of the data market in the EU27 is projected to grow by 9.7%, from €82.1 billion in 2023 to more than €90 billion in 2024. Despite this steady growth, the EU lags significantly behind the United States, where the data market is expected to reach €404 billion (+18.7%) in 2024. China is also rapidly advancing, with an anticipated value of €68.2 billion (+37.9%), while Japan and Brazil exhibit strong growth rates of 21.6% and 15.2%, respectively. Israel, while smaller in scale, shows a notable 10.3% growth, reinforcing its strategic role in niche markets. These comparisons underline the EU's position as a leading data market globally but also highlight the need for further digital integration and investment to close the gap with the US and China.

The data economy's direct and indirect impacts in the EU27 remain substantial, with direct contributions rising from €118.3 billion in 2023 to €132.7 billion in 2024 (+10%). Indirect backwards impacts also show steady growth, increasing from €130 billion to €139 billion (+6.9%). However, the EU's growth rates are outpaced by competitors such as the US (+19% direct impacts, +14% indirect impacts) and China (+38% direct impacts, +14% indirect impacts). Japan also demonstrates robust performance, with direct and indirect impacts increasing by 22% and 11%, respectively. Brazil and Israel contribute on a smaller scale but maintain consistent growth, reflecting their expanding roles in the global data economy.

Overall, the EU27's data market and data economy indicators reveal a stable trajectory of growth and development. However, the region faces significant challenges in catching up with global leaders like the United States and China. Addressing structural barriers, fostering digital skills, and promoting a unified data ecosystem are essential for the EU to fully realize its potential and strengthen its position in the global data-driven economy

14 Methodological Annex

14.1 Overview

The study required a complex mix of quali-quantitative methodologies allowing to reach the interlocked objectives. While quantitative methodologies represent the most relevant part of the study, qualitative methodologies are indispensable to balance the statistical approach and provide the market and social intelligence needed to lead to policy insights and the development of sound scenarios.

In order to ensure the study's continuity, the methodological approach builds upon previous EDM Monitoring Tool releases, including necessary improvements. It is important to emphasise that the EDM Monitoring Tool's modular structure does not change in its core substance, as it has already proven to be sufficiently adaptable to the evolution of the data market and data economy in past years.

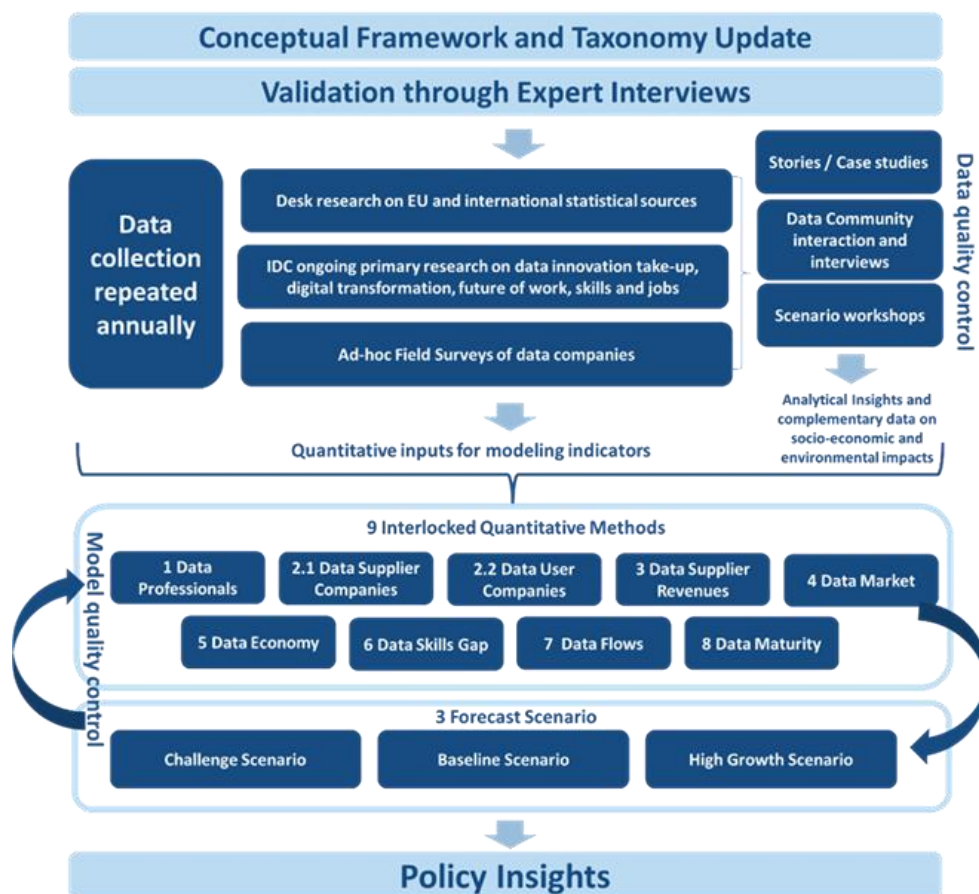
The study introduces a set of methodological changes to address both the requests of the tender specifications and the need to provide more quantitative and qualitative evidence on the evolution of the data market and economy in Europe. These changes will enable the European Commission to better measure progress towards the key policy objectives set out by the EU digital strategy and the 2020 European data strategy:

The methodological approach builds on previous versions of the European Data Market Monitoring Tool, incorporating the following enhancements to maintain the study's continuity:

- The provision of facts and figures under Objective A will be enhanced by **two specific indicators** measuring the EU's data inflow and outflow, as well as the maturity level of the EU data market.
- Additional desk research and IDC data sources will support the **measurement of the value of data**. This aspect was present in the previous edition of the European Data Market Study 2021-2023 but was only an initial attempt to capture a concept and value that had not been extensively researched.
- The assessment of data professionals and the measurement of the data skills gap will benefit from the revised definition and approach introduced by the previous European Data Market Study 2021-2023. This will be further enhanced by implementing an **expanded survey** covering **18 geographies**, including three additional EU Member States (Austria, Estonia, and Portugal) and **Israel as a new non-EU country** to be monitored under the international set of indicators.
- Renewed focus and an expanded scope for the descriptive stories under Objective B, ensuring the Consortium can cover all aspects mentioned in the tender specifications. This will include specific attention to the **common European Data Spaces** and their current and potential contributions to the EU data economy, thanks to the addition of a new Consortium member.
- A broader involvement of **data economy experts and stakeholders** from the outset of the study will inform the design phase of the project and allow for the introduction of corrective measures in the methodology before the actual measurement of the indicators.

The figure below illustrates the complexity of the methodologies employed to provide facts and figures on the European data market and economy. The main methodological steps are clearly outlined as follows:

1. **Revision and Update of Conceptual Framework and Taxonomy:** This involves reviewing and refining the existing framework and taxonomy.
2. **Validation:** The revisions and updates are validated through expert interviews to ensure accuracy and relevance.
3. **Data Collection:** Organizing and conducting data collection, which includes both desk and field research. This process will be repeated annually to support the measurement of indicators.
4. **Complementary Data and Analysis:** Simultaneously, case studies, stories, and stakeholder polling will provide additional data and analytical insights.
5. **Integration into Quantitative Models:** Data collected and qualitative analyses will be integrated into eight interconnected quantitative models used to measure the main indicators.
6. **Scenario Forecasting:** Alongside indicator calculations, scenario forecasting will be conducted. This involves developing the primary assumptions that drive three alternative scenarios up to 2030 and forecasting all related indicators.
7. **Interaction Between Models and Scenarios:** The quantitative models and the scenario methodology will interact closely, providing mutual feedback to enhance precision.
8. **Quality Control:** Each step in the process will include quality control measures, focusing particularly on data quality during the data collection phase and model quality during indicator measurement and scenario development.



14.1.1 Desk Research

As in the previous editions of the European Data Market study, the study team revised the list of relevant and available public sources, integrated it if necessary and collected the data that are necessary for the indicators' update.

Desk research will continue to represent one of the methodological cornerstones of the design and implementation of Objective a. As in the previous editions of the European Data Market study, the study team will revise the list of relevant and available public sources, integrate it if necessary and collect the data that are necessary for the indicators' update during the three rounds of measurement of the study duration.

- For the new indicators on data flows and data maturity a few selected sources will be as follows:
 - OECD Digital Economy Papers⁶⁷, for example “Moving Forward on data free flow with trust”, OECD, April 2023; “Fostering cross-border data flows with trust”, OECD, December 2022. “Perspectives on the value of data and data flows”, OECD, December 2020; “Measuring the economic value of data and cross-border data flows – A business perspective”, August 2020
 - Other sources from EU institutions, for example: “Data Flows – Future Scenarios: in-depth analysis for the ITRE Committee, Directorate-General for Internal Policies, European Parliament, 2017; “Economic value of data flows”, Final Study Report, European Commission, February 2023,
 - Other international organisations, for example: World Economic Forum “From Fragmentation to Coordination: The Case for an Institutional Mechanism for Cross-Border Data Flows”, WEF, April 2023
 - Sources from the ITU, World Telecommunication/ICT Indicators Database Online, 2023⁶⁸
- Concerning the indicators on data market, data companies, data companies' revenues, and the data economy the main sources will be:
 - Eurostat business demography statistics in the European Union, treating aspects such as the total number of active enterprises in the business economy, their birth rates, death rates, and the survival rate (last update: March 2023)⁶⁹;
 - Eurostat annual structural business statistics with a breakdown by size-class are the main source of data for an analysis of SMEs (latest update: March 2023)⁷⁰;
 - IDC Worldwide Black Book Live Edition, monthly updates from the years 2022 through 2028⁷¹. The Black Book represents IDC's live analysis of the status and projected growth of the worldwide ICT industry in 93 countries.
 - IDC's spending guides⁷². Spending Guides are multi-dimensional, all-in-one data products that present technology forecast data segmented by any or all of the following views: region, country, industry, company size, line of business or use case:
 - IDC Worldwide ICT Spending Guide Industry and Company Size, semi-annual updates for IT Hardware, Software, IT, business and telecom Services from 2022 to 2028 by 20 Industries and 5 size-classes in 55 countries;

⁶⁷ https://www.oecd-ilibrary.org/science-and-technology/oecd-digital-economy-papers_20716826

⁶⁸ [World Telecommunication/ICT Indicators Database online \(itu.int\)](https://www.itu.int/ITU-T/ict/indicators/)

⁶⁹ https://ec.europa.eu/eurostat/statistics-explained/index.php/Business_demography_statistics

⁷⁰ <https://ec.europa.eu/eurostat/web/structural-business-statistics/overview>

⁷¹ https://www.idc.com/getdoc.jsp?containerId=IDC_P336

⁷² As an example: Worldwide ICT Spending Guide: Industry and Company Size, IDC 2020, Worldwide ICT Spending Guide: Industry and Company Size, IDC 2020 https://www.idc.com/getdoc.jsp?containerId=IDC_P33207

- IDC Worldwide Big Data and Analytics Spending Guide, semi-annual updates for Big Data and Analytics spending from 2022 to 2028 by 20 Industries and 5 size-classes in 53 countries;
 - IDC Worldwide Digital Transformation Spending Guide, semi-annual updates for Digital Transformation spending from 2022 to 2028 by 20 Industries and 283 use cases in 9 regions;
 - IDC Worldwide Artificial Intelligence Spending Guide, semi-annual updates for Artificial Intelligence spending from 2022 to 2028 by 20 Industries and 198 use cases in 9 regions and 34 countries.
- IDC European Tech and Industry Pulse Survey 2022- 2023⁷³.
- IDC Big Data and Analytics in the COVID-19 Era: Adoption and Spending Trends Across Vertical in Europe, Jun 2023, IDC # EUR145280920.
- IMF World Economic Outlook (WEO) Database, April 2023.
- Consensus Forecasts, Consensus Economics, monthly updates to July 2023.
- Review of data on social networks about new and emerging companies through thorough research of annual reports of the most relevant companies, where available.
- For the data professionals we will use in addition the following sources:
 - OECD publications about the digital economy⁷⁴. As an example, “A roadmap toward a common framework for measuring the Digital Economy”, OECD 2022 and “Going digital: Making the transformation work for growth and well-being: Measuring the Digital Transformation. A Roadmap for the Future” OECD 2022.
 - ILOSTAT (International Labour Organization) Statistics and Databases (2023)
 - EUROSTAT Educational attainment statistics (Last update: 2022)⁷⁵.
 - European Data Science Academy (EDSA) project deliverables and publications (2022).
 - IDC's Technology Employment Impact Guide – updated on a semi-annual basis with forecast of employment across 40 technology job roles, including seven data management and analytics roles (Last update June 2020)
 - Cedefop – Skills-OVATE data for vacancy estimations (Most recent data collected between 1 July 2018 and 31 December 2022)
 - Cedefop – Skills Index and Skills forecast (Last update 2022)⁷⁶
- Other sources from which relevant data for the indicators’ measurement and for the three updates of the indicators during the study duration will be:
 - The Digital Economy and Society Index (DESI), Human Capital Dimension, (2a Basic Skills and Usage; 2b Advanced skills and Development), last update, 2022.
 - IDC Worldwide Augmented and Virtual Reality Spending Guide, 2022.
 - IDC Quarterly Wearable Device Tracker, 2023
 - IDC FutureScope: Worldwide Future of Work 2020 Predictions, Oct 2022, IDC #US44752319.
 - Practices to Make AR and VR a Reality for Enterprises, Jun 2023. IDC #EUR146541720.

⁷³ <https://www.idc.com/getdoc.jsp?containerId=EUR145717319>

⁷⁴ <https://www.oecd.org/sti/ieconomy/>

⁷⁵ https://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics

⁷⁶ https://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics

14.1.2 Scenarios Desk Research

The desk research for the scenarios will be repeated each year to provide updated data and trends. We will use a combination of external sources and IDC sources from its ongoing research. The most relevant sources for the next year will be the following:

- IDC's European IT spending forecast and key digital trends across European industries and Worldwide Economic and Industry Assumptions. The most recent versions are dated January 2023)⁷⁷. These documents are updated quarterly to feed into IDC's ongoing forecasting.
- IDC's FutureScape predictions by technology and industry are delivered once a year: IDC analysts deliver 10 main predictions for the next 2 to 5 years for each vertical market (for example, government or retail) and main technology area (for example Digital transformation). The predictions are developed in a global interactive process between analysts and then are specialized by world region (of which one is Europe). These predictions have proven very useful for the development of scenarios assumptions and storylines.
- The most recent research on Data Spaces in Europe such as the European Data Spaces - Scientific Insights into Data Sharing and Utilisation at Scale⁷⁸,
- The most recent public studies about digital markets and big data forecasts and trends, by well renowned international bodies and organisations such as Accenture, OECD, McKinsey⁷⁹.
- Forecasts to 2030 of EU GDP and ICT spending, under 3 alternative scenarios, leveraging the market insights and forecasts of the Economist Intelligence Unit (EIU⁸⁰), the International Monetary Fund, and the OECD.
- Collection and review of all useful data from IDC's extensive databases to estimate the future value of the data market, including for example size and forecast of data stored, size and forecast of data analytics and Big data software, primary research on companies' plans of adoption for data analytics and data-driven applications and services, etc.
- Historical trends emerging from the EDM Monitoring Tool indicators in the period 2019-2025, the European Data Market study update (SMART 2016/0063) and European Data Market Study 2021-2023 (VIGIE 2022-0655)

14.2 Measuring Data Professionals

Definition and scope

Data professionals are defined in three main types as follows:

Data technical professionals are specialists in the collection, storage, management, modelling, and quality assurance of data as well as the integration of various data sources to ensure consistency, accuracy and quality of data. A data technical professional can, given the question that needs to be answered, ensure that the data supply chain is provided and that it is accurate.

⁷⁷ As an example: European IT Spending Forecast, 2022-2026: European IT Spending Forecast, 2022–2026: Key Digital Trends Across European Industries, January 2023, <https://www.idc.com/getdoc.jsp?containerId=EUR147862122&pageType=PRINTFRIENDLY>

⁷⁸ JRC Publications Repository - European Data Spaces - Scientific Insights into Data Sharing and Utilisation at Scale (europa.eu)

⁷⁹ A roadmap toward a common framework for measuring the Digital Economy, OECD, 2020 <http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>

⁸⁰ <https://store.eiu.com/product/market-indicators-and-forecasts>

Data business professionals perform predictive analysis, qualitative analysis, data modelling, data extraction and data summaries with the purpose of creating new insights and knowledge from available data. Data business professionals have these tasks as a primary or as a significant focus. They have thorough industry and/or process understanding and can put data analysis into context and relate to existing trends within the industry or line of business they are in. They rely on the quality of the data collected, but typically leave collection, management, and quality of data to the data technical professional. A data business professional has proficiency in analysis tools, such as Excel, Tableau and Power BI, and can summarize large amounts of data and visualize and present trends and insights to a wider audience of key stakeholders in the business in order to drive the strategic decision-making process in the organization. A data business professional investigates what questions need to be answered, and where to find relevant data to answer those questions (Varian, 2009).

Data consumers are product, process, human resource, asset or department employees and managers, who are responsible for driving change or maintaining a position where decision making is heavily reliant on supply of data and insights based on large amounts of data. They work only part-time directly with data. They are decision makers, or stakeholders in a decision process where the data and insights provided determine the quality of the decisions made. A data consumer guides the business based on the data and insights provided through the data supply chain.

The data professionals' indicator will include the following sub-indicators.

Table 81 Indicator 1 – Data Professionals

Indicator 1 - Data Professionals				
N.	Name	Description	Type and Time	Segmentation
1.1	Number of data professionals	Total number of data professionals in the EU	Number, 2023-24-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK
				By Industry: 12 industry sectors NACE rev.2
				By size: not applicable
1.2	Employment share	Total number as a share of total employment in the EU	% of total employment, 2023-24	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK
				By Industry: 12 industry sectors NACE rev.2
				By Size: not applicable
1.3	Intensity share	Average number of data professionals per company (only for private sector)	Number, 2023-24	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK
				By Industry: 12 industry sectors NACE rev.2
				By Size: not applicable

Methodology Approach

The methodology approach is Our approach is based on an iterative process and on a calibration process of the final estimates.

Statistical Identification

Data professionals are not classified as such in any of the labour and occupation statistics. To define them statistically, we adopted the International Standard Classification of Occupations (ISCO-08), selecting categories where data professionals may be included. The criteria adopted for the selection of the ISCO-08 codes are:

- We selected the occupations where data professionals can be involved either as data providers or as data users;
- We selected the occupations from 1 to 4-digit disaggregation.
- The occupation codes selected are those where the presence of data professionals can be detected because they fit into the definitions above:
- The selected codes are those where a significant part of the workers may be data professionals; the occupations where the data professionals are a very marginal part of the workers have been excluded; as an example, the medical practitioners have been excluded, although some practitioners may be data professionals because they undertake research activities. Since they are only a very marginal part of the practitioners, we excluded them from the occupations where data professionals are present.
- We excluded all the data professionals which are not included into the knowledge economy perimeter because their occupation is a low skilled one, i.e., with high routine level (as an example, call centre workers are in theory data professionals but since their activity is a routine one and as such excluded from the knowledge economy, they are not considered data professionals).

Table 82 ISCO-08 Structure and Data Professionals

	ISCO-08 structured Classification			
	Major Groups (1 digit)	Sub-groups (2 digits)	Minor Groups (3 digits)	Units (4 digits)
Number of codes ISCO-08 structure	10	43	131	436
Number of selected codes including data professionals	8	23	52	245
Of which data business professionals	4	7	12	41
Of which data technical professionals	2	3	4	10
Of which data consumers	8	23	51	231
Share of data professionals' codes in the ISCO-08 structure	80%	53%	40%	56%

Calculation of the quantitative Perimeter

The quantitative perimeter of employment where data professionals are trackable is based on the selected ISCO codes crossed with the NACE classification of economic activities, for each one of the 27 Member States, the rest of EEA countries, the UK and the EU as a whole and has been updated based on the source's updates.

Estimate and Calibration of the Penetration of Data Professionals

The next step is to estimate the percentage of data professionals within the perimeter of data professional candidates. The sets of assumptions will be revised and updated for each release of the study and applied to the model to calculate the share of data professionals by Member State and by industry.

Forecasting Data Professionals

The same model will be applied to forecast data professionals to 2030, by developing specific assumptions by scenario, even though the level of uncertainty is higher, and the reliability of the forecasts is lower.

14.3 Measuring Data Companies

Definition and scope – Data supplier companies

Data Supplier Companies are organizations whose main activity is the production and delivery of digital data-related products, services, and technologies. These products and services include the supply of data itself. They represent the supply side of the data market.

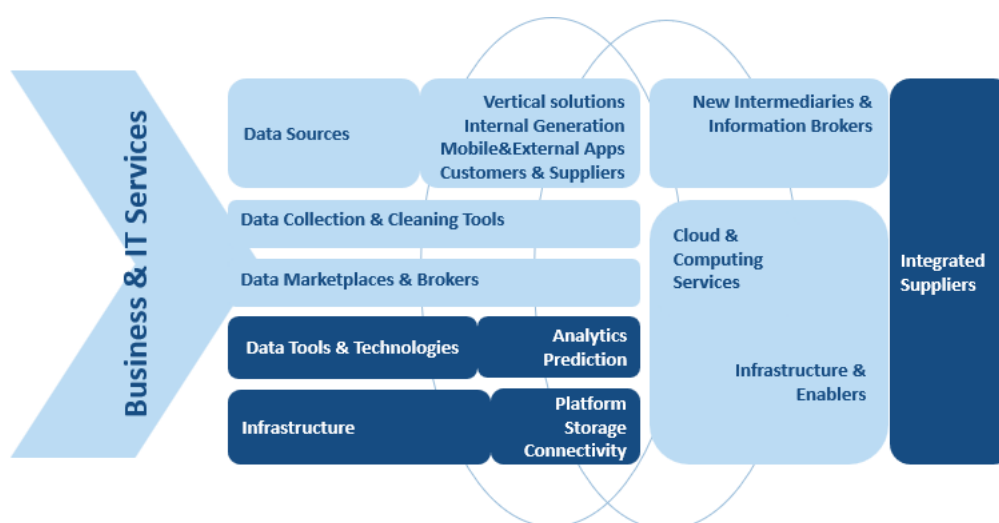
Figure 13 below shows an updated classifications of the main typologies of data suppliers, which will be investigated by the survey and updated in the Taxonomy.

The following sub-indicators are specific measures associated with Data Supplier Companies:

Indicator 2.2 – Share of total Data Supplier Companies

This indicator measures the share of Data Supplier Companies (defined above) on the total number of companies in all industries categorised as data supplier industries, i.e., sectors A, C, D, E, G, H, J, K, M, P, and Q according to the Statistical classification of economic activities in the European Community (NACE, Rev. 2), expressed in percentage. This differs from the first cycle of the EDM Monitoring tool, which measured only data suppliers from the J and M sectors. See par.2.3.2 for the rationale in this change.

Figure 76 The data industry technology stack by type of stakeholder



Source: IDC 2020

Indicator 2.3 – Number of Data User Companies

Data user Companies are organisations that generate, exploit collect and analyse digital data intensively and use what they learn to improve their business. They represent the demand side of the data market.

Indicator 2.4 – Share of Total Data User Companies

This indicator measures share of European data user companies, counted as legal entities based in one EU Member State, on the total number of private enterprises in the EU. This is expressed as a percentage of the total.

Indicator 2.5 – share of data user companies that offer data re-use.

This indicator measures the share of data user companies that offer data re-use of their internal data, either as free access through an application programming interface (API) or sold to registered users of the API. The indicator is gathered from the data supplier and data user companies survey so only updated in the initial and final data deliveries.

Table 83 Indicator 2.1: Number of data supplier companies

Indicator 2 - Description				
N.	Name	Description	Type and Time	Segmentation
2.1	Number of data supplier companies	Total number of data supplier companies in the EU & EEA & UK, measured as legal entities based in one country	Number, 2023, 2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By Industry: Sectors A, C, D, E, G, H, J, K, M, P, Q By company size: below 250 employees above 250 employees
2.2	Share of data supplier companies	Total data supplier companies on total companies in industry sectors A, C, D, E, G, H, J, K, M, P, Q	%, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By Industry: Sectors A, C, D, E, G, H, J, K, M, P, Q
2.3	Number of data user companies	Total number of data user companies in the EU, measured as legal entities based in one country	Number, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By Industry: 12 industry sectors NACE rev.2 By company size: below 250 employees above 250 employees
2.4	Share of data user companies	Total data user companies as share of total private companies	%, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Industry: 12 industry sectors NACE rev.2
2.5	Share of data user and data supplier companies	Percent of data companies that offer data -reuse as a	2023, 2024	By industry: 12 industry sectors NACE rev. 2

	that offer data for re-use.	percent of total data supplier and data user companies.		By company size band: Below 250 employees Above 250 employees
--	-----------------------------	---	--	---

Methodology Approach

The indicators on Data Supplier Companies and Data User Companies will be measured updating the same model used in the previous EDM study which leverages both IDC and public sources. Main sources are summarised in Table 15 above.

14.4 Measuring the Revenues of Data Companies

Definition and scope

In accordance with the definition and scope adopted in the previous editions of the European Data Market study, Data Companies Revenues measures the revenues of the data companies identified and classified by Indicator 2, for the products and services specified in our definition of the data market. The revenues correspond to the aggregated value of all the data-related products and services generated by Europe-based companies, including exports outside the EU.

Indicator 3.2 – Share of Data Companies Revenues

This indicator expresses the ratio between the data companies' revenues, defined above, and the total amount of companies' revenues in the data supplier companies' sectors – A, C, D, E, G, H, J, K, M, P, and Q according to the Statistical classification of economic activities in the European Community (NACE, Rev. 2), expressed in percentage.

The indicator will be measured according to the segmentations presented in the following table, including the sub-indicators.

Table 84 Indicator 3: Revenues of data companies

Indicator 3 - Description				
N.	Name	Description	Type and Time	Segmentation
3.1	Total revenues of data	Total data companies' revenues	Billion €, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By company size: below 250 employees above 250 employees
3.2	Share of data companies' revenues	Ratio between data companies' revenues and total companies' revenues in the sectors J and M	% of revenues on total, 2023-2024	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

Methodology approach

The indicator will be measured applying the same model used in the previous EDM study, which calculated the revenues by feeding on:

Table 85 Data sources for Indicator 3 – Data Companies’ Revenues

Data Source	Used in
Data Supplier Companies (Indicator 2)	Data Company Revenues
IDC Core IT Spending guide	Data Company Revenues
IT Big Data and Analytics spending Guide	Data Company Revenues
IDC Worldwide Black Book (standard edition)	Data Company Revenues
IMF World Economic Outlook	Data Company Revenues

14.5 Measuring the Data Market

Definition and Scope

As in the past editions of the study, the Data Market is defined as the marketplace where digital data is exchanged as “products” or “services” from the elaborations of raw data. We define its value as the aggregate value of the demand of digital data and the value of data sold or exchanged in the market (data monetization: new). This indicator does not include the economic benefits of data-driven innovation (indirect and induced impacts of data) which is estimated in the Data economy indicator. The value of the data market includes imports (data products and services bought on the global digital market from suppliers not based in Europe) and excludes the exports of the European data companies.

Table 86 Indicator 4: Data Market Value

Indicator 4 - Description				
N.	Name	Description	Type and Time	Segmentation
4	Value of the data market	Estimate of the overall value of the data market (including data monetization)	Billion €, 2023-2024-2025 Forecast to 2030 - 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By Industry: 12 industry sectors NACE rev.2
4.1	Data monetization	Sub-indicator Estimate of the value of data monetization	Billion €, 2023-2024-2025 Forecast to 2030 - 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK By Industry: 12 industry sectors NACE rev.2

Methodology approach

The data market indicator will be updated every year for the duration of the study. The model is built on data from IDC databases concerning the components of hardware, software, and services, spending which fall in the definition of the data market. The value of data monetization is added to this and is estimated from desk research and the results of the ad-hoc data companies survey. The IDC data is already segmented by country and by industry and this is mapped to the industry segments used in this study using already established mapping tables build from detailed matches of NACE II segments. The respective shares for the software, hardware, services, and data monetization spending

are derived from IDC surveys covering Big Data, IT spending patterns and intentions in the European market, and a survey of data supplier companies and data user companies in key Member States, together with analyst expertise and alignment with IDC's European and worldwide forecasts for the business analytics and Big Data market.

This model updates the data market value shares by MS and by industry and uses the following data sources:

Table 87 Data sources for the Data Market indicator

Data Source	Used in
New ad-hoc survey	Data Market
Data Companies' revenues (Indicator 3)	Data Market
Eurostat Business Demographic Statistics	Data Market
Eurostat annual Structural Business Statistics	Data Market
Eurostat chain linked Volumes (GDP)	Data Market
IDC Core IT Spending guide	Data Market
IT Big Data and Analytics spending Guide	Data Market
IDC Worldwide Black Book (standard edition)	Data Market
IMF World Economic Outlook	Data Market
Consensus Forecasts – Consensus economics	Data Market

14.6 Measuring the Data Economy

Definition and scope

*The **Data Economy** measures the overall impact of the market of data and data products on the European economy. It involves the generation, collection, storage, processing, distribution, analysis elaboration, delivery, and exploitation of data enabled by digital technologies.*

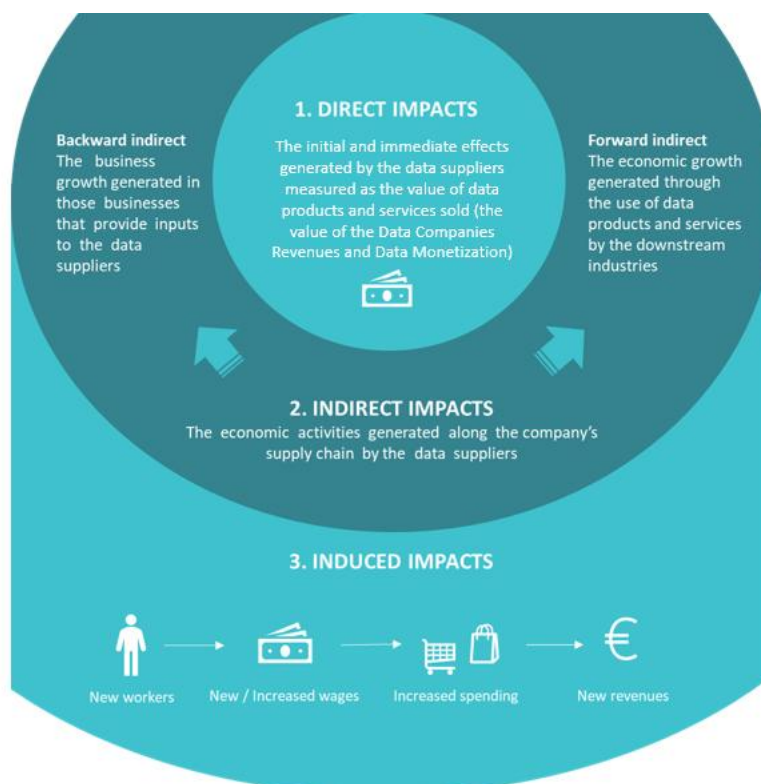
The Data Economy represents a wider and different concept than the Data Market: the Data Market measures the exchange of digital products or data-enabled services, generating innovation, improving production processes, and allowing for enhanced customer experience and understanding. The Data Market is therefore a business-oriented concept. The Data Economy instead captures a wider reality as it apprehends the value and wealth generated in the economy (not just across businesses) by the exploitation of data.

- The **direct impacts** are the initial and immediate effects generated by the data supplier companies; they represent the activity potentially engendered by all businesses active in the data production. The quantitative direct impacts will then be measured as the revenues from data products and services sold, i.e. the value of the Data Companies Revenues as well as Data Monetization. .
- The **indirect impacts** are the economic activities generated along the company's supply chain by the data supplier companies, considering input providers and customers of data supplier

companies. Indeed, there are two different types of indirect impacts, the backward indirect impacts and the forward indirect impacts (Richardson, 1985):

- the **backward indirect impacts**: such impacts represent the business growth resulting from changes in sales from suppliers to the data industry. To produce and deliver data products and services, the data companies need input from other stakeholders. Revenues generated among the providers side from those sales to data companies are the backward indirect impacts.
- the **forward indirect impacts**: such impacts include the economic growth generated through the use of data products and services by the downstream industries, i.e. the data user companies as a selected number of industries. For the user companies, data is now a relevant factor of production; the adoption of data products and services by the downstream industries provides different types of competitive advantage and productivity gains to the user industries. The main benefits that the exploitation of data can provide to downstream industries are (OECD, 2013, Mc Kinsey, 2011):
 - Optimizing production and delivery processes: data-driven processes (data-driven production);
 - Improving marketing by providing targeted advertisements and personalized marketing practices (data-driven marketing);
 - Improving existing organization and management practices (data-driven organization).
- The **induced impacts** include the economic activity generated in the whole economy as a secondary effect. Induced additional spending is generated both by new workers, who receive a new wage, and by the increased wage of existing jobs. This spending induces new revenues creation in nearly all sectors of the economy. Additional consumption will support economic activity in various industries such as retail, consumer goods, banks, entertainment, etc.

Figure 77 The Data Economy: direct, indirect and induced impacts



Source: European Data Market Monitoring Tool, IDC 2020

This indicator will be measured according to the scope detailed in the following table.

Table 88 Indicator Data Economy

Indicator 5 - Value of the Data Economy				
N.	Name	Description	Type and Time	Segmentation
5	Value of the data economy	Value of the direct, indirect and induced impacts of data-driven innovation on the EU economy	Billion €, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK
5.1	Incidence of the data economy on GDP	Ratio between value of the data economy and EU GDP	Billion €, 2023-2024-2025 Forecast to 2030, 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

Our Data Economy estimation does not include the user benefits and social impacts of data-driven innovation such as changes in quality of life (health, safety, recreation, air quality). Although these benefits may be evaluated in economic (monetary) terms, they are not economic impacts as defined above as they do not induce an increase in the business activities and a consequent growth in GDP.

The Value of data

The value creation process based on data rests on the elaboration of information and knowledge (OECD 2016), although the boundaries between data, information, and knowledge are sometimes fuzzy. The huge volume of data is a global phenomenon which is sometimes viewed with suspicion by consumers and businesses because data flows are seen as an intrusion of privacy.

Nevertheless, it is now commonly agreed that data analysis can provide benefits to both businesses and consumers. Moreover, the introduction of GDPR (General Data Protection Regulation) in May 2018 helped in managing the usage of information, giving rules to data users as well as providing control over personal data to data owners. Indeed, the economic theory holds that information encourages competition between businesses for the benefit of consumers. Data do not provide value and benefits as such; data need to be collected, stored, aggregated, combined and analyzed in order to be appropriately used for decision making processes. To create value, data need to be processed (OECD, 2016):

- **Extracting information from structured and unstructured data:** data analytics techniques are today able to analyze both structured and unstructured data. We should remind here that most data stored by businesses are unstructured. Technologies such as optical character recognition, natural language processing, face recognition algorithms and machine learning algorithms are empowering the use of all data.
- **Real-time monitoring and tracking:** analysis of data in real time is often mentioned as one of the most powerful factors since it supports organizations to make real-time decisions, which, in a fast-changing world, is a well-known competitive advantage.
- **Inference and prediction:** until now, prediction was based exclusively on prior information and data series. Data analytics can now enable the creation of information even without prior information. Such information can be created through patterns and correlations of data. Personal information, for example, can be deduced from anonymous or non-personal data. Businesses and organizations demand real time insights rather than historical and periodical information, and for advanced specialized data analytic services. Algorithms allow machine and statistical learning based on non-specific data; businesses can learn and predict a lot about their customers even if they do not have specific data and time series about the issue they are interested in. Machine learning has, as an example, applications in health care where data collected on patients are recorded by imaging, or it supports production processes to increase the quality of production.

The diffusion of technology supporting production and analysis of data induces organizations and businesses to base their decisions on data much more than previously. As pointed out by OECD in its recent report, the process to take decisions is also changing. Decision makers do not necessarily need to understand the phenomenon before they act on it. A store can change the product placement based on data analysis without the need to know the reason why such a change should improve the sales. There is therefore a decision automation process: “first comes the analytical factor, then the action, and last, if at all, the understanding” (OECD, 2015).

The impacts of such a new approach to decision making and to the use of data in all the enterprises and organizations' functions are many and we believe, such impacts will be object of studies and

analysis in the upcoming years. It is, at this point, difficult to classify them and to suggest a taxonomy of such impacts.

Such impacts have been observed through some empirical studies and case analysis. The most relevant ways the benefits appear are the following:

- **Creating more information, knowledge and transparency:** technology is making data more accessible and exploitable to all kinds of stakeholders, including SMEs. This increases transparency and decisions are made on a rational process.
- **Improving performance:** having access to a wide range of information and to a high volume of data is changing the way of making decisions. An increasing number of organizations are going to become data-driven organizations, which means that they make decisions based on empirical results. As an example, retailers can adjust prices and promotions, more precisely than they were used to and in real time. This may improve competitiveness. McKinsey underlines that the health sector is achieving a lot of benefits from the new making decisions process: studies on clinical data allow to identify and understand the sources of variability in treatment, to identify the best treatment protocols and to create guidelines for the optimization of treatment decisions. This does not only increase the effectiveness of treatments, but it also produces saves.
- **Improving customization of actions for better decisions:** data technology is definitely improving the segmentation of customers and the analysis of their preferences in real time. This allows companies to supply products and services targeted to specific groups of individuals who have specific needs and preferences. Such a segmentation is also useful when supplying public services. Such a segmentation helps define the price precisely and offers exactly what is needed which means a better quality and also companies avoid offering products and services the consumers are not willing to pay.
- **Innovating products and services as well as business models:** the more information and understanding businesses have about their customers, the better they can serve them. It is important to say that although consumers may fear their privacy is injured, this can also provide them unexpected surplus: real time price comparison services do not only provide better transparency but also allow buying the best product at the most convenient price (for example when buying online airline tickets or when booking hotels). Companies can in fact produce and create new products and services to better satisfy their customers' needs. This is true also for the public sector and specifically for the health care system where prevention care programs can be created.
- **Ecosystem effects:** there are some areas in which there are great opportunities deriving from the use and the exchange of data, and that will be also driving examples for the near future, such as parts provenance and the origin track of food and materials in manufacturing, but also tracking the conditions at which materials and goods are shipped, know your customers and digital identity (for the financial and the public sector), tracking of medical devices and appliances as well as managing data sources of medical information in healthcare.

These effects are reflected in an increase in revenues due to higher market share from the increase in competitiveness or due to a reduction in costs. All these effects are included in the forward indirect

impacts; these impacts are delivered on the user industry, and because of the above reasons, these are the impacts we consider new on the overall economic system.

Methodology Approach

Measuring the data economy, broadly speaking, depends on:

- the macroeconomic context
- the availability and diffusion of tools that help companies in their data elaboration and usage.
- the industry and country maturity.
- the integration processes the companies are implementing.

Therefore, the data economy model is based on a set of assumptions on all these factors, including choices about proxy indicators where actual data is missing.

The data economy model is a highly sophisticated model articulated by country and industry which has successfully delivered the current and forecast estimates of economic impacts for the last cycles of the EDM Monitoring Tool measurement.

The main steps are similar to the other indicator models and the following:

- annual round of desk research and data collection;
- Revision and update of the assumptions driving the model and the measurement of each category of impacts;
- Measurement of each type of impacts as follows:
 - Direct impacts: they correspond to the value of the data market (indicator 4)
 - Backward indirect impacts: they correspond to the increase of revenues by data supplier companies and are based on indicator 3 – data supplier companies' revenues;
 - Forward indirect impacts: this is the most difficult type of impact since is based on the estimates of the economic benefits by industry generated by the adoption of data-driven innovation, through the calculation of multipliers.
 - Induced impacts measure the secondary effect of the other categories of impacts together on the overall economy and are calculated through the estimate of appropriate multipliers.
- The impacts measured are then aggregated and their value and growth trend will be cross-checked again for coherence with other indicators. This is the value of the data economy and will be calculated in the first measurement for 2023, 2024 and 2025 (estimate) for the EU27, separately and in total, the rest of the EEA, the UK and Switzerland.
- Separately, the study team will provide estimates of GDP value for each of the country covered and will calculate the incidence of the aggregated data economy on GDP (for the EU27, separately and in total, the rest of the EEA, the UK and Switzerland).

The forecasting to 2030 will be carried out as follows:

For the forecasting scenarios the study team will:

- Review the qualitative assumptions developed for each scenario for the year 2030 (3 scenarios);
- For direct and backward indirect impacts, the forecast will be calculated separately by the data market model and the data companies' revenues model and the results will be included in the data economy model (through a round of cross-check and validation of coherence, robustness and quality of all the results);
- For forward indirect impacts and induced impacts, we will derive assumptions in order to calculate the forecast multipliers under the 3 alternative scenarios to the year 2030;
- The value of all impacts will be aggregated calculating the value of the data economy;
- Estimates of GDP value in 2030 for the countries measured will be generated for the 3 alternative scenarios
- Finally, we will calculate the incidence of the data economy on GDP;
- The results will be again cross-checked for mistakes or lack of coherence by different members of the study team.

It should be noticed that the IDC study team includes 3 different analysts in charge of the indicators models (Mike Glennon for the data market, data companies, data company revenues, Carla La Croce for the data economy, Marianne Kolding for the data professionals and data skills gap). They are the same analysts who have developed and calculated these models in the past years. This will help the quality control since they will collaborate in the reciprocal cross-check and validation of their models.

Data sources

Each year the study team will carry out ad-hoc desk research to update the data economy model assumptions, particularly the value of multipliers, leveraging other similar studies about the economic impacts of data innovation and other emerging technologies. The results of the data collection for this study will be used specifically the measurement of business impacts of data innovation. IDC annually updated research will be used, including (but not limited to) the following studies:

- IDC Worldwide Semiannual IT Spending Guide Industry and Company Size
- IDC Worldwide Public Cloud Services Spending Guide
- IDC Worldwide Big Data and Analytics Spending Guide
- IDC Worldwide Internet of Things Spending Guide
- IDC Worldwide Artificial Intelligence Spending Guide

IDC spending guides estimate the demand side spending in technologies by industry, country and use case for a period of 5 years (previous year, current year and 3 years forecast). The spending guides are high quality data products, cross-checked for coherence both by geography and by industry. These spending guides will feed into the estimate of the level of take-up and value of data spending by industry as well as into the historical series.

The data on business impacts sourced from the ad-hoc field survey will also be leveraged to improve the estimate of indirect impacts. In order to measure the impact of the diffusion and use of data services and products, we will estimate each component (as defined in the above paragraph) of the impacts separately.

Estimate of forward indirect impacts

As highlighted by OECD, 2013, Mc Kinsey 2011 the impacts provided by the exploitation of data over the economic system include:

- optimizing production and delivery processes (data-driven processes)
- optimizing marketing by providing targeted advertisement
- enhancing research and development and developing new products and services
- improved decisions making, launch of innovations, creation of new businesses,
- innovating business models
- creating transparency and diffusion of information

While impacts from the data supply-side are immediate and measurable, the impacts on the demand-side are more difficult to catch, especially in the early stage of an emerging industry.

The estimate of the value of the data economy will be based on estimates of the multipliers of the data products and services on the whole economy which depend on (but not only):

- The multiplier effect of data products and services on innovation in the whole economy;
- The multiplier effect of increased revenues by users.

IDC will cluster the industries which may be affected by a high, medium, and low multiplier effect in order to estimate the overall effect on the EU economy. Finance, retail, manufacturing, energy for example are industries where the impact of an intensive use of data is likely to be high. Direct and indirect impacts and the possible multiplier effects are not going to occur within a year, but they may require at least a couple of years.

IDC will develop a detailed model based on other models calculating the economic impacts of IT pervasive innovations. Impacts on economy will clearly depend on the diffusion rate, which in turn depends also on the general economic conditions of next years.

Assumptions

These are the main assumptions underlying the model which will be revised and updated again before the first round of measurement in the new cycle.

- The penetration rates of data in terms of value added for the user industries using data are positively correlated to the penetration rate in terms of number of companies using data;
- Data related products and services are potentially adopted by all companies (both SMEs and large) in all industries;
- The adoption rate of the data related products and services depends on the technological maturity of companies and on the IT spending of the countries;
- The adoption of data related products and services will provide both direct and indirect impacts on industry and on the overall economy

- The adoption of data-related products and services may provide saving effects (where these products substitute more traditional ones) which in turn may increase re-investments
- The adoption of data-related products and services may generate more effective decisions and in turn customer satisfaction
- The adoption of data related products and services and use of data leads to new decision-making processes. They act as a rationalization and optimization factor (Brynjolfsson, 2011, Mc Kinsey, 2012), since they improve effectiveness and efficiency, and in some cases, they may have a disruptive effect. The impacts generated thanks to these new decision-making processes are accounted under the forward indirect impacts.
- For the induced impacts, the additional earnings are spent according to the general economic mood.
- For Austria, Belgium, Denmark, Finland, Ireland, Luxembourg, Malta, the Netherlands, and Sweden we assume that these Member States have the same distribution of benefits as the average of the Big Six.
- For the other Member States, we estimate the benefits of the rest of Europe, based on the survey results, and we assume that all the minor Member States are achieving benefits similar to the rest of Europe.

14.7 Measuring Data Professionals Skills Gap

Definition and scope

The **Data Professionals Skills Gap** indicator captures the potential gap between demand and supply of data skills in Europe. For the calculation of this indicator, we are including only the data business and data technical professionals, since the data consumers are primarily concerned with other activities but are using data to make informed decisions.

Monitoring the skills gap is of paramount importance since the lack of skills may become a barrier to the development of the data industry and the rapid adoption of data-driven innovation. For the data consumers, the ability to interpret and use data is more aligned with advanced digital and analytical skills.

Table 89 Indicator 6- Data skills gap

Indicator 6 - Description				
N.	Name	Description	Type and Time	Segmentation
6	Data Professionals Skills Gap	Gap between demand and supply of data technical and business professionals	Absolute number and % on total demand, 2023-24-25 Forecast to 2030, 3 scenarios	By Geography: 5 EU MS: DE, ES, FR, IT PL Rest of EU27 Total EU 27 UK Switzerland Rest of EEA

Measurement Approach

The measurement of this indicator is based on a model combining the separate estimates and forecasts of the demand of technical data professionals and the supply of corresponding data skills by the education and training system (Figure 14). This includes balancing the main sources of data skills (from the education system and re-training to the provision from other careers) with the estimated demand of data skills (by all data companies).

More specifically, we use the following definitions:

- **The supply of data professionals** is equal to the data skills supply stock (the sum of employed data professionals and the unemployed ones).
 - **The demand of data professionals** is the sum of existing and open positions for data technical professionals and data business professionals, that is the number of currently employed data professionals (indicator 1 in this study) plus the unfilled vacancies.
 - **The indicator measures the difference between total demand and supply**; if demand is higher than supply there is a data skills gap (excess demand). If supply is higher than demand, there is over supply and potentially unemployment.
- Furthermore, key assumptions are made and datapoints used on variables such as (but not limited to): Level of upskilling/reskilling, retirement rate within data professionals by country and immigration levels to provide a robust picture on workforce development for the forecasting period.

Data sources

As for the other indicators, the study team will carry out annually ad-hoc desk research on data skills supply and demand dynamics. The main sources which will be considered are (but not limited to):

- ILOSTAT (International Labour Organization) Statistics and Databases (2023)
- LEADS project on Advanced Digital Skills publications (last update 2023)
- EUROSTAT Educational attainment statistics (Last update: 2022).
- IDC's Technology Employment Impact Guide – updated on a semi-annual basis with forecast of employment across 40 technology job roles, including seven data management and analytics roles (Last update 2022)
- Cedefop – Skills-OVATE data for vacancy estimations (Most recent data collected between 1 July 2018 and 31 December 2019)
- Cedefop – Skills Index and Skills forecast (Last update 2022)

Measurement of demand

The total demand for data technical and business professionals will be calculated for the years 2021, 2022 and 2023 in the first cycle and will move forward one year for each measurement cycle. For the current year of the indicator (in the first measurement it will be 2023) we need to add to the number of data professionals sourced from Indicator 1 an estimate of existing unfilled positions (vacancies). This is so because the labour market is a dynamic environment characterised by inflows and outflows of human resources, and in any given moment in the present there are companies looking to hire as well as unemployed looking for a job. Our model includes estimates of these inflows and outflows due to retirements, sickness, deaths, graduations, career changes between companies, industries and job roles, and people entering or exiting the market for training or education activities.

To calculate the current vacancies, we will carry out additional data collection on job search portals such as Linked.in to calculate the level of demand for data skills jobs, defined on the basis of the desks research and analysis calculated for the Indicator 1 on data professionals. IDC ongoing research on the demand for advanced ICT and data skills will be leveraged to support the forecasts. In addition, the survey will provide data about companies' difficulty in searching and finding specific data skills. This will help to model the forecast demand and to understand the level of the potential data skills gap.

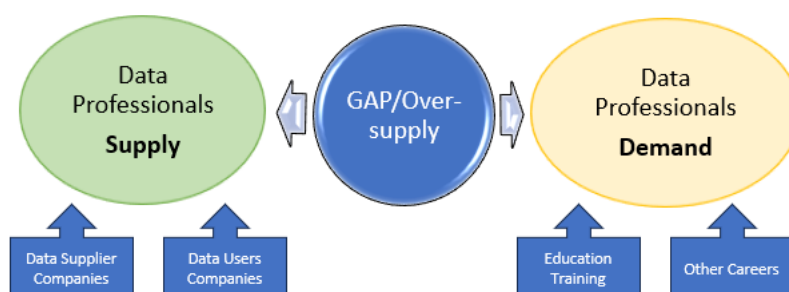
The forecasted demand for data professionals to 2025 (baseline scenario) and 2030 under the 3 scenarios calculated by Indicator 1 instead is considered as the total potential demand (it incorporates future potential vacancies).

Measurement of supply

Supply will be estimated aggregating the number of graduates in the relevant disciplines corresponding to the data skills identified in Indicator 1 and the level of inflows from other careers or upskilling. The model considers the inflows and outflows of the data skills market such as retirements, unemployment, and vacancies.

Since we have changed the definition of data professionals, in the first phase of the study we will also carry out an update of the type of data skills to be monitored and the type of educational institutions providing them. To do so we will leverage desk research but also expert interviews, specifically with Ernestina Goncalves of UPM Madrid, who leads the BDVA taskforce on skills and education (see also par. 2.3.5 on expert interviews).

Figure 78 The Data Skills Demand-Supply Balance Model



Source: European Data Market Monitoring Tool, IDC 2016

14.8 Measuring Data Flows

Definition and Scope

Indicator 7 on data flows measures the flow of data into and out of Member States from enterprises buying cloud services used over the internet. Net flows are the result of subtracting data inflows from data outflows. Cloud services include Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a service (IaaS). Software as a Service is the provision of application-level services to organizations. Platform as a Service is the provision of an environment where organizations can develop their own applications for web deployment, and Infrastructure as a Service is the provision of

base computing resources including, compute, storage, or networking for organizations to use. This data is limited to Member States and those countries included in the EEA, and the United Kingdom.

Table 90 Indicator 7 - volume of data flows

Indicator 4 - Description				
N.	Name	Description	Type and Time	Segmentation
7	Volume of data flows	Estimate of the volume of data flowing in and out of Member States in terabytes	Terabytes, 2023-2024-2025 Forecast to 2030 - 3 Scenarios	By Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

Data Sources and Methodology

The foundation for measuring data flows is the Eurostat data: Cloud Computing Services (ISOC_CICCE_USE), which gives the percent of enterprises using cloud computing services. Tracking changes in data flows, aligned with data from the European Data Flow Monitoring study with its Cloud Data Flow Strategic Visualisation Tool ⁸¹. The tool gives up to date indications of changes in data flows from and to the EU as a whole. The foundation for data flows is from the ITU data, published regularly by the ITU. Forecast values use the ITU historical data and an anticipated growth rate from the ITU – currently estimated at 22 percent per year.

Cloud use by enterprise – from Eurostat data – gives the share of enterprises that use cloud data. Multiplying this by data volume by member state from ITU data gives data volume per enterprise. For data volume per employee the data volume is divided by the total number of employees (again divided by the share of enterprises using cloud data) gives data volume per employee. Finally, multiplying this data volume per employee by the total number of employees in specific industries gives the data volume by industry within a member state.

Historical data flows for 2023 will come from the Cloud Data Flow Strategic Visualisation Tool.

Table 91 Data Flows data sources

Data Source	Used in
New ad-hoc survey	Data Flows
Eurostat share of companies using the cloud (isoc_cicce_use)	Data Flows
Eurostat Business Demographic Statistics	Data Flows
Eurostat annual Structural Business Statistics	Data Flows
ITU Statistics - Study on Mapping DataFlows https://ec.europa.eu/newsroom/dae/redirection/document/82796	Data Flows
The European Data Flow Monitoring study with its Cloud Data Flow Strategic Visualisation Tool ⁸²	Data Flows

⁸¹ <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

⁸² <https://digital-strategy.ec.europa.eu/en/policies/european-data-flow-monitoring>

14.9 Measuring Data Maturity

Definition and Scope

Data Maturity is the assessment of the level of engagement of an organization in its use of data in key digital areas. The key digital areas are:

- Businesses receiving orders through the internet.
- Businesses using Artificial Intelligence.
- Businesses purchasing cloud computing services.
- Businesses having performed big data analysis.
- Businesses using IoT.

These digital areas have weights attached to them – totaling 100%. For each industry, the percentage of organizations associated with each key area is multiplied by the corresponding weight. The result is summed to give a non-dimensional⁸³ value of maturity. Industries within a member state can be compared to give relative maturity, and selection is done on company size band in addition to by industry to give a profile of maturity by company size, and by industry.

This maturity level by industry and size band gives a reference point against which organizations can measure themselves and understand where to invest for improved digital maturity. Member States will use these measures of maturity by industry to establish where to focus investments to raise the maturity of their organizations.

Table 92 Indicator 8 - Data Maturity

Indicator 4 - Description				
N.	Name	Description	Type and Time	Segmentation
8	Data Maturity	Model of the maturity of data Use	Dimensionless, 2023-2024-2025 Forecast to 2030 - 3 scenarios	By industry for each specific Geography: EU27 MS (by country and total) Rest of EEA Switzerland UK

Data Sources and Methodology

The model uses Eurostat sources from the E-business section of the data tree and from the ICT usage in enterprises section of the data tree, both under science, technology, digital society. Values assessed are:

- share of enterprises using Big Data Analytics
- share of enterprises using IoT
- Share of enterprises using Artificial Intelligence
- Share of enterprises using cloud computing
- Share of enterprises receiving orders online.

These values are selected for a specific industry in a member state, and a weighted sum gives the overall data maturity for that industry in the member state. Reviewing the relative values of industries in a specific member state enables the member state to assess the digital maturity for

⁸³ Thus, not expressed in, or representing terms of any particular unit (as of mass, length, or time)

each industry and to act accordingly to support industries that as less adept in the adoption of digital technologies.

Table 93 - Data Maturity data sources

Data Source	Used in
Eurostat isoc_eb_bdn share of enterprises using big data	Data Maturity
Eurostat isoc_eb_iot share of enterprises using IoT	Data Maturity
Eurostat isoc_eb_ai share of enterprises using AI	Data Maturity
Eurostat isoc_cicce_use share of enterprises using cloud computing	Data Maturity
Eurostat TIN00111 enterprises receiving orders online	Data Maturity

15 Annex II- Survey

For each of the yearly measurement rounds of the indicators under Objective A, the study team will gather data and relevant quantitative evidence through different means. The outputs of these data collection efforts will be integrated into the quantitative modelling of indicators.

Field survey: A quantitative survey of 1440 respondents, an increase from the 1190 respondents in the European Data Market 2021-2023 survey, will serve as the primary data collection method to inform the construction and calculation of the 8 indicators under Objective A.

The survey will serve the following purposes:

- Monitoring the impact of the war in Ukraine on businesses in the European Union, which continue to face challenges due to the dramatic increase in energy prices, resulting in generalized inflation, and the absence of data expertise previously sourced from Ukraine.
- Enhancing the internal coherence of data collected at the member state level to facilitate data extrapolation for non-surveyed countries. The inclusion of three additional Member States will bolster the statistical representation of the data, resulting in more reliable indicators.
- Improving the quantitative foundation for measuring indicators of EU international partners/competitors with the inclusion of Israel as one of the surveyed countries.
- Gathering further evidence on data economy-related themes such as socio-economic and environmental aspects and the contribution of common European Data Spaces to the European data economy.

Similar to previous editions of data market studies, the survey will be used to collect additional evidence on updated definitions for key indicators added in the previous cycle, as well as new indicators added in the current cycle, including:

- Measuring the value of data (data monetization): Investigating data monetization practices to contribute to estimating the value of data.
- Measuring data users: Analysing data innovation uptake through the investigation of data use cases and adoption to identify data users more comprehensively.
- Measuring data suppliers: Identifying data supplier companies by probing their core business, encompassing all sectors with expectations of significant identification in sectors like finance or retail.
- Measuring data skills: Providing updated evidence on organizations' data skill requirements.
- Measuring data flows: Complementing Eurostat data on data flows by querying respondents on data import and export.
- Measuring data maturity: Evaluating data maturity for surveyed organizations to complement metrics obtained through Eurostat.
- Providing primary research data for assessing the impact of common European Data Spaces: Evaluating participation and benefits gained by organizations participating in Data Spaces.

Desk research: The survey will be supplemented by additional national, European, and international statistical sources, such as Eurostat and Ilostat. From these sources, we will collect specific data relevant to each indicator, as outlined below.

Data collection will also include **screening of data from IDC's ongoing primary research** on major technology markets. This research is based on annual worldwide surveys of technology vendors and users, as well as databases estimating market trends and value by country, industry, and technology.

1.5.7. Quantitative Survey and Sample Design

Survey execution will be meticulously crafted, coordinated, and overseen by the European division of IDC's Global Primary Research Group (GPRG), adhering to the criteria delineated in this section. The selection of the sample size has been carefully calibrated, taking into account the study objectives and financial constraints. Drawing on our extensive experience, we are confident that the survey's quality and reliability will yield robust data to inform the model's indicators.

The composition of the sample and the inclusion of countries will be subject to discussion and validation with the European Commission. Similar to the previous survey, we will employ a 20-minute telephone survey to ensure comprehensive data collection, including essential firmographic information necessary for thorough data analysis and segmentation.

Table 94 Survey features

2 nd Survey Features	Description
Sample size	1,440 completed interviews (<i>new</i>)
Countries	EU: Austria (<i>new</i>), Czech Republic, Estonia (<i>new</i>), France, Germany, Greece, Italy, Netherlands, Poland, Portugal (<i>new</i>), Romania, Spain, Sweden Non-EU: Iceland, Israel (<i>new</i>), Norway, Switzerland, UK
Methodology	CATI/telephone 20-minute. Languages: English, French, German, Italian, Spanish, Czech, Polish, Greek, Portuguese, Romanian.
Target respondent	Decision makers and influencers for data solutions within the company, manager level+. Mix of IT and non-IT (e.g., analysts, analytics, BI roles etc.)
Target company	Companies/organizations with 1+ employees, all verticals. Companies with "1 employee" will not exceed 5% of sample.
Screening questions	Companies must use data to make business decisions.
Quotas	Hard quotas by country. Minimum quota: minimum 200 respondents must be data suppliers (must sell data to other companies) Soft quotas (+/-10% flexibility*) for industry verticals Soft quotas (+/10% flexibility*) for size-bands in each country <i>*Note: higher quota flexibility for size and verticals is needed in CEE and smaller countries, due to the structure of the business population.</i>
Timescale	~ 12 weeks

The countries selected for surveying are determined by the following criteria:

- Ensuring geographical representation across all main regions within the EU.
- Incorporating a mix of large, medium, and small Member States to reflect country size diversity.
- Including non-EU countries featured in the tool, such as Switzerland, Norway, Iceland, Israel, and the UK.

On request of the European Commission, we have halved the sample size of the UK (now at n=50, against the previous sample size of n=100 as presented in our original technical proposal) and increased the sample size of other Member States(Austria, Italy, Poland, Portugal, Spain).

Survey quotas for countries, industries, and company size bands are established to create a robust baseline, as outlined in the table below.

Table 95 Sample Quotas Table

Country	Sample N=	Industry	Soft Quota %	Company Size Band	Soft Quota %
Austria	60	Agriculture	6%	1-9	12%
Czech Republic	70	Construction	6%	10-49	20%
Estonia	30	Manufacturing	10%	50-249	20%
France	160	Education	7%	250-499	20%
Germany	160	Financial services (Banking, Insurance)	9%	500+	28%
Greece	60	Healthcare service providers	9%		
Iceland	40	Information and communications, Telecom, Media	10%		
Israel	40	Professional services	10%		
Italy	130	Public administration and defense	10%		
Netherlands	90	Retail/wholesale	10%		
Norway	40	Transportation and logistics	7%		
Poland	110	Utilities	6%		
Portugal	60				
Romania	90				
Spain	120				
Sweden	70				
Switzerland	60				
UK	50				

Country quotas are considered firm quotas, necessitating compliance during the survey. Meanwhile, quotas for each industry and company size band serve as flexible targets, with absolute adherence not mandatory.

2.3.3 Sample Frame and Confidence Intervals

The sample frame is derived from a list source representing each country, with vertical markets categorized according to standardized industries based on NACE codes. A specific number of interviews will be conducted across five company sizes and twelve vertical market segments to guarantee dependable and comprehensive results, maintaining a 95% confidence interval for each size and industry group.

With a confidence level of 95%, the margin of sampling error (MoE) for the entire survey sample stands at $\pm 2.6\%$. However, confidence intervals for individual questions may fluctuate due to variations in sample size, particularly when examining results at the vertical market level or for filtered questions.

Table 96 Margin of Error by Country.

Country	Sample N=	MoE +/- %
Austria (new)	60	12.7%
Czech Republic	70	17.9%
Estonia (new)	30	17.9%
France	160	7.7%
Germany	160	7.7%
Greece	60	12.7%
Iceland	40	15.5%
Israel (new)	40	15.5%
Italy	130	8.5%
Netherlands	90	10.3%
Norway	40	15.5%
Poland	110	9.3%
Portugal (new)	60	12.7%
Romania	90	10.3%
Spain	120	8.9%
Sweden	70	17.9%
Switzerland	60	12.7%
UK	50	13.2%
TOTAL	1,440	2.6%

2.3.4 Quality control of data processing and elaboration

The IDC survey team will take primary responsibility for data processing, data verification, and cleaning, as well as for conducting statistical analyses of the survey results, including the tabulation of findings. Survey data will be provided in both raw format and in the form of banner tables, which display responses to each survey question, both aggregated and segmented by key categories such as industry, country, and company size. Our banner table template incorporates statistical testing for each response, ensuring transparent and immediate assessment of statistical reliability. Additionally, our statistical team is equipped to conduct advanced analyses including cluster and conjoint analyses.

IDC conducts checks on raw data collected at three stages during the data collection process: at 10%, 50%, and 100% completion. For telephone surveys, we also review sample audio recordings. During the data processing and cleaning phase, we ensure data consistency by identifying numeric outliers, assessing response patterns (online surveys only), detecting speeders, evaluating adequacy of open-ended responses, verifying responses to key technology adoption questions, and addressing any other data discrepancies.

For telephone research projects, we engage in ongoing clarification of responses by randomly recalling respondents throughout the project, and if necessary, at the conclusion of data collection. This allows us to address any misunderstandings or errors in responses. In some instances, we may also request field agencies to replace a certain percentage of interviews. In the case of online surveys, we oversample by up to 10% to account for records that do not meet our data quality standards.

2.3.5 Extrapolation of results to non-surveyed countries

The survey results will be analyzed for the 18 countries surveyed. IDC will employ a standardized methodology to extrapolate these results to the remaining countries included in the Monitoring tool through data modeling. This extrapolation process relies on identifying the most similar countries that were not surveyed and mapping their characteristics against those of the surveyed countries.

The data modeling process entails matching the surveyed countries with unsurveyed ones based on several dimensions including industries, company size, and education levels. This involves constructing a 20-dimension vector to represent each country's profile across these dimensions. Specifically, the methodology assesses the share of total country representation across 12 NACE II industries, five company size categories, and the proportion of the population educated to degree level. By comparing these shares between surveyed and unsurveyed countries, the closest match across all dimensions is identified as the nearest equivalent country.

This methodology, which has been utilized since the inception of the European Data Market Monitoring tool, has proven effective in providing reliable extrapolations in previous editions of the study.

2.3.6 Questionnaire structure

The preliminary questionnaire outlined in this section will undergo discussion and validation with the European Commission, taking into account feedback from the methodology update and validation interviews. New inquiries, particularly concerning Artificial Intelligence, data flows to and from the EU, and common European Data Spaces, have been incorporated. The questionnaire's structure is organized into the following sections:

- Introduction: Providing an overview of the survey.
- Screener Questions: Screening respondents to ensure they meet the criteria for participation.
- Section 1: Drivers and Usage of Data
- Section 2: Data Monetization
- Section 3: Data Suppliers
- Section 4: Organizational Data Readiness
- Section 5: Business Impacts of Data-Driven Innovation
- Section 6: Data Skills

Table 97 Draft questionnaire (main sections)

Sections	Draft questions	Type of answer	What the data is used for
Screener questions	What is the status of your organization's use of Big Data and analytics today?	Currently using Piloting or implementing Considering or evaluating for future use (TERMINATE) Not using and no plans to do so (TERMINATE)	Select data users
	Which of the following best describes your position within your organization?	List of managerial roles – select only managerial roles	Select appropriate respondents
	What is your role in decisions regarding your organization's use or potential plans for using big data and analytics?	One of the decision makers Strong influencer or advisor Not a decision maker, but highly knowledgeable about these decisions	Select appropriate respondents

Sections	Draft questions	Type of answer	What the data is used for
		None of these [TERMINATE]	
	Questions on geographical location, industry sector, company size bands	List of options by country, sector and number of employees	Achieve survey quotas by country, sector, company size band
	Does your organization provide data products, services, tools or technologies?	List of products and services – answers yes, no, planning	Select 200 respondents who answer yes to at least 1 category of products/services/tools
	Does your organization collect, aggregate and sell data?	Answers yes, no, planning	Select 200 respondents who are engaged in data monetization
Section 1	Drivers and use of data		
	Which of the following business goals are your main drivers for implementing data analytics?	<i>Rank in order of priority maximum 3</i> Better understand customer behaviour and expectations Optimize our pricing strategies and go-to-market programs Product, services, or program improvement and innovation Improve our understanding of the market and our competitors Improve and optimize our business processes and operations Improve our facilities, and equipment design, maintenance, and utilization Improve our operational, fraud, and risk management Implement better regulatory compliance and financial controls	Profiling user companies and data-driven business strategies
	In which business areas does your organization implement big data and analytics or Artificial Intelligence?	<i>Rank in order of priority and level of data investments, maximum 3</i> Customer service and support Engineering Research and development (R&D) Product innovation (new business initiatives) Maintenance and logistics Marketing Finance HR and legal Sales Product management Governance, risk, and compliance IT and data operations	Measure uptake of data technologies by company function
	Is your company implementing the following data-driven use cases?	Yes – Planning – No List of use cases • Horizontal for all • Vertical specific • Add AI use cases	Measure take-up of use cases
	What percentage of the data you use in data analytics is generated from external devices owned by, or managed by your organization (Internet of Things), in relation to internally generated process related data plus externally acquired data?	Range of percentages	Monitor data use
	Which of the following tools does your company plan to use	Spreadsheets Structured reporting tools Data discovery tools	Monitor data use

Sections	Draft questions	Type of answer	What the data is used for
	for analysis of data within the organization?	Multi-dimensional analysis tools Advanced Analytics tools Business Intelligence apps.	
Section 2	Data monetization		
	Do you make your internal data available for sale or external use or re-use?	Yes, we maintain API's to allow external use of our data for free We require external data user companies to register with us for data use for free We require external data user companies to register with us and pay for data use. No, We do not make our data available for external use	Estimate data sharing and monetization
	What is your budget for gathering, acquisition, or purchase of data?	Range of prices to click on: (update range of prices) - Current year - in two years	Estimate data monetization
	What are your plans to use external data?	Currently using Plans to use in next 36 months No plans, but considering No plans	Estimate data monetization
	Does your organization participate in one or more data marketplaces/ industrial data platforms?	Yes / No, but planning / No	Estimate data monetization and data reuse
	If yes to above: Did you purchase data in the last year? If yes to above: how much did you invest in the last year in data purchases?	Yes / No, but planning / No Absolute number % of IT spend	Estimate data monetization
	If yes to above: Did you sell data in the last year? If yes to above: what was your income from sale of data in the last year?	Yes No, but planning No Absolute number % of IT spend	Estimate data monetization
Section 2a	Data Flows, Data Spaces		
	Identify from which geographical location you moved data in the past 12 months	Volume moved (TB) Cost of data migration (Euro) Former location New location Enter top 5 countries incl. did not move data.	Estimate data flows
	Does your organisation participate in any Data Spaces?	List of Data Spaces for participation	Understand involvement in Data Spaces
	In which Data Spaces do you participate?	List of Data Spaces	Understand involvement in Data Spaces
	What benefits do you perceive you get from participation in Data Spaces	List of potential benefits	Understand value of participation in Data Spaces.
Section 3	Data suppliers		
	Which of the following is closer to your main role in the data market?	Rank by importance, max 3 Vertically integrated data supplier Information and data broker Data marketplace Industrial data platform	Profiling data suppliers

Sections	Draft questions	Type of answer	What the data is used for
		Technical data tools and solution provider Provider of data analytics Provider of mobile and/or external apps for data Provider of ICT enablers, cross infrastructures, cloud computing	
	Do you provide...	List of data products and services	Profiling data suppliers
Section 4	Organizational data readiness		
	Which roles will use data analytics tools?	<list of roles> Currently using Plans to use in next 36 months No plans, but considering No plans	
	What are the barriers to adoption of data analytics and data tools?	Insufficient skills/ lack of expertise Difficulty in finding expertise Insufficient investment High cost of tools and data Resistance from senior management	
	What is the basis for decision making in your organization?	Internal Expertise (%) External expertise (%) Internal data (%) External data (%)	
Section 5	Business impacts of data-driven innovation		
	What is the main business benefit of your data investments and use of data analytics?	<i>Rank by relevance, max 3</i> Cost reduction Time efficiency Product/service quality Revenue growth Customer satisfaction Business model innovation Increase in the number of new products or services launched None of the above	Estimate business benefits for the data economy
	For the impacts selected: For revenues, profits, cost reduction: Can you provide the value of the improvement in the current year? For the other impacts: Can you provide the % of improvement in the current year?	Absolute value Or % improvement	Estimate business benefits for the data economy
Section 6	Data skills		
	What share of your organisation's employees are in the following roles?	Data technical professional (%) Data business professional (%) Data consumer (%)	Measure data professionals
	What is currently the number of vacancies in your organization for people with data skills	Absolute number As a % of jobs No vacancies	Measure the data skills gap
	Which of the following skills exist in your organization in relation to the use of data analytics?	Strategy development and project planning IT Hardware Data preparation and cleaning capabilities Complex data analysis using OLAP, multi-dimensional analysis tools or spreadsheets.	

Sections	Draft questions	Type of answer	What the data is used for
		Predictive analysis competence Business intelligence capabilities Performance measurement Data Governance	
	In the past 12 months, have you been hiring for some of the following roles?	Data technical professional yes-no Data business professional yes-no Data consumer yes-no	
	How difficult did you find it to hire for these roles?	"(Only the roles for which they were hiring) and then: Not difficult A bit difficult - took a few months Very difficult - took best part of a year Very difficult - we have decided to stop looking	
	If you have stopped looking, how are you filling the role instead?	Reskilling from other positions Engaging external provider to help Postponing the project/role Abandoning the project/role altogether	
	What is the impact of data and analytics on your employee satisfaction and recruitment?	Very high High Medium Low Very low	

2.3.7 Qualitative Management for Quantitative Data Collection

We will design and implement the survey using the strict best practices and quality management procedures developed by IDC for this project. The phases that are outlined in the diagram below and elaborated upon in the subsequent sections comprise the procedure.

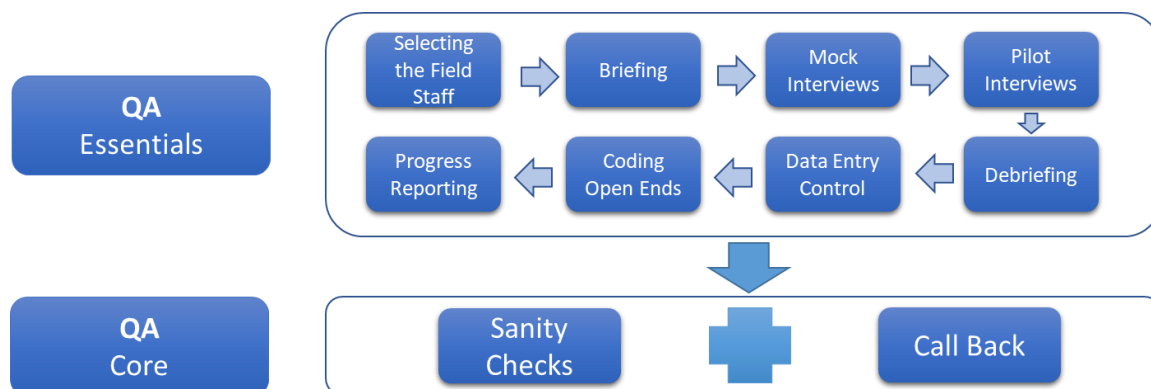


Figure 79 IDC End-User survey Quality Management Process

2.3.8 Supplier Selection

IDC maintains a carefully curated list of preferred suppliers, selected through a stringent evaluation process and regularly reassessed. This supplier roster encompasses a blend of global, regional, and local providers across all methodologies, including telephone, online, face-to-face, and qualitative

research (such as in-depth interviews and focus groups). Initial selection typically relies on referrals from trusted colleagues or peers, followed by a thorough assessment of adherence to industry standards (e.g., ESOMAR, MRS memberships) and a comprehensive evaluation process.

This evaluation process involves interviews with key personnel, review of documentation and processes, and, in the case of phone suppliers, on-site visits to their call centre facilities. Once a supplier successfully completes several projects with IDC and meets stringent quality standards, they are added to the preferred supplier roster. Supplier selection for specific projects considers various factors such as target audience, project complexity, geographic coverage, methodology requirements, domain expertise, and the size of the call centre.

While the complete supplier list cannot be disclosed, examples of suppliers used for various project types can be provided.

2.3.9 Data Collection Roles and Responsibilities

IDC analysts, along with the survey team analysts, collaborate to develop the questionnaire, ensuring its readiness for fieldwork. Following this, the questionnaire undergoes proofreading by IDC's PS&T team, the internal publishing unit, before entering the programming stage. Both programming and testing are conducted in-house for all projects, utilizing industry-leading survey software such as Decipher for data collection.

External fieldwork suppliers are engaged for sample-only services, including database management, recruitment, telephone interviewing, and, for online projects, sample provision from their online panels. Once the survey is tested internally and the supplier is selected, IDC shares the survey links with the external providers and sends the questionnaire to translation agencies if needed.

For telephone research, IDC holds kickoff calls with the field house project manager and interviewer team lead to review study objectives, sample targets, and expectations, ensuring alignment with the questionnaire design. The interviewer team lead then briefs the telephone interviewers, who utilize CATI systems to conduct interviews in conjunction with IDC's survey links, enabling data capture on IDC's systems. Online suppliers exclusively provide sample services. Throughout the data collection process, the IDC survey manager serves as the primary contact point to liaise with the external field partner. They monitor quota achievement, address any inquiries or issues, and ensure milestones are met for interim and final deliverables.

2.3.10 Questionnaire Translation

After programming the English version of the survey, IDC transfers the questionnaire in XML format to external translation agencies. These agencies specialize in technical language and employ translators with expertise in the field. Additionally, some translation agencies maintain a library of IDC and technology-specific terms, enhancing consistency across IDC projects. Once translated, IDC analysts, who are native speakers, review the translations to ensure accuracy, particularly regarding industry-specific technical terminology.

Following the review process, the translated documents are uploaded to the survey systems, and survey links are checked for consistency to ensure that respondents receive a seamless experience across different language versions. This meticulous process helps maintain the integrity and reliability of the survey data across different linguistic contexts.

2.3.11 Questionnaire Validation

IDC implements a soft launch or pilot stage for all projects, both CATI and CAWI. During this phase, typically involving 5-10% of the target sample, the survey team and IDC analysts review the collected data to ensure questionnaire adherence and consistency. Key questions are scrutinized to verify alignment with expectations, especially regarding adoption metrics. In telephone interviews, sample recordings are evaluated to confirm questionnaire clarity, consistent respondent understanding, and absence of interviewer bias. Based on this evaluation, adjustments may be made to address any identified issues and ensure the survey's effectiveness.

2.3.12 Respondent Screening

IDC employs screening questions to ensure that the target companies and respondents are accurately reached. Suppliers are provided with clear definitions of verticals and size bands, which are aligned with standard industry categorizations like NACE or SIC. Potential companies are randomly selected from databases utilized by external suppliers, such as proprietary databases or D&B. Screening questions are also tailored to capture respondents' knowledge and involvement in the topic of interest. Additionally, IDC provides comprehensive lists of possible respondent titles, departments, and seniority levels to be targeted, recognizing the diversity of roles across industries, sizes, and countries. These lists are not exhaustive, given the wide range of titles and designations across different contexts.

2.3.13 Interview Completeness

In quantitative studies, both for telephone and online surveys, IDC considers an interview or survey complete when 100% of the questions have been answered. To ensure completeness, our questionnaires include non-answer options, such as "Don't know" and "prefers not to answer," for certain types of questions, such as numeric, sensitive, or future-oriented questions. However, if a respondent consistently defaults to selecting "Don't know" or refuses to answer a high number of questions, we instruct the interviewer to terminate the interview and seek a referral. In online research, we reserve the right to reject surveys that are incomplete due to non-completion reasons.

For qualitative, in-depth interviews, completion criteria are agreed upon with clients, specifying a certain percentage of completion or key questions that must be answered for the interview to be declared completed.

2.3.14 Data Checking and Cleaning

We use data logic checks and prompts in the survey instrument for both online and phone surveys. When discrepancies or inaccuracies are found, these checks ask respondents to validate or explain their responses, ensuring the correctness and dependability of the data. For example, if a respondent indicates an unusually high number of servers owned, the interviewer will ask for confirmation of the answer. Similarly, if a respondent initially states that they do not use cloud services but later mentions a specific type of cloud, a clarifying question will be posed.

In online research, we employ measures to eliminate respondents who exhibit straight-lining (consistently selecting the same response option), speeding through the survey, providing poor open-ended answers, or repeatedly refusing to answer questions. In telephone research, we assess audio recordings and raw data collected to evaluate the quality of responses, including the frequency of non-answers, the quality of open-ended responses, and the average survey duration. Additionally, random recalls of respondents are conducted to verify responses that do not meet our quality standards.

2.3.15 GDPR compliance

IDC prioritizes data protection and privacy in all its research endeavors. We routinely enter into Data Protection Agreements (DPAs) with survey partners, outlining clear roles and obligations to comply with the General Data Protection Regulation (GDPR). Our data privacy policy is publicly available at <https://www.idc.com/about/privacy/eu>.

For both telephone (CATI) and online (CAWI) research, IDC does not collect company names or personally identifiable data on our survey system. While we may receive access to a list of company names for internal data quality checks, this information is not linked to raw survey data. Additionally, all quantitative survey data is analyzed and presented externally in an anonymous and aggregated manner.

Our external suppliers own and control the contact databases, and we ensure that they adhere to industry standards and regulations. All suppliers are members of reputable regulatory bodies such as ESOMAR, MRS, or similar organizations, depending on their region. Upon engaging a new supplier, both parties sign confidentiality, Non-Disclosure Agreements (NDAs), and GDPR agreements to safeguard data privacy.

For qualitative research such as in-depth interviews and focus groups, where we obtain contact information from respondents, we prioritize obtaining informed consent. We are transparent with respondents about the study's objectives, the identity of the end clients, and how their data will be analyzed and/or published.

2.3.2 Desk research

One of the methodological pillars of Objective A's design and execution will remain desk research. Similar to past iterations of the European Data Market study, the research team will update the list of pertinent and publicly accessible sources, incorporate it as needed, and gather the data required for the indicators' updates during the course of the three measurement cycles.

- For the new indicators on data flows and data maturity a few selected sources will be as follows:
 - OECD Digital Economy Papers⁸⁴, for example “Moving Forward on data free flow with trust”, OECD, April 2023; “Fostering cross-border data flows with trust”, OECD, December 2022. “Perspectives on the value of data and data flows”, OECD, December 2020; “Measuring the economic value of data and cross-border data flows – A business perspective”, August 2020
 - Other sources from EU institutions, for example: “Data Flows – Future Scenarios: in-depth analysis for the ITRE Committee, Directorate-General for Internal Policies, European Parliament, 2017; “Economic value of data flows”, Final Study Report, European Commission, February 2023,
 - Other international organisations, for example: World Economic Forum “From Fragmentation to Coordination: The Case for an Institutional Mechanism for Cross-Border Data Flows”, WEF, April 2023
 - Sources from the ITU, World Telecommunication/ICT Indicators Database Online, 2023⁸⁵
- Concerning the indicators on data market, data companies, data companies' revenues, and the data economy the main sources will be:

⁸⁴https://www.oecd-ilibrary.org/science-and-technology/oecd-digital-economy-papers_20716826

⁸⁵ [World Telecommunication/ICT Indicators Database online \(itu.int\)](https://www.itu.int/ITU-T/ict/indicators/)

- Eurostat business demography statistics in the European Union, treating aspects such as the total number of active enterprises in the business economy, their birth rates, death rates, and the survival rate (last update: March 2023)⁸⁶;
- Eurostat annual structural business statistics with a breakdown by size-class are the main source of data for an analysis of SMEs (latest update: March 2023)⁸⁷;
- IDC Worldwide Black Book Live Edition, monthly updates from the years 2022 through 2028⁸⁸. The Black Book represents IDC's live analysis of the status and projected growth of the worldwide ICT industry in 93 countries.
- IDC's spending guides⁸⁹. Spending Guides are multi-dimensional, all-in-one data products that present technology forecast data segmented by any or all of the following views: region, country, industry, company size, line of business or use case:
 - IDC Worldwide ICT Spending Guide Industry and Company Size, semi-annual updates for IT Hardware, Software, IT, business and telecom Services from 2022 to 2028 by 20 Industries and 5 size-classes in 55 countries;
 - IDC Worldwide Big Data and Analytics Spending Guide, semi-annual updates for Big Data and Analytics spending from 2022 to 2028 by 20 Industries and 5 size-classes in 53 countries;
 - IDC Worldwide Digital Transformation Spending Guide, semi-annual updates for Digital Transformation spending from 2022 to 2028 by 20 Industries and 283 use cases in 9 regions;
 - IDC Worldwide Artificial Intelligence Spending Guide, semi-annual updates for Artificial Intelligence spending from 2022 to 2028 by 20 Industries and 198 use cases in 9 regions and 34 countries.
- IDC European Tech and Industry Pulse Survey 2022- 2023⁹⁰.
- IDC Big Data and Analytics in the COVID-19 Era: Adoption and Spending Trends Across Vertical in Europe, Jun 2023, IDC # EUR145280920.
- IMF World Economic Outlook (WEO) Database, April 2023.
- Consensus Forecasts, Consensus Economics, monthly updates to July 2023.
- Review of data on social networks about new and emerging companies through thorough research of annual reports of the most relevant companies, where available.
- For the data professionals we will use in addition the following sources:
 - OECD publications about the digital economy⁹¹. As an example, “A roadmap toward a common framework for measuring the Digital Economy”, OECD 2022 and “Going digital: Making the transformation work for growth and well-being: Measuring the Digital Transformation. A Roadmap for the Future” OECD 2022.
 - ILOSTAT (International Labour Organization) Statistics and Databases (2023)
 - EUROSTAT Educational attainment statistics (Last update: 2022)⁹².
 - European Data Science Academy (EDSA) project deliverables and publications (2022).
 - IDC's Technology Employment Impact Guide – updated on a semi-annual basis with forecast of employment across 40 technology job roles, including seven data management and analytics roles (Last update June 2020)
 - Cedefop – Skills-OVATE data for vacancy estimations (Most recent data collected between 1 July 2018 and 31 December 2022)

⁸⁶ https://ec.europa.eu/eurostat/statistics-explained/index.php/Business_demography_statistics

⁸⁷ <https://ec.europa.eu/eurostat/web/structural-business-statistics/overview>

⁸⁸ https://www.idc.com/getdoc.jsp?containerId=IDC_P336

⁸⁹ As an example: Worldwide ICT Spending Guide: Industry and Company Size, IDC 2020, Worldwide ICT Spending Guide: Industry and Company Size, IDC 2020 https://www.idc.com/getdoc.jsp?containerId=IDC_P33207

⁹⁰ <https://www.idc.com/getdoc.jsp?containerId=EUR145717319>

⁹¹ <https://www.oecd.org/sti/ieconomy/>

⁹² https://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics

- Cedefop – Skills Index and Skills forecast (Last update 2022)⁹³
 - Other sources from which relevant data for the indicators’ measurement and for the three updates of the indicators during the study duration will be:
 - The Digital Economy and Society Index (DESI), Human Capital Dimension, (2a Basic Skills and Usage; 2b Advanced skills and Development), last update, 2022.
 - IDC Worldwide Augmented and Virtual Reality Spending Guide, 2022.
 - IDC Quarterly Wearable Device Tracker, 2023
 - IDC FutureScape: Worldwide Future of Work 2020 Predictions, Oct 2022, IDC #US44752319.
 - Practices to Make AR and VR a Reality for Enterprises, Jun 2023. IDC #EUR146541720.
- In addition, IDC has established a LinkedIn community for European start-ups and scale-ups, which we will be able to poll for specific insights on the topics above.

⁹³ https://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics