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# Realising a cloud-enabled economy in France:

How cloud drives economic and societal impact through micro, small, and medium-sized businesses

2023



# By 2030, MSMEs can deliver greater societal value in a cloud-enabled France

Across key sectors this<sup>i</sup> opportunity is expected to represent:

**€7.9 billion** combined annual productivity benefits unlocked through cloud-enabled MSMEs in healthcare, education, and agriculture

This represents a 140% increase on current levels



**2.2 million** people in France (7% of the workforce) employed by cloud-enabled MSMEs within healthcare, education, and agriculture

**4 million** telehealth consultations using cloud supported by MSMEs' services



**3 million** school students engaging in online learning via cloud-enabled MSMEs

**1 in 4** farms using cloud-enabled precision agriculture technologies supported by MSMEs



MSMEs is the abbreviation of micro, small, and medium enterprises.

Current values are annual 2022-2023 values based on the latest available data.

i. Key societal sectors are healthcare, education, and agriculture.

# Overview

Micro, small, and medium enterprises (MSMEs, businesses and startups with between 1 and 250 employees) are a major driver of economic performance. In France, MSMEs collectively account for over 99% of all firms, around 48% of jobs, and 42% of Gross Domestic Product (GDP).<sup>1</sup> MSMEs are also a major source for innovation and disruption in the economy, leveraging both old and new technologies to fill gaps in the current market and bring new products and services to bear.

By allowing users to procure on-demand, scalable IT products and services over the internet or a private network, cloud technology has driven economic and societal benefits by creating new business models, reducing costs, and supporting new opportunities for entrepreneurs and startups. According to the Organisation of Economic Cooperation and Development (OECD), 29% of all businesses across France now utilise at least some basic form of cloud technology (such office software and email), although adoption rates of more advanced technologies, such as artificial intelligence (AI) and machine learning (ML) remain low, at approximately 10% of businesses.<sup>2,3</sup> Cloud technologies have most profoundly impacted MSMEs by allowing them to start, operate, and scale their operations more effectively.

The use of cloud technology by MSMEs is expected to become increasingly widespread, advanced, and mature. With continuous advancements in technology and the decreasing costs of cloud services, MSMEs will have access to an even wider range of scalable and cost-effective technology solutions across functions, occupations, and industries. We refer to this potential future state as the “cloud-enabled economy,” a future characterised by high levels of overall cloud adoption across French businesses. It is anticipated that under this scenario, 90% of all businesses would adopt at least a basic level of cloud technology.<sup>4,5</sup> For many businesses, however, this represents only the beginning of their cloud journey. The escalating sophistication in cloud technology beyond basic applications will be a pivotal driver for economic growth in the future. As MSMEs tap into advanced cloud functionalities, such as AI, data analytics, and serverless computing, they can foster innovation, streamline operations, and customise consumer experiences at global scale. These advanced uses can unlock new revenue streams, encourage innovation and the creation of new business models, and enhance global competitiveness, collectively underpinning the future of the digital economy.

By 2030, a cloud-enabled French economy is expected to deliver even greater societal impact by supporting MSMEs to produce new products and solutions or augment their existing operations. Within key societal sectors, namely health, education, and agriculture, this annual contribution is expected to reach €7.9 billion. Furthermore, by 2030, cloud-enabled MSMEs are expected to support four million remote health consultations, three million school students to access online education, and give one in four farms access to more efficient and sustainable farming practices in France. Cloud-enabled MSMEs are also heavily involved with developing solutions to transition the economy towards a more sustainable future and designing digital finance solutions (through ‘fintechs’) that are helping to support better financial inclusion and wellbeing.

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<sup>1</sup> OECD (2022), Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard.

<sup>2</sup> OECD (2023), Share of businesses purchasing cloud services

<sup>3</sup> Advanced levels adoption derived from aggregated cloud usage types. See Section 1.2.1.

<sup>4</sup> Gartner (2022), The future of cloud computing in 2027: From technology to business innovation.

<sup>5</sup> Gartner (2021), Gartner says cloud will be the centerpiece of new digital experience.

While these benefits are substantial, the opportunities of the cloud-enabled economy will not eventuate without action. To unlock this potential, French businesses and governments will need to collaborate to foster the continued adoption and maturity of cloud usage. Businesses can achieve this by:

- identifying how cloud can help them scale and deliver global impact
- investing in embedding cloud technology into their strategy; and
- developing a migration plan and training employees to leverage the benefits of cloud technology.

French governments can support businesses in achieving a cloud-enabled economy by:

- prioritising cloud technology education and training as appropriate, both in tertiary education and in the workforce
- investing in digital infrastructure to ensure innovation can continue unimpeded
- ensuring the regulatory and legislative environment supports cloud adoption; and
- leading by example through promoting cloud adoption across all levels and divisions of government.

# 1 The cloud-enabled economy

Cloud technology has changed the way many businesses operate, particularly for MSMEs (businesses with between 1 and 250 employees)<sup>6</sup>, by enabling them to scale quickly, reduce costs, reach global markets, and access a range of technology resources that were previously unattainable.

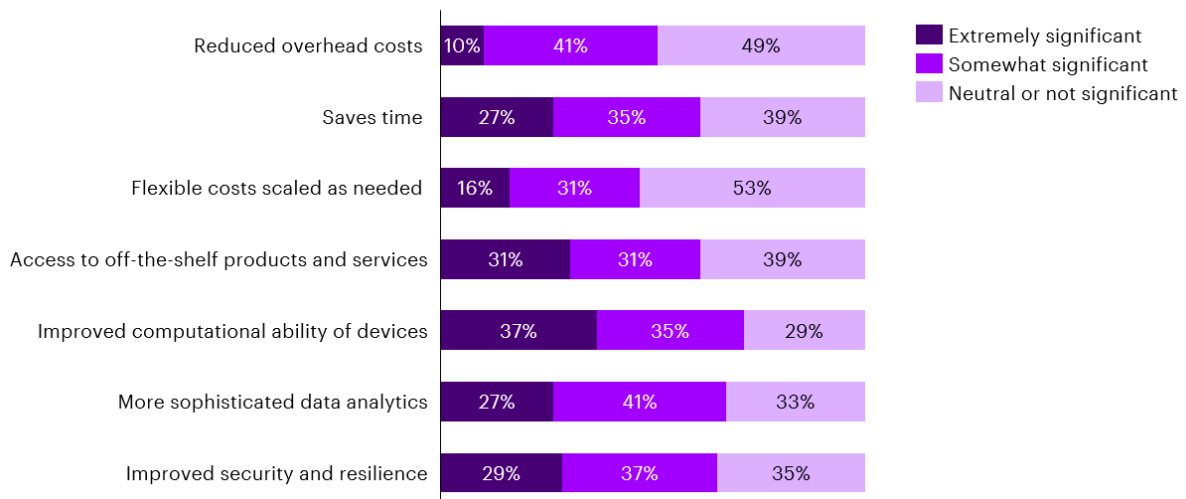
## 1.1 Cloud technology enables the digital economy

Cloud technology refers to the provision of on-demand IT products and services delivered over the internet or a private network.<sup>7</sup> This involves housing digital resources from centralised servers owned and operated by cloud service providers, reducing the need for individual businesses to procure and maintain physical hardware. Outsourced technology provides greater flexibility to support MSMEs through the early stages of the business lifecycle by:

- reducing overheads and time to market
- providing greater ability to scale up or down depending on business demands
- offering specialised technology solutions
- increasing computational power of ordinary devices; and
- enhancing security and resilience.<sup>8</sup>

**Figure 1: The most significant benefits of cloud for MSMEs**

*Average % of cloud-enabled MSMEs across several industries in France that find cloud somewhat or extremely significant in providing a particular benefit*



Source: Accenture societal impact survey (2023), n = 50. 'Neutral or not significant' includes responses of neutral, somewhat insignificant, and not significant at all. Survey responses were from French MSMEs operating in healthcare, education, agriculture, finance, and sustainability industries.

By promoting shared resources, cloud has fundamentally changed the way that individuals and businesses interact with technology, with the number of potential applications of cloud technology far eclipsing simple, remote data storage. Most applications, platforms, and smart products have some functionality facilitated by cloud technology as shown in Figure 2. Having

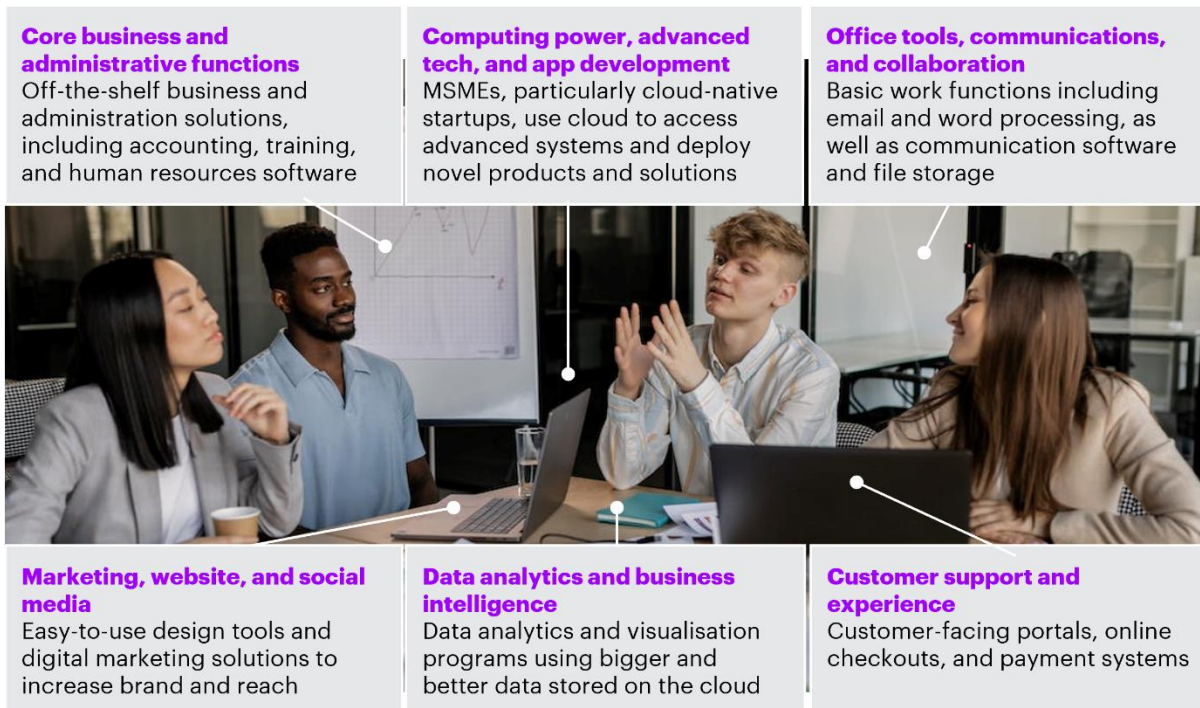
<sup>6</sup> The definition of MSME used in this report is taken from the OECD (2023) and covers enterprises with businesses between 1-250 employees.

<sup>7</sup> AWS (2023), What is cloud computing?

<sup>8</sup> Accenture societal impact survey (2023), n = 562.

access to on-demand functionalities supports MSMEs to start, operate, and scale their business more efficiently and effectively.

**Figure 2: End-to-end cloud applications for MSMEs**



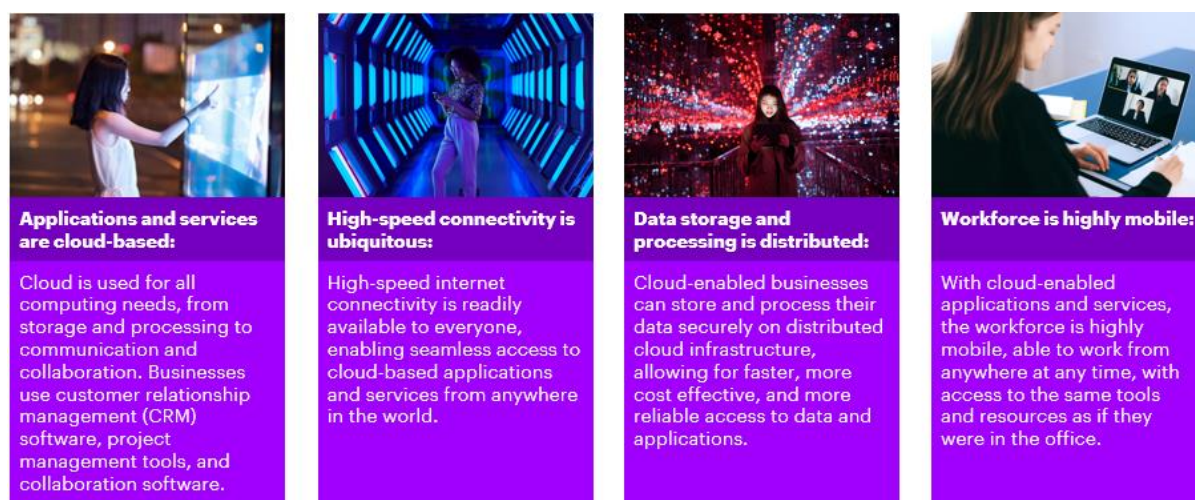
Source: Accenture

## 1.2 Achieving a cloud-enabled economy can unlock significant societal and economic potential

With continuous advancements in technology and the decreasing costs of cloud services, economies will continue to experience a wave of digital disruption and productivity as businesses find more ways to produce novel, new products and solutions or augment their existing operations. We refer to this potential future state as the “cloud-enabled economy,” a future characterised by high levels of cloud adoption; based on an assessment of cloud industry forecasts, this report expects 90% of all businesses will adopt at least a basic level of cloud technology in a cloud-enabled economy. As cloud technology applications mature, a cloud-enabled economy would increasingly involve digital applications and services being cloud-based, high internet speed and connectivity, cloud-enabled data storage and processing, as well as a mobile workforce (see Figure 3).



**Figure 3: Characteristics of a cloud-enabled economy**



Source: Accenture

### 1.2.1 The spectrum of cloud adoption

The definition of cloud technology adoption used in this report is consistent with the OECD, and refers to the share of businesses that purchased cloud services<sup>9</sup> as a proportion of all businesses, across all levels of maturity.<sup>10</sup> However, cloud technologies have a range of applications across a suite of business functions that mean that the use of cloud technology can be considered on a spectrum of maturity or sophistication as shown by the figure below, which includes:

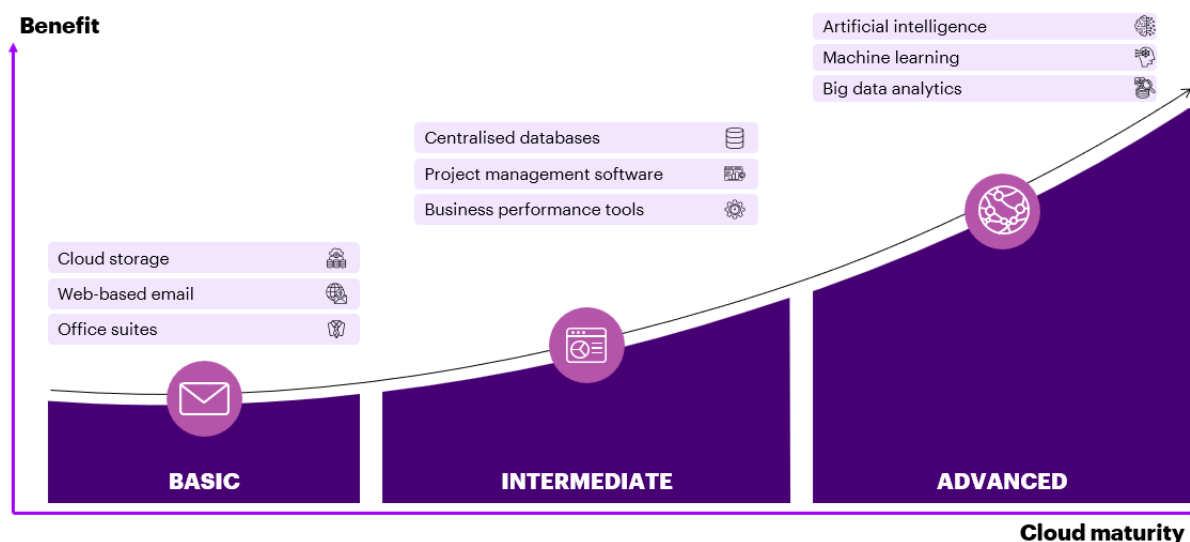
- **Basic adoption:** user-friendly solutions designed for everyday tasks. These solutions typically do not require specialised technical knowledge to operate and primarily serve to simplify and enhance common digital activities. These include simple cloud-based storage solutions, web-based email services, and collaborative office suites.
- **Intermediate adoption:** applications and platforms that cater to more specialised needs but still largely consist of off-the-shelf products with intuitive interfaces. Such tools include customer relationship management, enterprise resource planning, project management tools, developer platforms, and cloud-based databases.
- **Advanced adoption:** highly specialised cloud applications and cutting-edge technologies tailored for expert tasks. This category encapsulates machine learning and AI platforms, big data analytics tools, internet of things (IoT) platforms, serverless computing, container management systems, and advanced security and compliance tools.

As the global economy increasingly digitises, the need for MSMEs to increase their cloud maturity is becoming increasingly pertinent. MSMEs that fail to leverage the scalability of cloud solutions may not only forfeit the ability to compete more effectively with fewer fixed IT costs, but may also pass up more sophisticated data analysis tools, more secure safeguards for digital assets, streamlined compliance with international regulations, and advanced technology applications (such as artificial intelligence, see Section 1.2.2). For many MSMEs to maintain their competitive edge in a dynamic, cloud-enabled economy, the sophistication of their adoption will need to evolve and adapt with the technology according to their specific needs.

<sup>9</sup> Cloud computing as part of this definition includes information and communications technology (ICT) services that are provided over the internet or a private network to access servers, storage, network components and software applications

<sup>10</sup> OECD (2023), OECD Going Digital Toolkit

**Figure 4: Spectrum of cloud maturity and example applications**

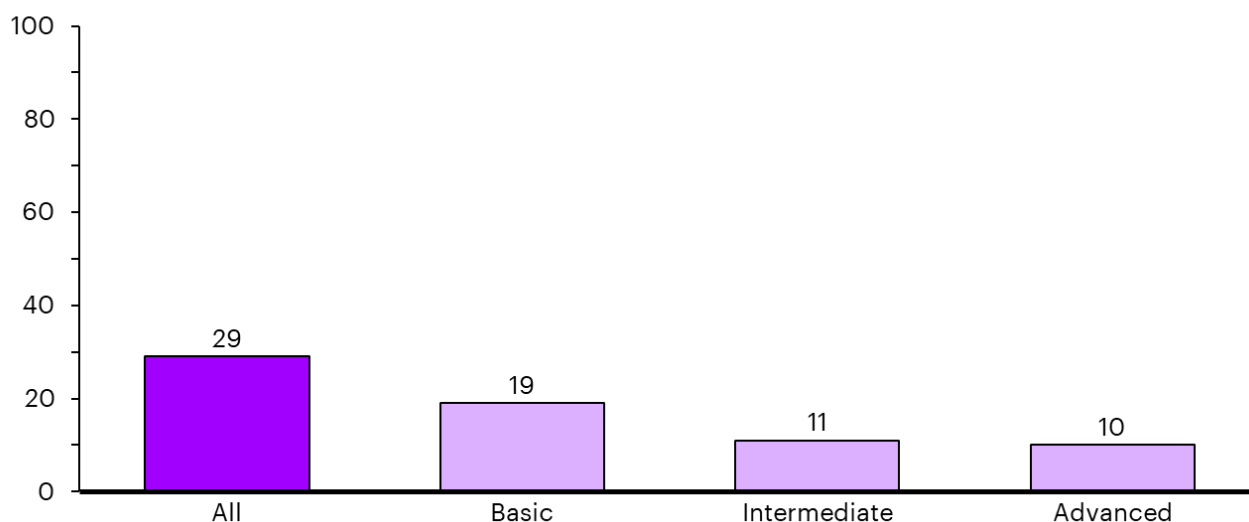


Note: Applications above are examples of types of uses for each of the levels of maturity. The lists are not exhaustive. Source: Accenture

The rate of cloud adoption across France varies considerably depending on the technology types. The OECD reports that 29% of businesses use at least a basic level of cloud technology in their business, although intermediate and advanced adoption rates are far lower with 11% and 10% of businesses, respectively (see Figure 5).

**Figure 5: Cloud adoption in France by sophistication, all businesses (2021)**

*% of all firms adopting cloud technology*



Source: OECD (2023)

### 1.2.2 Advanced cloud usage unlocks the potential for emerging and innovative technologies

Embracing advanced cloud adoption also allows businesses to select from a variety of innovative and cutting-edge technologies to meet their unique business needs and secure a competitive edge in the market. Cloud technology has increased the viability and proliferation



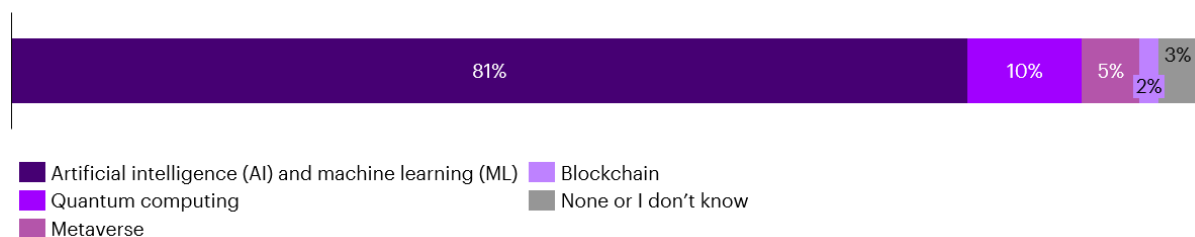
of a wide range of tools, business models, and technologies that, together with cloud, generate societal and economic impact. Advanced applications of cloud include:

- artificial intelligence (AI), encompassing generative AI
- machine learning (ML)
- internet of things (IoT)
- quantum computing; and
- edge computing.

These examples form a growing list of advanced technologies that have become accessible to a wider base of users through cloud technology (see Appendix D of the global report for a full description of each technology supported by cloud).<sup>11</sup> Of these technologies, generative AI is experiencing the most rapid and dramatic growth; over the next 10 years generative AI is expected to grow at an annual average rate of 27%.<sup>12</sup> Although the technology has only recently been adopted by the wider public, generative AI is already disrupting and enhancing businesses' processes, accelerating innovation, and facilitating greater speed and creativity across a variety of industries. Businesses and employees are already experimenting with generative AI to create content that supports a range of tasks from writing text and code to generating images.<sup>13</sup> As shown in Figure 6, 77% of French MSMEs across several industries identified AI (including generative AI and natural language processing (NLP)) and ML as the technologies likely to be most significant in creating societal impacts in 2030.<sup>14</sup> Generative AI could be used by cloud-enabled MSMEs for a wide variety of applications, such as helping medical professionals analyse patient data and testing results to inform decision making, or generating practice exam questions and content with instant feedback available to support individualised learning pathways.

**Figure 6: Technologies supported by cloud creating the most significant societal impacts in 2030**

*Average % of cloud-enabled MSMEs across several industries in France that believe a technology supported by cloud will be the most significant in creating societal impacts in 2030*



Source: Accenture societal impact survey (2023), n = 50. 'Artificial intelligence (AI) and machine learning (ML)' includes subsets generative AI and natural language processing (NLP). Survey responses were from French MSMEs operating in healthcare, education, agriculture, finance, and sustainability industries.

### 1.2.3 A more productive, cloud-enabled economy offers societal as well as economic benefits

While the opportunity to scale and grow businesses has a clear impact on economic activity (see Chapter 2), in many cases businesses can also create a positive societal impact. Cloud has opened up a range of emerging technologies that are underpinning a new wave of digitally-led innovation to address some of society's most pressing, global issues. Cloud

<sup>11</sup> Damian Mazurek, (2023), Leveraging Cloud-based AI/ML Services to elevate your business.

<sup>12</sup> Precedence Research (2023), Generative AI Market size to hit USD 118 Bn by 2032

<sup>13</sup> AWS (2023), Generative AI on AWS.

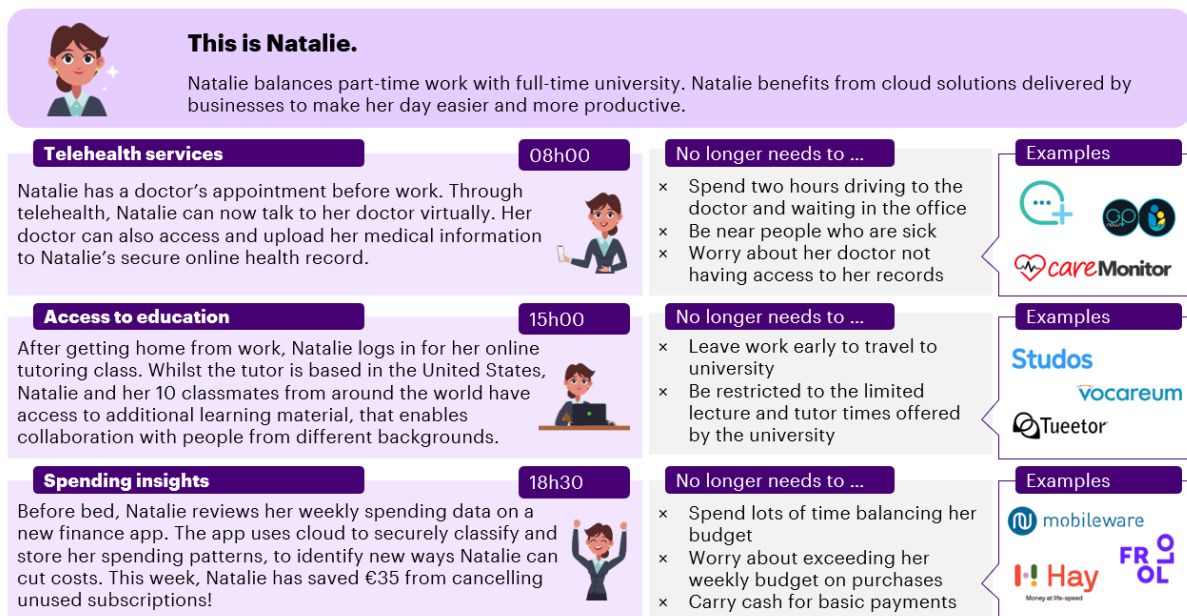
<sup>14</sup> Survey responses were from MSMEs working in healthcare, education, agriculture, finance, and sustainability.

technology offers MSMEs new ways to produce and commercialise technological solutions that generate positive societal benefits, in addition to economic benefits, across a range of industries. Although this list of industries is not exhaustive, the estimation of the societal impact of cloud technology is focused on the following industries:

- healthcare
- education
- agriculture
- finance; and
- sustainability and disaster response.<sup>15</sup>

While these industries are not the only ones that are impacted by cloud technology, these industries face increasingly complex challenges that could lead to less equitable societal outcomes if they do not adapt and harness the benefits offered by cloud technology. These industries are also directly linked to the UN Sustainable Development Goals (SDGs), particularly the overarching objectives of improved healthcare (Goal 3), education (Goal 4), and economic prosperity and equality (Goal 9 and 10).<sup>16</sup> Figure 7 demonstrates through a stylised cameo how cloud technology supports access to these industries for individuals through digitisation.

**Figure 7: The impact of cloud-enabled MSMEs on individuals**



Notes: Examples include MSMEs and startups using cloud solutions from AWS case studies  
Source: AWS<sup>17</sup>

<sup>15</sup> The report chose to focus on these industries since most societal impact case studies reviewed fell into one or more of these industries. These labels also benefit from matching the economic modelling data as they are taken directly from the International Standard Industrial Classification (ISIC).

<sup>16</sup> United Nations (2023), Sustainable development goals.

<sup>17</sup> AWS (2023), Customer Success Stories.

## 2 Unlocking €7.9 billion in productivity benefits within key societal sectors

MSMEs are a major driver of economic performance in France, accounting for over 99% of all firms, around 48% of jobs, and 42% of Gross Domestic Product (GDP).<sup>18</sup> Cloud technology is helping to create and scale MSMEs (see Chapter 10), the impact of which can be identified in overall, aggregate economic performance. The impact of further cloud adoption and maturity on aggregate economic output is estimated with a novel economic model, based on analysing current data that captures the relationship between adoption and economic activity. In Chapter 3, this analysis is taken to the next level of granularity, assessing how much of this impact can be attributed to key societal sectors of healthcare, agriculture, and education.

### Box 1: Modelling the economic potential of a cloud-enabled economy

This research estimates the impact of cloud on economic productivity at the country level using data from the OECD to capture the relationship between cloud adoption rates and GDP (controlling for capital and labour inputs). A full explanation of the modelling approach, data, and outputs can be found in Appendix A of the global report.

The productivity benefits of the cloud-enabled economy to French societal sectors would be significant. Through successful transition to a cloud-enabled economy, MSMEs in the healthcare, education, and agriculture industries within France are expected to unlock €7.9 billion in combined annual productivity benefits by 2030, a 140% increase from €3.3 billion. Under this scenario, it is estimated that 2.2 million people would be employed at cloud-enabled MSMEs operating within agriculture, education, and healthcare, representing 7% of the total jobs in France (an increase from 2% currently). This reflects the increasing use of cloud technology in almost all forms of digital technology and occupations across the economy. France has the potential for significant growth in unlocking the potential of cloud, by increasing not only the rate of overall adoption but also the sophistication of cloud applications. Cloud spending as a proportion of GDP in mature markets like United States approximately two times higher than France. However, cloud expenditure in France is expected to grow at an average compounding rate of 12% over the next five years to €19 billion in revenue as cloud usage maintains pace with technological change.<sup>19</sup>



Annual productivity benefits unlocked by cloud-enabled MSMEs in key societal sectors are expected to reach €7.9 billion by 2030



2.2 million people in France are expected to be employed by cloud-enabled MSMEs in key societal sectors by 2030

<sup>18</sup> OECD (2022), Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard.

<sup>19</sup> Statista (2023).

## 3 The societal impact of the cloud-enabled economy

MSMEs that harness cloud have the potential to create significant societal impact in France. We define “societal impact” in reference to the positive changes and improvements in outcomes facilitated by cloud technology in areas such as healthcare, education, and agriculture. By leveraging cloud technology, MSMEs can enhance the efficiency, affordability, and accessibility of services in these industries, enabling advancements such as telemedicine, online education, precision agriculture, financial access and autonomy, and sustainable technology. These solutions will lead to improved social wellbeing and development.

### 3.1 Driving innovation and improving access to healthcare and life sciences

Approximately 18% of people in France live in rural and remote areas, which imposes additional barriers to accessing healthcare.<sup>20</sup> Cloud is helping to overcome these barriers by enabling MSMEs to make healthcare easier to access whilst also driving efficiency in healthcare delivery and supporting decisions around patient healthcare. Through remote consultations and monitoring of health indicators, cloud technology can help make healthcare more accessible to underserved communities throughout France. If France were to achieve a cloud-enabled economy, MSMEs in healthcare are expected to unlock €4.6 billion in annual productivity benefits by 2030. Cloud-enabled MSMEs are expected to support four million virtual health consultations per year by 2030.<sup>21</sup>

#### Impact of MSMEs on healthcare in the cloud-enabled economy, by 2030



**€4.6 billion** in annual productivity benefits unlocked through cloud-enabled MSMEs in the healthcare sector, an increase from €1.9 billion

Around **4 million** virtual health consultations supported by cloud-enabled MSMEs, a 100% increase from 2 million consultations currently



Note: Estimates for the number of telehealth consultations produced through market size estimates (see Appendix C of the global report) and are calculated separately to the GDP contribution. Current values are annual 2022-2023 values based on the latest available data.

Cloud is also important for streamlining administrative tasks, creating efficiency for healthcare providers. Euris is a French MSME utilising cloud to support the storage and analysis of health data by delivering SaaS software and data hosting solutions to life sciences companies, insurers and e-health service providers.<sup>22,23</sup> Healthcare providers can use cloud

<sup>20</sup> OECD (2022), Rural population.

<sup>21</sup> Remote health consultations can also be supported by telephone or through large cloud-enabled firms.

<sup>22</sup> AWS (2023), Euris Health Cloud.

<sup>23</sup> Euris (2023).



technology to support informed patient healthcare decisions, helping providers to collaborate and easily share patient information, and assisting them to take insights from large amounts of data to make treatment personalised and tailored. Technologies supported by cloud, particularly generative AI, also have significant potential to change the healthcare industry, from the delivery of healthcare to administrative functions. While generative AI is still a nascent technology, MSMEs can use it to support clinical decision making, helping medical professionals analyse data more accurately, along with supporting efficiency in research and development.<sup>24</sup>

### 3.2 Improving access to engaging and personalised education

Cloud technology can make education more equitable, safe, and accessible by providing new learning opportunities for a wider audience, including remote communities or adults with limited time who are looking to boost or diversify their skills. These students and adults will be able to learn in a more collaborative environment, as cloud supports them to interact and share content more readily. Cloud can also help reduce the administration workload for teachers, enabling them to spend more time educating students. Under a cloud-enabled economy, MSMEs in education are expected to unlock €2.6 billion in annual productivity benefits by 2030. Through supporting the education industry, cloud-enabled MSMEs are expected to facilitate three million school students and nine million adults in France to receive online learning by 2030.

#### Impact of MSMEs on education in the cloud-enabled economy, by 2030



**€2.6 billion** in annual productivity benefits unlocked through cloud-enabled MSMEs in the education sector, an increase from €1.1 billion

Around **3 million** primary to high school students using online education via cloud-enabled MSMEs, a 200% increase from 1 million students currently



Around **9 million adults** accessing education via cloud-enabled MSMEs, a 125% increase from 4 million adults currently

Note: Estimates for the number of students and adults accessing cloud-based education produced through market size estimates (see Appendix C of the global report) and are calculated separately to the GDP contribution. Current values are annual 2022-2023 values based on the latest available data.

Cloud-enabled MSMEs are also introducing advanced analytics into the classroom, helping to personalise learning. Personalised content and feedback can help students with different learning styles work at their own pace, not to mention reduce the administration burden on teaching staff. TestWe is an MSME based in Paris that supports over five million remote and

<sup>24</sup> WE Forum (2023), How will generative AI impact healthcare?

secure tests a year with cloud, enabling students to be certified or accredited by completing exams offline and uploading them afterwards.<sup>25,26</sup> Educators are also utilising cloud-based learning analytics to monitor the quality, safety, and security of online learning environments. AI, and in particular, generative AI has the potential to be particularly useful in helping educators provide differentiated learning pathways based on the needs of individual students.<sup>27,28</sup>

### 3.3 Developing smarter and more sustainable farming practices

MSME cloud services are being used by the agricultural industry in France to support smarter, more sustainable farming practices. These technologies can assist agricultural decision making, by employing sophisticated monitoring devices that provide better, real-time data about crops, livestock health, and resource consumption (referred to as precision agriculture).<sup>29</sup> In addition to supporting the use of data or supply chain tools, cloud is also enabling automated vehicles and equipment which helps to improve the efficiency of agriculture. Under a cloud-enabled economy, MSMEs in agriculture are expected to unlock €0.7 billion in annual productivity benefits by 2030. Precision agriculture technology supported by cloud-enabled MSMEs are expected to be in operation in one in four farms across France by 2030.

#### Impact of MSMEs on agriculture in the cloud-enabled economy, by 2030



**€0.7 billion** in annual productivity benefits unlocked through cloud-enabled MSMEs in the agriculture sector, an increase from €0.3 billion

Around **1 in 4** farms using precision agriculture supported by cloud-enabled MSMEs, a 100% increase from 1 in 8 farms currently



Note: Estimates for the number of farms using precision agriculture produced through market size estimates (see Appendix C of the global report) and are calculated separately to the GDP contribution. Current values are annual 2022-2023 values based on the latest available data.

### 3.4 Improving financial access and wellbeing

The digitisation of the finance sector has led to a wave of disruption, increased competition, and new types of products and services that better serve customers.<sup>30</sup> Alongside the rapid adoption of smart devices, a critical part of the proliferation of digital finance options has been cloud technology that supports fast and secure methods of transferring financial

<sup>25</sup> AWS (2021), TestWe Turns to AWS to Drive Global Expansion.

<sup>26</sup> TestWe (2023).

<sup>27</sup> World Economic Forum (2023), Can AI improve education? Here are 4 potential use cases.

<sup>28</sup> Stanford University, Human-Centered Artificial Intelligence, (2023) AI Will Transform Teaching and Learning. Let's Get it Right.


<sup>29</sup> FAO (2022), Leveraging automation and digitalization for precision agriculture: Evidence from the case studies.

<sup>30</sup> OECD (2020), "Digital disruption in banking and its impact on competition".


information and better access to information.<sup>31</sup> As such, cloud-native MSMEs in the finance industry (referred to as fintechs) represent one of the fastest growing markets in the world, expected to rise from US\$134 billion in 2022 to US\$557 billion globally by 2030 – more than a 400% increase.<sup>32</sup>

The rise of fintech apps has not only been seen an increase in the number of financial services companies, but also a boost in convenience and access, individual autonomy over financial decisions, better access to information, and tighter security frameworks. According to the Accenture societal impact survey, by 2030, one in four people globally are expected to be using financial services supported specifically by cloud-enabled MSMEs.<sup>33</sup> Globally, 15% of cloud-enabled MSMEs working with the finance sector are expected to be helping budget-constrained customers or small businesses to better manage their finances.<sup>34,35</sup> AI has the potential to unlock even greater individual financial wellbeing in a cloud-enabled economy by allowing customers to automate more elements of personal finances.<sup>36</sup> While this technology is still nascent, the possibility of integrating AI to perpetually monitor and screen for better fees or financial products holds enormous potential to improve financial health.<sup>37</sup>

**Impact of MSMEs on finance in a cloud-enabled economy by 2030**



**1 in 4** people globally using financial services supported by cloud-enabled MSMEs



Globally, **15%** of surveyed cloud-enabled MSMEs working with the finance sector help budget-constrained customers or small businesses better manage their finances

Source: Accenture societal impact survey (2023), n = 188. Based on global results across 12 countries.

For many countries, a cloud-enabled financial services sector is not far away, with many MSMEs already incorporating or exploring the use of cloud-supported technologies, such as AI and ML, to improve outcomes for consumers across a range of applications.<sup>38</sup> A sample of MSMEs operating in the financial services space globally indicated that the most common areas for these MSMEs to be active were in providing digital banking and budgeting or financial management tools.<sup>39,40</sup> The improvements in societal outcomes most often attributed to these MSMEs were increased affordability of services, improved financial literacy and education, and fraud detection.<sup>41,42</sup>

<sup>31</sup> OECD (2020), “Digital disruption in banking and its impact on competition”.

<sup>32</sup> Vantage market research (2023)

<sup>33</sup> Accenture societal impact survey (2023), n = 188.

<sup>34</sup> Accenture societal impact survey (2023), n = 188.

<sup>35</sup> Based on the number of cloud-enabled MSMEs currently supporting this outcome.

<sup>36</sup> Crunchbase (2023) How the future of personal finance is self-driving money

<sup>37</sup> Crunchbase (2023) How the future of personal finance is self-driving money

<sup>38</sup> IMF (2021), Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance.

<sup>39</sup> Accenture societal impact survey (2023), n = 188.

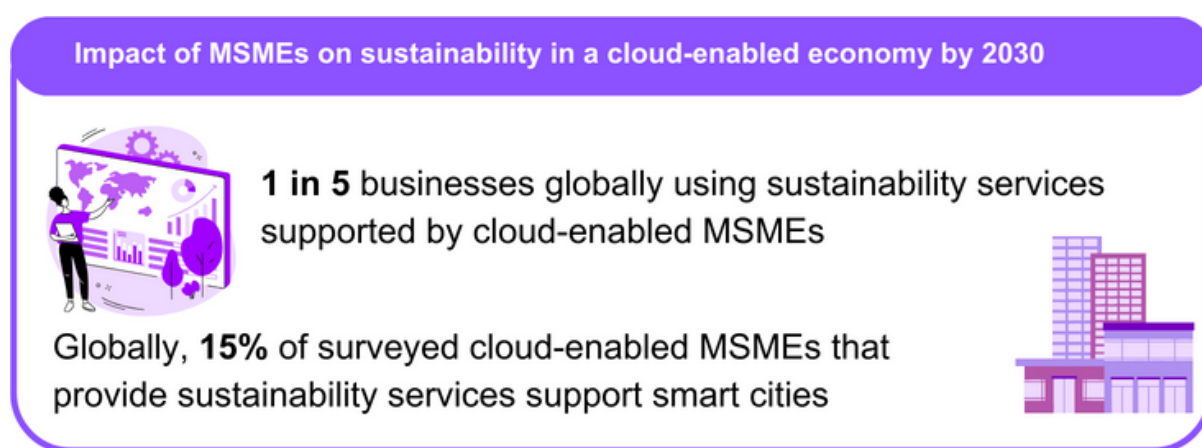
<sup>40</sup> Based on the services that cloud-enabled MSMEs are currently delivering.

<sup>41</sup> Accenture societal impact survey (2023), n = 188.

<sup>42</sup> Based on the number of cloud-enabled MSMEs currently supporting this outcome.

## 3.5 Designing a sustainable future

Developing the tools and technologies that will support a sustainable future is one of the most pressing global challenges, but also one filled with enormous economic potential. Cloud-enabled MSMEs can employ technology and digitisation to directly reduce environmental impact through innovations such as more efficient resource usage and smarter waste management. According to the Accenture societal impact survey, by 2030, one in five businesses globally are expected to be using services provided by cloud-enabled MSMEs to directly address their climate and sustainability objectives, such as through energy or emissions monitoring and reduction.<sup>43</sup> And it's not only businesses using these services; across the world, cities and towns are increasingly turning to cloud-based technology solutions provided by MSMEs to achieve a range of sustainable outcomes.<sup>44,45</sup> Globally, 15% of cloud-enabled MSMEs providing services to achieve sustainability goals are expected to be supporting "smart cities", such as through optimising traffic flows or making waste removal more efficient, and enabling the tracking or reduction of electricity usage.<sup>46,47,48,49</sup>



Source: Accenture societal impact survey (2023), n = 66. Based on global results across 12 countries.

According to the Accenture societal impact survey of global MSMEs, cloud technologies have already enabled these businesses to provide smarter resource management and usage, access to sustainable and renewable technologies, carbon footprint monitoring, and sustainability information.<sup>50</sup> Through these sustainable solutions, global MSMEs are helping to support wider sustainability goals including more efficient use of energy and water, improving waste management, supporting better air quality, and increasing the availability of renewable energy.<sup>51</sup>

<sup>43</sup> Accenture societal impact survey (2023), n = 66.

<sup>44</sup> IDC (2023), Smart Cities.

<sup>45</sup> IDC (2021), The Next Frontier: AI and Digital Twins in Smart Cities.

<sup>46</sup> Accenture societal impact survey (2023), n = 66.

<sup>47</sup> Based on the number of cloud-enabled MSMEs currently supporting this outcome.

<sup>48</sup> AWS (2023), Building Smart Cities with AWS Cloud.

<sup>49</sup> OECD (2021), Measuring smart city performance in COVID-19 times: Lessons from Korea and OECD countries.

<sup>50</sup> Accenture societal impact survey (2023), n = 66.

<sup>51</sup> Accenture societal impact survey (2023), n = 66.



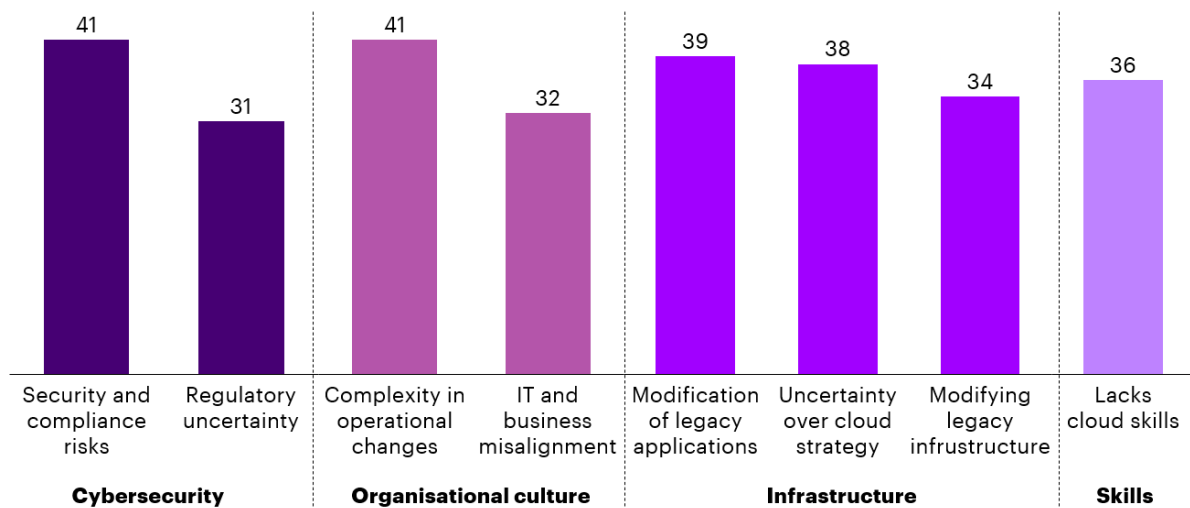
# 4 Achieving the cloud-enabled economy

The cloud-enabled economy offers significant potential in terms of both economic and societal impact. France’s path towards a cloud-enabled economy will primarily focus on increasing adoption rates. As adoption accelerates, the focus will then shift towards using cloud in new ways within firms who have already adopted to reach the full potential of the cloud-enabled economy. This will involve maturing cloud usage across more complex business functions and implementing more advanced technologies supported by cloud, such as AI and ML.

Compared to the rest of the world, cybersecurity and organisational culture are particularly large barriers in the EU. Privacy concerns were among the reasons that have led to data standards such as GDPR (General Data Protection Regulation).<sup>52</sup> France also introduced the SecNumCloud standard, which was updated in 2022 so that majority foreign-owned cloud firms are not able to be SecNumCloud certified.<sup>53,54</sup> Given the regulatory environment around security, concerns about adhering to data localisation rules present barriers for firms adopting cloud.<sup>55</sup> A global survey of global business leaders, conducted by Accenture, shows that persistent barriers to adoption in developed countries, like France, continue to concern cybersecurity, reluctant organisational cultures, insufficient infrastructure (e.g., software and hardware) or difficulty transitioning, and digital cloud skills (see Figure 8). Unlocking the cloud-enabled opportunities by 2030 requires continued coordinated action from industry and the French government to address key barriers to cloud technology uptake.

**Figure 8: Primary barriers to cloud technology uptake**

*% of respondents listing barrier in top three responses*



Source: Accenture (2023). Global survey responses from 2022, n = 800.

To address each of these complex challenges MSMEs should evaluate barriers at the firm level, to identify specific security, IT resources, organisational culture, and skills required to be successful. This will help MSMEs to develop holistic cloud solutions, optimised and scaled to improve performance, and reduce costs.

<sup>52</sup> Accenture (2021), Europe’s competitive way forward in the cloud.

<sup>53</sup> ANSSI (n.d.), SecNumCloud evolves and moves to GDPR era.

<sup>54</sup> CSIS (2023), The CLOUD Act and Transatlantic Trust.

<sup>55</sup> Brinda, M. & Woolley, K. (2019), The Secret to More Cloud Adoption in Europe? More Supply

## 4.1 Holistic strategies to overcome firm-specific barriers to cloud adoption

MSMEs can adopt a range of internal policies and actions to overcome these barriers and further integrate cloud solutions across all business functions, thereby maximising their productivity dividend overtime (see Figure 9).

Figure 9: Steps for MSMEs to adopt cloud

■ Cybersecurity 
 ■ Infrastructure 
 ■ Skills 
 ■ Organisational culture

Steps	Description	Barriers addressed			
<b>1</b> <b>Identify how cloud can streamline strategic goals</b>	<ul style="list-style-type: none"> <li>Identify how cloud solutions can meet your goals</li> <li>Identify a cloud partner that can help navigate the process</li> <li>Examine case studies of how MSMEs have used cloud to transform their business and create impact</li> <li>Interview employees to determine which barriers are preventing these systems and/or processes from being introduced or optimised at the firm level</li> </ul>				✓
<b>2</b> <b>Evaluate industry and government support</b>	<ul style="list-style-type: none"> <li>Examine the French government’s cloud policies and programs offered by industry to address firm-specific barriers and accelerate cloud maturity</li> <li>This could include R&amp;D tax credits from the French government, or sponsorship programs for startups run by cloud providers such as AWS</li> </ul>	✓	✓	✓	✓
<b>3</b> <b>Educate all employees</b>	<ul style="list-style-type: none"> <li>Support employees to upskill in cloud, and utilise training from cloud providers where relevant</li> <li>Identify specific skill shortages to focus their training</li> </ul>	✓		✓	✓
<b>4</b> <b>Review data security arrangements</b>	<ul style="list-style-type: none"> <li>Review data security arrangements from the cloud provider and determine whether additional internal policies are required</li> <li>Review security features of cloud and best practice data policies</li> <li>Simplify and harmonise policy across the business, with clear guidelines for different functional applications of cloud</li> </ul>	✓			
<b>5</b> <b>Create a whole-of-business cloud migration strategy</b>	<ul style="list-style-type: none"> <li>Evaluate the costs and benefits of alternative strategies to determine a whole-of-business solution that meets business goals</li> <li>MSMEs should prioritise solutions which deliver the greatest net benefit in the medium to long term</li> <li>Determine the scale and complexity of the cloud infrastructure required</li> <li>MSMEs with less cloud experience could consider enlisting cloud partners such as consultants to achieve this</li> </ul>	✓	✓	✓	✓

Source: Accenture

## 4.2 Strong policy support to address structural barriers and incentivise MSME cloud adoption









There are a variety of EU and French government policies aimed to address the barriers to cloud adoption. In particular, cybersecurity policy is harmonised across the EU, with data protection regulated under the General Data Protection Regulation (GDPR) (2016). The policy has promoted cross border data flows within the EU and addressed security concerns of end users. However, data localisation may restrict global data flows, and security concerns can cause firms to be reluctant about adopting cloud.<sup>56,57</sup> As such, more can be done to harmonise policy with other regions, encourage the global flow of data, reduce the regulatory burden for MSMEs, and create a competitive environment where businesses can select the technologies that best support them. To improve cloud adoption, international examples can offer best practice solutions for France to further address the remaining adoption barriers (see Figure 10).

<sup>56</sup> OECD (2020), Data localisation trends and challenges.

<sup>57</sup> Brinda, M. & Woolley, K. (2019), The Secret to More Cloud Adoption in Europe? More Supply

**Figure 10: Global best-practice examples of cloud adoption policies**

■ Cybersecurity ■ Infrastructure ■ Skills ■ Organisational culture

Policy	Key existing support	Future policy	International policy examples	Barriers addressed
<b>Invest in digital infrastructure</b>	51% of the broadband connects are optic fibre, supported by investment and regulation to encourage competition among internet providers. Tax deductions are also available to incentivise investment into data centres.	Greater investment into centralising IT infrastructure and establishing more data centres would support cloud adoption.	 <b>Spain optic fibre</b> accounts for 83% of broadband connections  <b>Iceland optic fibre</b> accounts for 82% of broadband connections  <b>Sweden optic fibre</b> accounts for 81% of broadband connections	Infrastructure: ✓ Skills: ✓ Organisational culture: ✓ Cybersecurity: ✓
<b>Invest in cloud skills and training</b>	France's launched the €55 million National Plan for Digital Skills in 2018, as a part of the EU Digital Skills and Jobs Coalition. The plan aims to train 1.5 million people and equip a total of 4.5 million with basic digital skills.	Continued support for digital skills training, with a focus on emerging cloud skills. Improved engineering and maths scores would also support cloud training.	 <b>Australia's National Cloud Computing Strategy</b> includes cooperation with industry and educators to enhance cloud training  <b>Dutch Digitilisation Strategy 2.0</b> aims to increase digital skills through collaborations with business and facilitation of adult education programs.	Skills: ✓ Organisational culture: ✓ Cybersecurity: ✓
<b>Create clear guidelines for industry</b>	The EU has Guidelines for the use of cloud computing services and how it relates to the GDPR. Also, the EU-US Data Privacy Framework has made an adequacy decision indicating that the US offers adequate protection for personal data transfers from the EU. France does not have guidelines for how the regulation is applied to local industry, but France does have a Health Data Hosting certification system.	Work with experts to develop clear guidelines on how businesses can adopt cloud in compliance with the GDPR, especially for highly regulated firms.	 <b>Japan's Data Protection Laws</b> include clear guidelines for the finance, healthcare and telecommunications sectors	Skills: ✓ Organisational culture: ✓ Cybersecurity: ✓
<b>Incentivise cloud adoption and maturity</b>	France has R&D tax credits available for business purchasing cloud computing, and general tax incentives for startups and MSMEs.	Greater support for MSMEs to reduce the cost of transitioning to cloud and encourage innovation.	 <b>Ireland's Finance Act 2022</b> explicitly allows costs incurred by a company on cloud computing to qualify for R&D tax credits	Skills: ✓ Organisational culture: ✓ Cybersecurity: ✓
<b>Improve cloud first policies</b>	While France does not have a 'cloud-first' policy, the National Cloud Strategy (2021) includes the 'Cloud at the centre' policy, which aims to make one of two internal inter-ministerial clouds the default hosting method for digital services.	Build on existing policy to introduce a 'cloud-first' policy, with clear guidelines and procurement policies. Consider how public cloud could be used to enhance the benefits.	 <b>United Kingdom's Cloud-First policy (2013)</b> is a whole-of-government, public cloud-first approach that outlines clear guidelines and procurement policies for departments	Skills: ✓ Organisational culture: ✓ Cybersecurity: ✓

Source: OECD,<sup>58</sup> The Connexion,<sup>59</sup> News in France,<sup>60</sup> Lim, S.,<sup>61</sup> Digital Skills and Jobs Platform,<sup>62</sup> Brinda, M. & Woolley, K.,<sup>63</sup> Misheva, G. V.,<sup>64</sup> Australian Government,<sup>65</sup> KPMG,<sup>66</sup> GDPR EU,<sup>67</sup> Delphix,<sup>68</sup> French Government,<sup>69,70</sup> Mcguire Sponsel,<sup>71</sup> One Trust Data Guidance,<sup>72</sup> UK Government<sup>73</sup>, European Commission<sup>74</sup>

<sup>58</sup> OECD (2023), OECD broadband statistics update

<sup>59</sup> The Connexion (2021), French countryside better connected to fibre internet than cities

<sup>60</sup> News in France (2022), France has the Second Fastest Internet Speed in the World

<sup>61</sup> Lim, S. (2019), The city of the future: What will a full-fiber broadband city look like

<sup>62</sup> Digital Skills and Jobs Platform (2023), Netherlands Dutch Digitalisation Strategy 2.0

<sup>63</sup> Brinda, M. & Woolley, K (2019), The Secret to More Cloud Adoption in Europe? More Supply

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- <sup>64</sup> Misheva, G. V. (2022), France - National Plan for Digital Inclusion
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- <sup>71</sup> Mcguire Sponsel (2020), Calculating cloud computing expenses
- <sup>72</sup> One Trust Data Guidance (2021), France: The new national cloud strategy - data transfers and localization implications
- <sup>73</sup> UK Government (2022), Government Cloud First policy
- <sup>74</sup> European Commission (2023), Data Protection: European Commission adopts new adequacy decision for safe and trusted EU-US data flows.



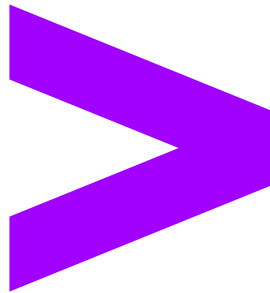
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