Dialling in

AI outlook in telecoms

Introduction

Telecom companies built the networks, infrastructure and connectivity that power the digital economy. But, ironically, the industry has struggled to adopt next-generation technologies early enough. It missed the streaming revolution led by the likes of Netflix, instead merely providing the pipes. Now, from 6G to immersive experiences, it has an opportunity to profit from the next wave of innovation.

An Economist Impact survey, commissioned by Databricks, polled 715 technical executives and 385 data and artificial intelligence (AI) technologists with titles such as data scientists, data engineers and enterprise architects. The survey included 135 respondents representing the telecoms industry.

We found:

- **The sector has a strong focus on customer experience, with 74% of respondents citing active high-impact use cases, and over half looking to AI to improve marketing, content creation and customer experience both now and in the future.**

- **The industry is a leader at investing in AI across both technical and non-technical business functions, surpassed only by finance.**

- **Security is the top AI-related concern, cited by 36% of respondents, surpassing all other challenges.**

- **So far, only 9% of companies have realised efficiency gains from generative AI (GenAI), but more than 50% anticipate seeing gains within two years.**

We'd like to thank the following executives for participating in interviews and sharing insights:

- **Melissa Pint**, chief digital information officer, **Frontier**

- **Senthil Ramani**, global lead, data and AI, **Accenture**

- **Takaaki Sato**, senior executive vice president, chief technology officer, **NTT Docomo**
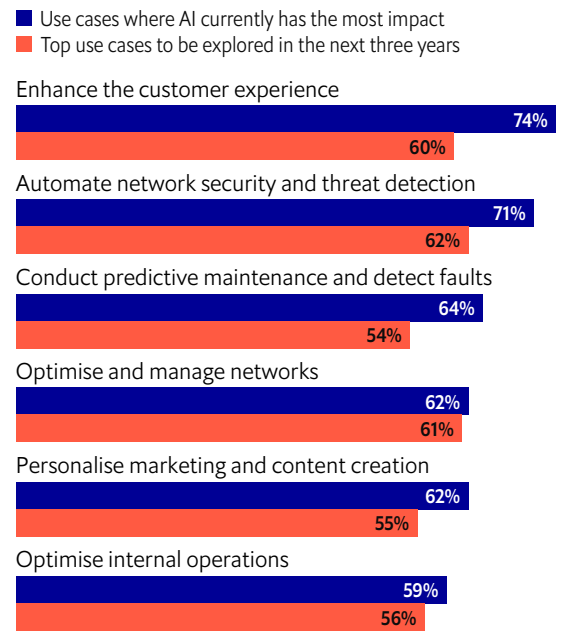
Enhancing customer experience

Telecom companies have been hard hit by the cost-of-living crisis, as consumers rein in spending and fight back against opaque pricing plans.[1] Operators are under pressure to provide personalised solutions for a more tech-savvy customer base, especially across bundled services like streaming, gaming and digital content. Omnichannel support, enhanced customer service and proactive service management are some of the additional measures needed to provide a seamless experience.[2] Telecom companies are also competing with the broader tech industry, which has begun exploring alternative communications infrastructure through initiatives like Google Fiber, Meta's Middle Mile and 2Africa projects, alongside satellite networks from companies such as Amazon and Eutelsat OneWeb.

Against this backdrop, our survey finds an industry keen to embrace AI, with three-quarters of respondents citing enhanced customer experience as one of their most impactful use cases, which will remain among the top three priorities in the years to come (see figure 1).

Across the sector, companies are running AI pilots aimed at tackling network performance issues such as latency, security threats, bottlenecks and network resource allocation.[3] AT&T, SK Telecom, Vodafone and Bell Canada have launched trials for GenAI applications that monitor weather patterns and predict possible network outages.[4] "We are using a lot of AI [to try] and get ahead of problems before they occur," says Melissa Pint, chief digital information officer at Frontier, a telecoms firm.

Figure 1: Top use cases now and in the future
- ■ Use cases where AI currently has the most impact
- ■ Top use cases to be explored in the next three years

Enhance the customer experience
- 74%
- 60%

Automate network security and threat detection
- 71%
- 62%

Conduct predictive maintenance and detect faults
- 64%
- 54%

Optimise and manage networks
- 62%
- 61%

Personalise marketing and content creation
- 62%
- 55%

Optimise internal operations
- 59%
- 56%

Source: Economist Impact

Senthil Ramani, global lead of data and AI at Accenture, highlights the significant potential of GenAI to optimise utilities network operations through full digitalisation and analysis. This, he notes, is crucial for maximising the benefits of telecom companies' sizable investments in 4G and 5G.

> **"The true organisations who are going to become the leaders with AI tomorrow are the ones who transcend productivity into understanding that AI is about growth. "**
>
> Senthil Ramani, global lead, data and AI, Accenture

1 https://www.ey.com/en_gl/insights/telecommunications/top-10-risks-for-telecommunications
2 https://onecompartners.co.uk/blog/evolving-customer-expectations-in-telecom-personalisation-and-beyond
3 https://www.fierce-network.com/wireless/get-ready-telco-genai-network-operations
4 https://www.forbes.com/sites/cindygordon/2024/03/11/how-the-telecom-industry-can-accelerate-growth-from-generative-ai/

At NTT Docomo, Japan's largest telecom company and the world's fourth largest by revenue,[5,6] AI is optimising network performance through tools such as wireless channel estimation, network traffic prediction, automated design, anomaly detection, and the automation of network operations and maintenance. A recent partnership with Sapeon, an AI semiconductor group backed by South Korea's SK Telekom, has seen NTT test a newly launched AI semiconductor, the X330, with a view to improving performance through reduced execution costs and power consumption. These network-focused measures are particularly important in an industry where reliability is paramount. The emergence of 6G connectivity, which is expected to be an AI-native network, will be capable of learning and adaptation, with built-in algorithms optimising network performance.[7]

By analysing customer purchase histories and usage patterns, and executing market trend analysis, NTT Docomo develops new services and plans that best meet customer needs. Predicting customer needs and offering personalised promotions has been heralded as a major achievement at the operator, which has seen a pronounced increase in customer satisfaction and loyalty as a result. This analytical approach to customer behaviour is bolstered by NTT's use of additional customer-oriented technologies, which have improved campaign ad effectiveness, enhanced customer web interactions, supported shop employees in catering more effectively to customers and accelerated the digital transformation of company partners.

Meanwhile, Frontier is using chatbots to handle customer queries more efficiently and deliver more personalised service.[8,9]

"Our Giga chatbot is guided by the belief that customers want to self-serve and get information quickly without having to make a phone call. We have seen customers that choose to use it getting better and faster responses, and [being] more satisfied than those that end up calling."

Last year, Frontier cut up to 2 million phone calls, saving their customers 50 years of collective time.

Melissa Pint, chief digital information officer, Frontier

Frontier is also using a GenAI tool to fine-tune sales and marketing. "GenAI helps us formulate leads and solution categories to cut down the time it takes to match customers to products. Our sales team can then add the special sauce," says Ms Pint.

5 https://www.docomo.ne.jp/english/corporate/about/outline/index.html
6 https://www.google.com/finance/quote/9432:TYO
7 https://www.technologyreview.com/2023/10/26/1082028/ai-powered-6g-networks-will-reshape-digital-interactions/
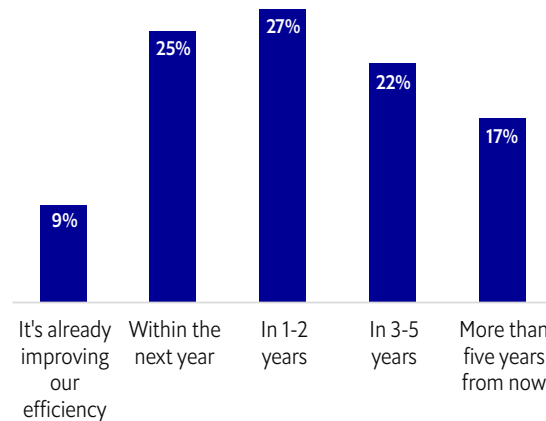8 https://totaltele.com/vodafone-invests-120m-in-ai-chatbot-supertobi/
9 https://newsroom.frontier.com/building-gigabit-america/meet-giga-frontiers-ai-driven-chatbot-is-ready-to-have-personalized-conversations/

Finding business efficiencies

AI integration offers advantages across a range of business functions, including marketing, sales, customer service, field service management, network maintenance and IT. Key benefits include optimised resource allocation, increased workplace productivity, and enhanced operational efficiency. By automating routine tasks such as billing, provisioning and compliance reporting, businesses can also minimise human error and lower operational costs.

Such is the breadth of potential benefits that the telecoms industry is second only to finance in our survey for investing in AI across both technical and non-technical business functions. And notably just over a quarter of respondents are applying GenAI almost exclusively to general (horizontal) use cases rather than domain-specific applications—more than double the rate seen in other industries. Only 9% report tangible improvements to efficiency so far, but 25% expect to accrue gains in the next year and an additional 27% anticipate this within two years (see figure 2) as capital investments in GenAI start to deliver measurable impact.
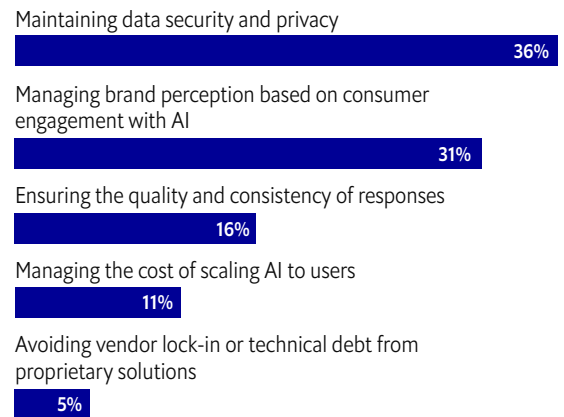
A secure line

Customer data kept by telecom operators is valuable, making it a prime target for cyberattacks. Digital environments are becoming increasingly complex, with new technologies multiplying access points and increasing the surface area for attacks. As a consequence, operators must impose strict security protocols for critical infrastructure.

As part of security efforts, operators can use AI to detect unusual patterns of behaviour before they become a potential threat, including account takeovers, unauthorised account access or SIM card fraud. In instances where a potential breach has been detected, GenAI can help craft more accurate, immediate and impactful customer notifications and responses, or automatically lock suspicious accounts.

However, AI also brings its own security challenges. Maintaining data security and privacy was singled out as the top AI-related concern by 36% of respondents, surpassing all others (see figure 3).

Figure 2: Expected timelines to realise significant efficiency benefits from GenAI

It's already improving our efficiency	Within the next year	In 1-2 years	In 3-5 years	More than five years from now
9%	25%	27%	22%	17%

Source: Economist Impact

Figure 3: Top concern with introducing AI to the organisation

Maintaining data security and privacy — 36%

Managing brand perception based on consumer engagement with AI — 31%

Ensuring the quality and consistency of responses — 16%

Managing the cost of scaling AI to users — 11%

Avoiding vendor lock-in or technical debt from proprietary solutions — 5%

Source: Economist Impact

Security protocols, consumer data, ethics and data governance must be treated as strategic priorities by telecoms companies. With the compliance burden growing, operators need to tackle a complex web of regulations including spectrum, market competition, consumer protection, net neutrality, data protection, infrastructure access, sharing and pricing.

A collaborative approach in the face of such challenges is needed. "Numerous issues, such as privacy protection, security measures, intellectual property issues, ethical concerns and the problem of deepfakes need to be addressed," says Takaaki Sato, senior executive vice president and chief technology officer at NTT Docomo. "It is essential to maximise the benefits of AI technology by overcoming these challenges in collaboration with relevant parties," he adds.

NTT Docomo is also integrating various filtering functions with its large language model initiatives, including around ethics, to use model outputs in an ethical and secure way.

Embracing agility

Telecom operators have often struggled to implement AI and GenAI due to factors such as data availability and reliability.[10] With their data often siloed in both structured and unstructured formats, and subject to evolving regulations and privacy laws, mismatches are common.

Nearly 66% of respondents in our survey cite high data infrastructure costs, while 62% cite legacy system integration, among the biggest challenges they face in scaling AI and GenAI.

To become truly AI-native organisations, telecom operators need to be willing to invest, experiment and scale. But success depends on the digital and data foundation. Modernising legacy systems is costly but necessary, and data assets need to be extracted from silos and assessed for quality, reliability and availability.

"All companies, ours included, have lots of data. That's not the problem. The problem is that it's in many places. A big underlying strategy [therefore] is pulling that data together. "

Melissa Pint, chief digital information officer, Frontier

Moving towards a centralised data architecture ensures data are clean, trustworthy and accessible.

Employing unified architecture is a crucial first step towards AI-driven modernisation. Additional steps must be taken, says Mr Sato, to advance "all layers, including data flow, data utilisation and AI utilisation. [Providing] a scalable data platform that can handle real-time, unified processing, as well as strengthening capabilities in software engineering and data engineering, are crucial."

However, becoming a data-driven organisation is not just a matter of the right infrastructure. Wider adoption of DevOps practices, building scalable infrastructure and fostering a data-driven culture all matter too. "It is vital to foster a culture that promotes data-driven decision-making. Decisions should be based on data, and to facilitate this, access to data should be easy and transparency should be increased," says Mr Sato.

---

[10]   https://www.rcrwireless.com/20240701/fundamentals/two-factors-hindering-telco-ai-adoption

This data-driven foundation will enable operators to explore use cases with confidence, but with the digital landscape changing so quickly, it can be hard to know where to invest. Companies see benefits to a stepwise approach. "Start small, iterate, learn quickly, fail, get feedback and keep moving forward," says Ms Pint.

This agile approach can deliver incremental value, but it requires finding the right technology fix for the problem, whether that is off-the-shelf, hybrid or open-source approaches.

Around 35% of telecom respondents report that they currently use hybrid GenAI approaches (eg, fine-tuning pre-trained models), more than any other sector, suggesting that operators are inclined to pursue creative solutions that best meet their needs.

For this agile approach to deliver requires a workforce that is comfortable using AI and is made to feel a part of the digital transformation journey. "One of the barriers is, we can create the tools, but people have to embrace [and] use them," says Ms Pint.

Frontier has taken extensive measures to ensure staff are actively involved in the journey, involving them in proof-of-concept initiatives, soliciting feedback, organising staff roadshows and crowdsourcing ideas for new applications. At NTT Docomo, engagement takes the form of "idea solicitation and recognition" initiatives, according to Mr Sato, aimed at encouraging staff contributions.

At other times, a more direct approach is needed.

"Ask [employees] what slows down your day-to-day job? What is repetitive? The more you free them up from the mundane tasks to do the part of the job that they really love, the more acceptance you'll get. "

Melissa Pint, chief digital information officer, Frontier

According to Mr Sato, freeing up time for more creative pursuits can also accelerate innovation.

" The use of GenAI to perform tasks that previously required specialised knowledge has a significant impact on technological innovation. This transformative capability lowers barriers to participation in various fields, leading to the recruitment of new talent."

Takaaki Sato, senior executive vice president, chief technology officer, NTT Docomo

While every effort has been taken to verify the accuracy of this information, Economist Impact cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report. The findings and views expressed in the report do not necessarily reflect the views of the sponsor.
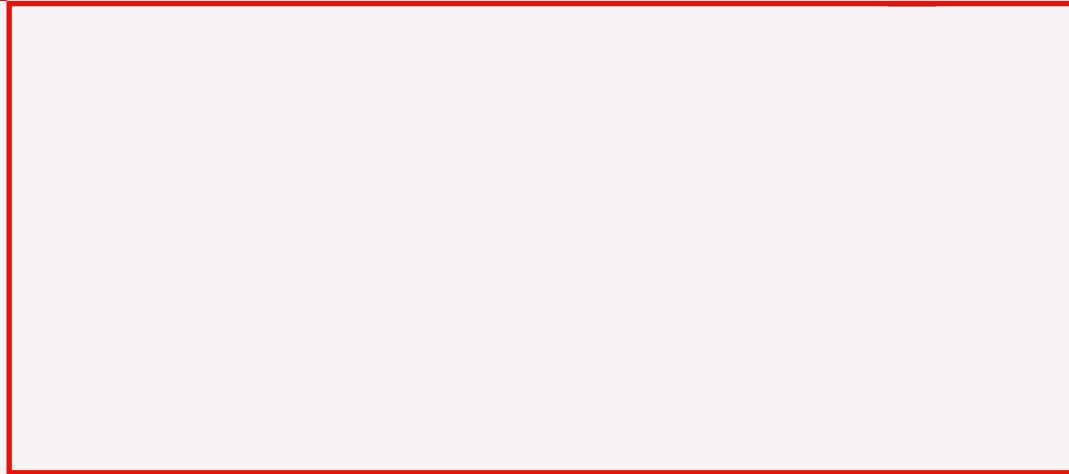
LONDON

The Adelphi
1-11 John Adam Street
London WC2N 6HT
United Kingdom
Tel: (44) 20 7830 7000
Email: london@economist.com

NEW YORK

900 Third Avenue
16th Floor
New York, NY 10022
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 1181/2
Email: americas@economist.com

HONG KONG

1301
12 Taikoo Wan Road
Taikoo Shing
Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
Email: asia@economist.com

GENEVA

Rue de l'Athénée 32
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
Email: geneva@economist.com

DUBAI

Office 1301a
Aurora Tower
Dubai Media City
Dubai
Tel: (971) 4 433 4202
Fax: (971) 4 438 0224
Email: dubai@economist.com

SINGAPORE

8 Cross Street
#23-01 Manulife Tower
Singapore
048424
Tel: (65) 6534 5177
Fax: (65) 6534 5077
Email: asia@economist.com

WASHINGTON DC

1920 L street NW Suite 500
Washington DC
20002
Email: americas@economist.com