Independent market research and competitive analysis of next-generation business and technology solutions for service providers and vendors

HEAVY READING
WHITE PAPER

Heavy Reading's 2024 5G AIOps Operator Survey

A Heavy Reading white paper produced for Kyndryl, Microsoft, RADCOM, and Wavelo

kyndryl Microsoft RADCOM wavelo

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EXECUTIVE SUMMARY

5G networks are scaling rapidly and evolving to support new standalone (SA) capabilities such as network APIs, analytics, distributed edge, and network slicing. Operators are compelled to innovate their network operations due to the complex network environment and the need to manage services dynamically and at velocity.

To assure customer experience and ultimately drive revenue growth, operators need insights and analysis across multiple network domains, including business and operational support systems (BSS/OSS), provisioning, network operations, data centers, etc. Technologies, such as advanced analytics, artificial intelligence (AI), and automation, streamline network operations and offer improved service quality within the tightly regulated telecoms environment. AI and generative AI (GenAI) are central to the vision of next-generation network operations—this is known as AIOps.

Heavy Reading launched its first **Analytics and Automation Market Leadership Program** in 2023 to investigate the opportunities and challenges in 5G networks. Year 2 of this project focuses on how analytics and automation, supported by AI, will underpin 5G networks and service operations.

This report presents the key findings of ***Heavy Reading's 2024 5G AIOps Operator Survey***. It provides the latest outlook on operator strategies for analytics, automation, and AI. The report is structured as follows:

- AIOps adoption strategies
- The impact of telco GenAI
- 5G network analytics and troubleshooting
- Billing and call center analytics and AI
- AIOps maturity and timescales

The 2024 project partners for the ***2024 5G AIOps Operator Survey*** are **Kyndryl, Microsoft, RADCOM,** and **Wavelo**.

Key findings

The following are the key findings from this project.

Operators are eager to integrate AI into their operational processes, but a considerable gap exists between ambition and implementation. More than a third believe AI will be fully integrated into network operational processes "within two years," and an eager quarter indicated "within 6–12 months." Yet, only 6% of respondents currently identify and resolve all network issues with AI systems, illustrating how immature AI operations are in practice.

The call center domain leads AI process adoption. In the next year, a combined 43% of operators expect integrated AI-driven automation to enhance subscriber interactions in the call center; 13% already support this, and 30% will "within 6–12 months." These bolder timescales reflect the early inroads made by AI call center solutions that concentrate on automated call protection, intelligent automated or assisted agents, and customer analysis.

AI is reinforcing how crucial energy efficiency is for 5G network infrastructure and is now regarded as being as important as more traditional performance metrics by network operators. For edge infrastructure, 56% of operators prioritize performance over power efficiency (44%). But, performance (51%) and power efficiency (49%) are virtually equal for core infrastructure. Concerns about high AI energy consumption may have amplified the vote for power efficiency. Operators have historically prioritized performance over energy efficiency, so this represents a major change in sentiment.

Operators want to use GenAI in technical network operational processes, aiming to enable open-loop autonomy for smaller tasks in the next 18 months. Survey data confirms network optimization (38%), network service assurance (32%), and technical customer care and support (17%) will experience the highest impact from GenAI. The transformation of GenAI SA use cases, such as knowledge access, to fully autonomous operations will vary across domains as operators ensure accuracy, data governance, and regulation.

AI regulation and organizational AIOps frameworks are currently immature. At 60%, the leading group of operators surveyed believes their AIOps solutions will adhere to "global standardization, e.g., 3GPP, ITU, etc.," followed by industry body organizational frameworks (49%). The survey data indicates that confidence in government/regional AI regulations (36%) is low, and additional respondents confirm "don't know/standards are not currently mature enough." Heavy Reading believes AI demand will accelerate the regulation debate.

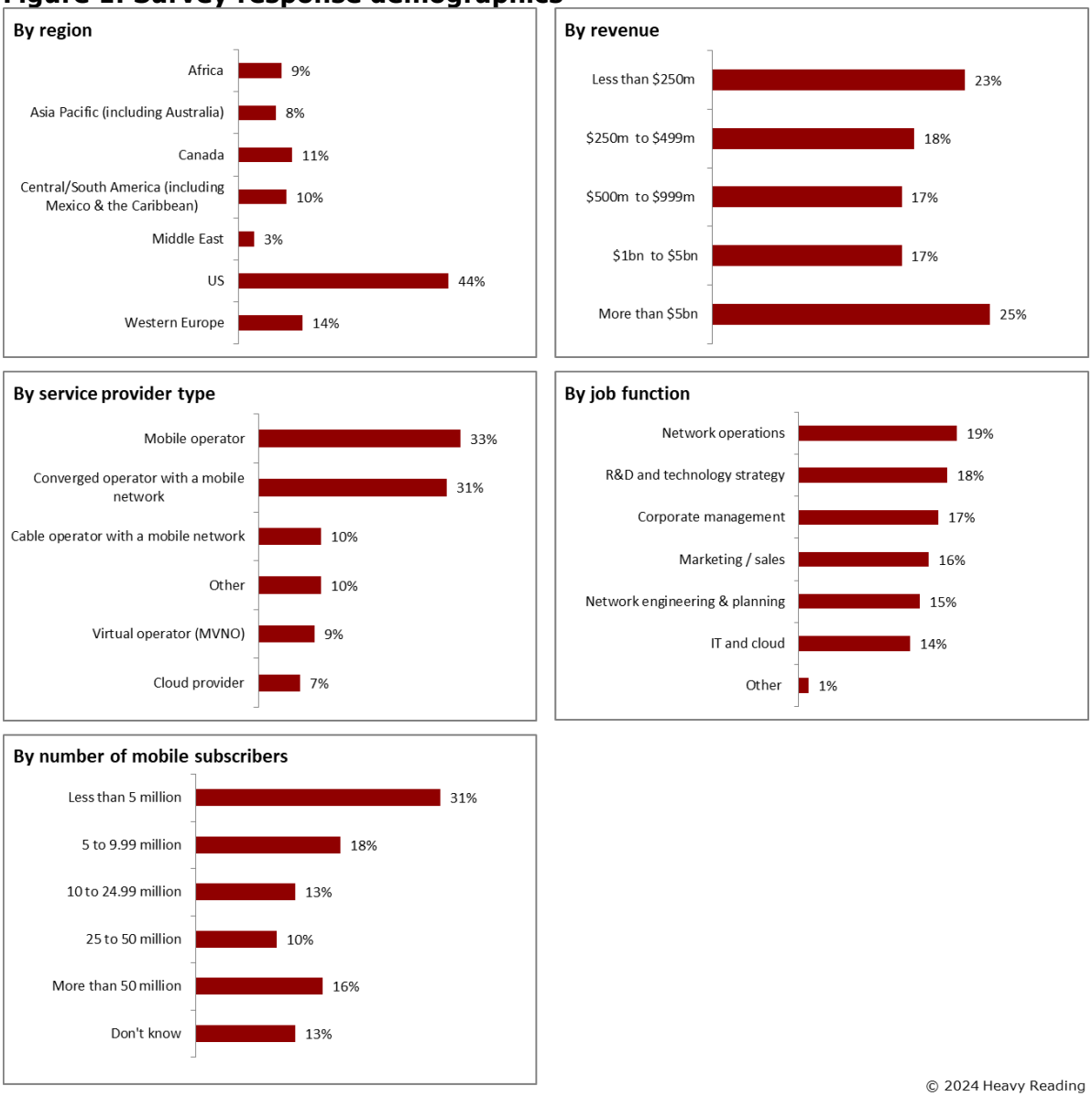
Operator enthusiasm to run 5G network analytics in public cloud infrastructure is rising. Respondents believe integration is "very important" (44%) or "important" (38%), with "somewhat important" (15%) trailing in third. Only 2% of operators consider integration "not important," suggesting an extensive role for public cloud in network analytics going forward. This migration from on-prem models marks a major change in mobile network analytics that is now underway.

Survey demographics

This Heavy Reading report is based on a web-based survey written by Heavy Reading with input from project partners. It was conducted in June/July 2024, and the analysis was written in July 2024. Respondents were drawn from the Light Reading service provider database of worldwide network operators. After reviewing responses, 88 were deemed qualified participants and were counted in the results (removing incomplete surveys and bad responses). To qualify, respondents had to work for a verifiable network operator with mobile network businesses.

All responses are confidential and presented only in aggregate form. Note that Heavy Reading does not share individual or company names from the survey details the full survey demographics.

Figure 1: Survey response demographics



Note: Numbers in figures throughout this report may not total 100 due to rounding. (n=88)
Source: Heavy Reading, 2024

AIOPS ADOPTION STRATEGIES

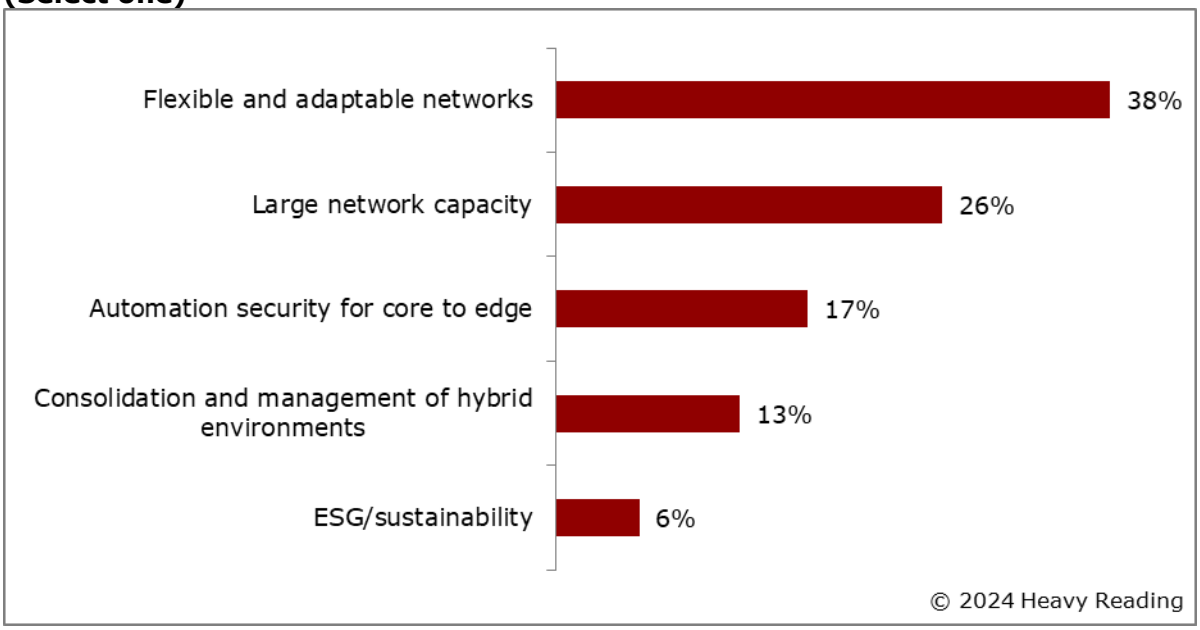
After a period of substantial network investment to upgrade and build 5G, operators are transitioning to a monetization phase, looking at tools and strategies to assist performance, personalization, and efficiency as they strive to stay competitive. This section explores adoption challenges, priorities, and strategies.

More than a third of operators (38%) believe flexible and adaptable networks will have the highest importance in operator network strategy, as shown in **Figure 2**. Establishing adaptability from day one allows operators to support various applications and exploit distinct efficiency gains through optimal workload placement across edge, core, or private clouds. Over a quarter (26%) will prioritize network capacity, again confirming the need for variable characteristics to provision and operate diverse services effortlessly across industry, enterprise, and consumer markets.

Automation security for core to edge (17%) scores lower in third place. Security attacks and breaches are frequent and sophisticated, and the lower scoring may suggest operators are still developing strategies for this complex environment to ensure they can enforce secure, automated protection.

Consolidation and management of hybrid environments (13%) is fourth, and (surprisingly) environmental, social, and governance (ESG)/sustainability (6%) scores lowest. Operators are unlikely to place a lower importance on operational efficiency measures such as consolidation or ESG/sustainability, as each tends to have dedicated strategies. Heavy Reading interprets this low scoring as the result of votes cast for other options.

Figure 2: What is the most important network strategy in your organization? (Select one)



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Source: Heavy Reading, 2024

Power-hungry network infrastructure and high performance criteria make circumventing high energy bills challenging. Operators must constantly prioritize, delivering high performance while observing power efficiency and sustainability targets.

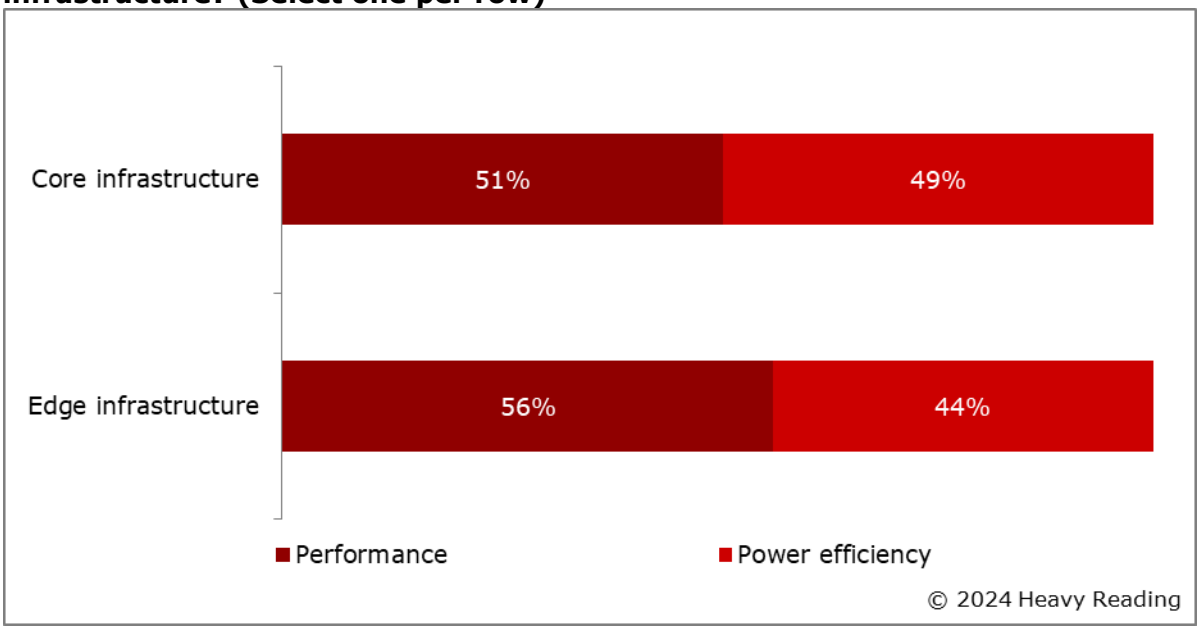
Figure 3 sought operators' opinions on the priority of performance or power efficiency in their core and edge infrastructure.

Energy efficiency is now a crucial requirement for 5G network infrastructure among operators. 56% of operators prioritize performance ahead of power efficiency (44%) in their edge infrastructure. In the core infrastructure, operators view performance and power efficiency almost equally, with 51% prioritizing performance over power savings (49%).

Heavy Reading believes the results reflect two rationales. First, new silicon and server power management innovations target energy efficiency for the newer cloud services-based workloads. New chips consume far less energy and perform better, allowing operators to achieve both goals. Alongside the new silicon, automated server power management processes can often vary processor frequency and voltage to save additional power.

Second, within the last six months, industry and media have voiced concerns about the insatiable AI power demands, energy-hogging, and potential electricity grid spikes, with model training taking the bulk of the demand. These recent well-publicized announcements about energy footprint requirements in the edge and core may have the vote for power efficiency. Operators have historically prioritized performance over energy efficiency, so this represents a major change in sentiment.

Figure 3: Which metric will have the highest priority within your 5G network infrastructure? (Select one per row)



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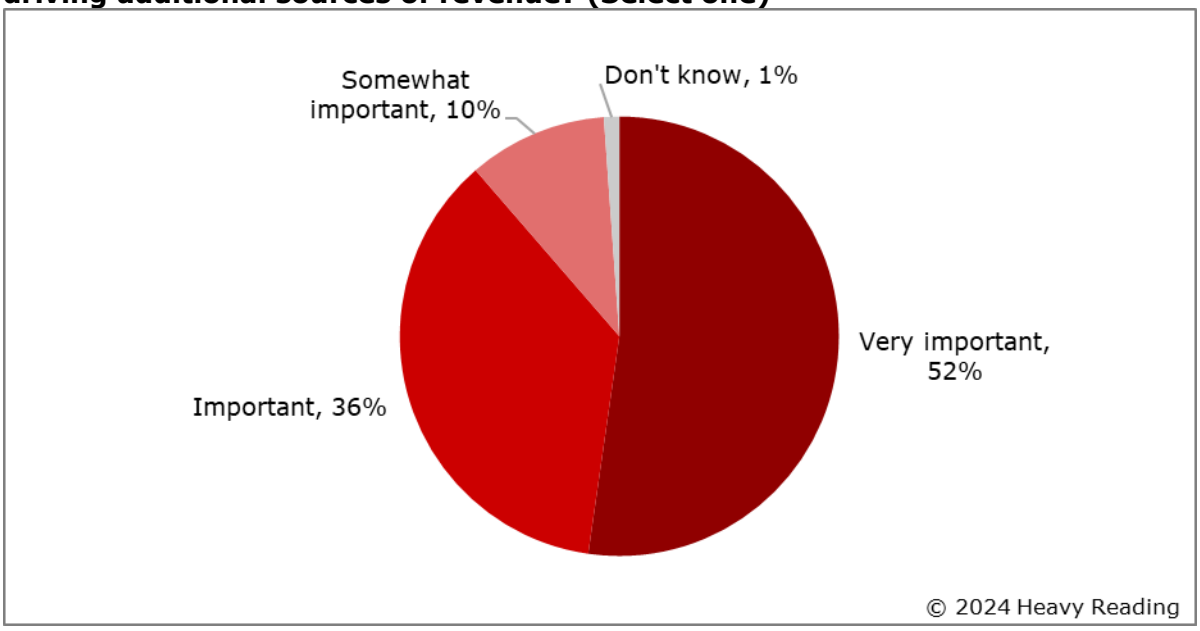
Source: Heavy Reading, 2024

AI and automation are essential to bring speed, remove human error, and boost productivity. **Figure 4** asks operators how vital automation is in offering new services and driving additional sources of revenue.

A majority (88%) of operators confirm automation has an important role in new services and driving additional sources of revenue (based on a combined total of "very important" [52%] and "important" [36%]). A minority of respondents (10%) think automation is "somewhat important," and just 1% "don't know."

These results are an overwhelming endorsement that 5G service offerings will rely heavily on network automation, which will also be essential for orchestrating and managing many 5G services, such as network slicing, low latency applications, etc. Automation will also support operator ambitions to accelerate service launch timelines from years (in previous generations) to shorter periods. Additionally, operators believe AI-automated customer usage and experience analysis can support the analysis of trends and preferences to assist with future service development.

Figure 4: How important is the role of automation in offering new services and driving additional sources of revenue? (Select one)



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Source: Heavy Reading, 2024

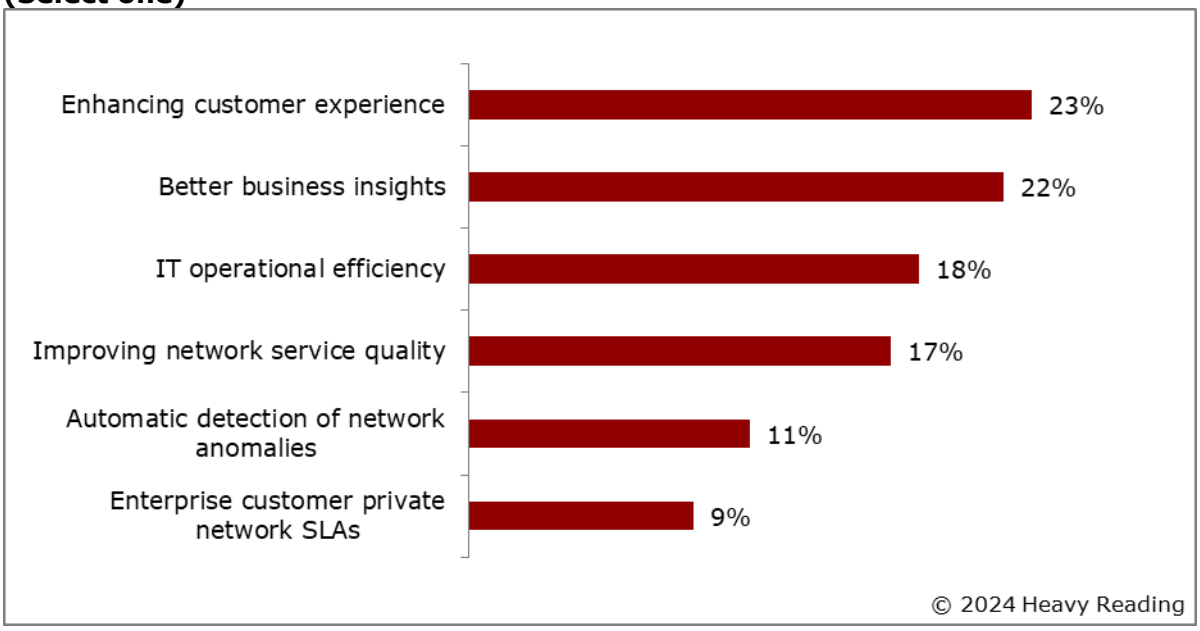
For the early adopters, AI processes are already showing promise and quantifiable network efficiencies and improvements, with notable achievements well-publicized. **Figure 5** examines which use cases operators believe will bring the most benefit.

The results are quite evenly spread, suggesting multiple use case strategies and priorities that remain undecided or are longer term. Close scoring across enhancing customer experience (23%) and better business insights (22%) lead in first and second place, respectively. These findings back a heavy reliance on AI customer experience and insights to support customer retention and business efficiency. They also indicate that operators wish to bring agility and measurable time improvements to data-heavy tasks.

IT operational efficiency (18%) and improving network service availability (17%) are the next grouping of use cases. Managing and maintaining IT infrastructure and the software they support represent the backbone of most organizations. As cloud infrastructure becomes more prominent for operators and enterprises, monitoring, management (including public, private, on-prem clouds, etc.), and troubleshooting are priorities. AI can support fast resolution across multiple IT operational tasks, such as event management, performance, workflow automation, etc. The IT domain has seen fast AI adoption, so it is no surprise that respondents prioritize IT operational efficiency so highly. AI network integration can also work rapidly to detect inefficiencies (e.g., data traffic peaks, increased cell subscribers, etc.) and quickly change network attributes to increase capacity or coverage to maintain service quality for users.

The lowest scores are for automatic detection of network anomalies (11%) and enterprise customer private network service-level agreements (SLAs; 9%). This is most likely due to their current level of immaturity, with fewer operators currently implementing these use cases.

Figure 5: Which use case within your organization will benefit most from AI? (Select one)



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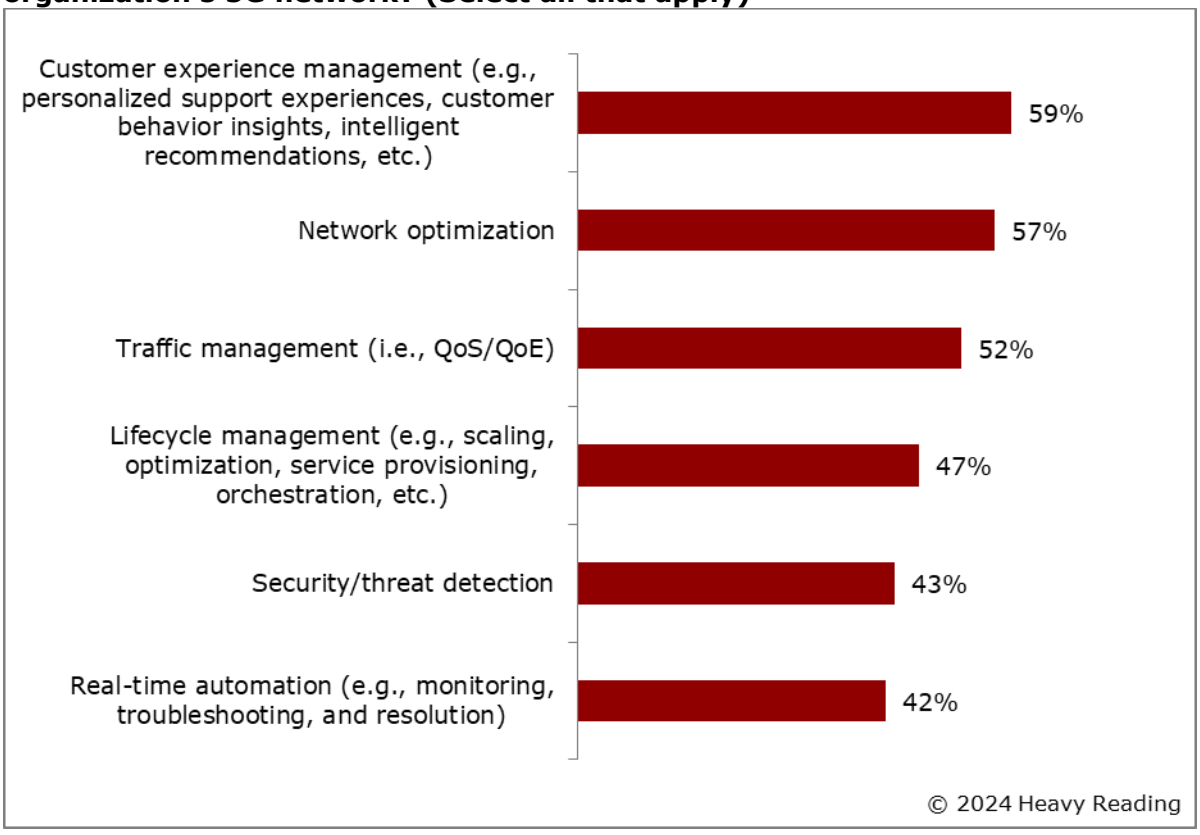
Source: Heavy Reading, 2024

AI abilities are quickly advancing, and operators are keen to prove capabilities and take advantage by incorporating them into operations to simplify tasks, support efficiency, and create personalized and superior network experiences. Data analysis, security, planning, troubleshooting, and config generation tasks may benefit from AI as network operations, service management, and infrastructure scale increase. **Figure 6** considers which 5G network AI process will have the highest impact.

Operators chose, on average, three choices across the six options, with widespread distribution across all categories indicating differing opinions and strategies under consideration. Customer experience management (59%) is top, narrowly ahead of network optimization (57%). Both methods rely heavily on data analysis across large datasets, which plays to the strengths of AI. The high scoring of customer experience management again (also confirmed in **Figure 5**) further validates that operators believe it is critical to prevent customer erosion and grow revenue.

Traffic management (52%) is third, validating the potential of AI for traffic monitoring and continuous real-time adjustments, which will be essential for services such as gaming, virtual reality tasks, real-time process operation, etc. Meanwhile, lifecycle management (47%), security/threat detection (43%), and real-time automation (42%) all score lower with respondents, perhaps hinting at the lack of solution deployment and maturity. However, AI's pattern-matching skills and speed on big datasets make it an indispensable resource for security and threat detection. Heavy Reading believes operators are still assessing AI model operational threats and risks and expects security/threat detection to have a higher impact once confidence is proven.

Figure 6: Which AI processes will have the highest impact within your organization's 5G network? (Select all that apply)



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Source: Heavy Reading, 2024

Figure 7 asks operators to consider the barriers to adopting automation and AI within their organizations. The outcome indicates operators anticipate barriers across all aspects, with a mixed level of barrier severity.

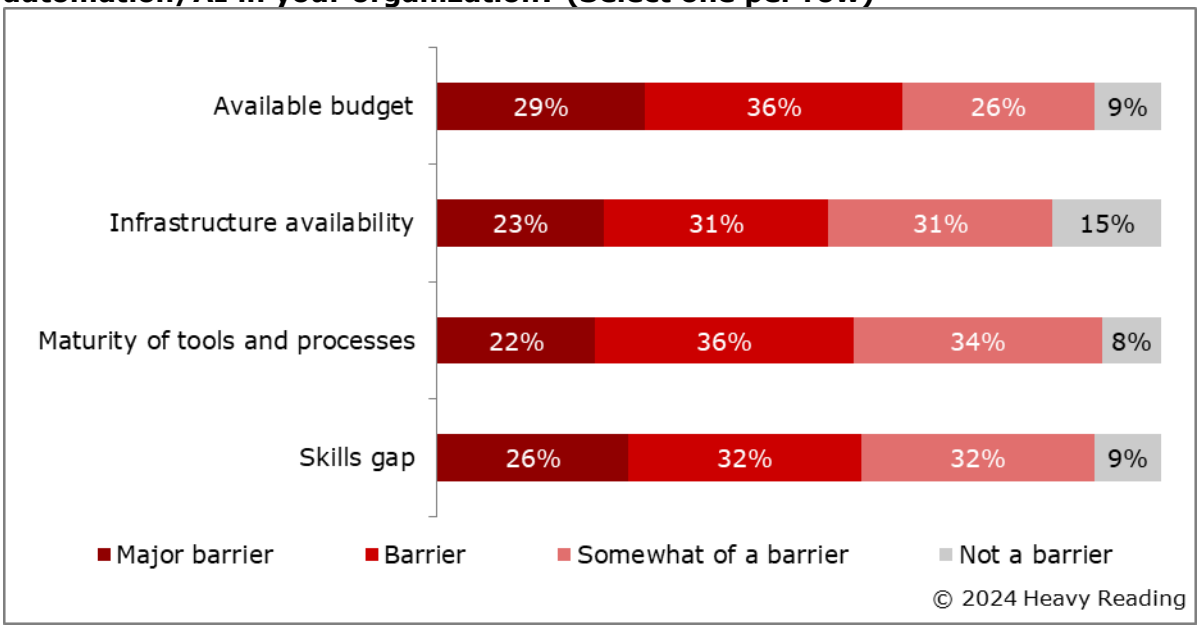
Given the complexity of 5G networks, supporting processes, multiple new technologies, and varying maturity between operators, it is unsurprising they perceive some level of barrier across all options. Selected by 29% of operators, available budget tops the list of "major barriers" to adoption, which may indicate concern that AI projects will be expensive due to the costs of new development, high performance compute upgrades, data quality consolidation and accuracy, integration, etc.

Operators believe skills gap (26%) in second is another "major barrier," followed by infrastructure availability (23%) in third, narrowly ahead of maturity of tools and processes (22%). These results reflect the new complexity AI introduces, such as additional compute requirements and resource planning, new processes, and governance, which require time to implement and learn. Closing the skills gap between development, data science, and operational teams will involve upskilling to ensure the smooth transition and support of new automation tools from development to live.

Challenges, especially around budget, tool maturity, and skills, are highlighted again as "barriers." Available budget and maturity of tools and processes score highest and joint first at 36%. Skills gap (32%) and infrastructure availability (31%) follow in third and fourth, respectively. Software development lifecycles are far quicker than in previous generations, but new AI technology and tools are still evolving, along with proof of their ability.

Respondents in technical job roles, including network engineering and planning, network operations, and IT and cloud, believe the skills gap and available budget will be greater barriers. To ease barriers, operators should cooperate with partners and the ecosystem to foster new skill sets, develop processes, and learn how to apply new tools. This may drive new collaborative working environments or iterative development practices.

Figure 7: To what extent are the following a barrier to your ability to adopt automation/AI in your organization? (Select one per row)



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Source: Heavy Reading, 2024

THE IMPACT OF TELCO GENAI

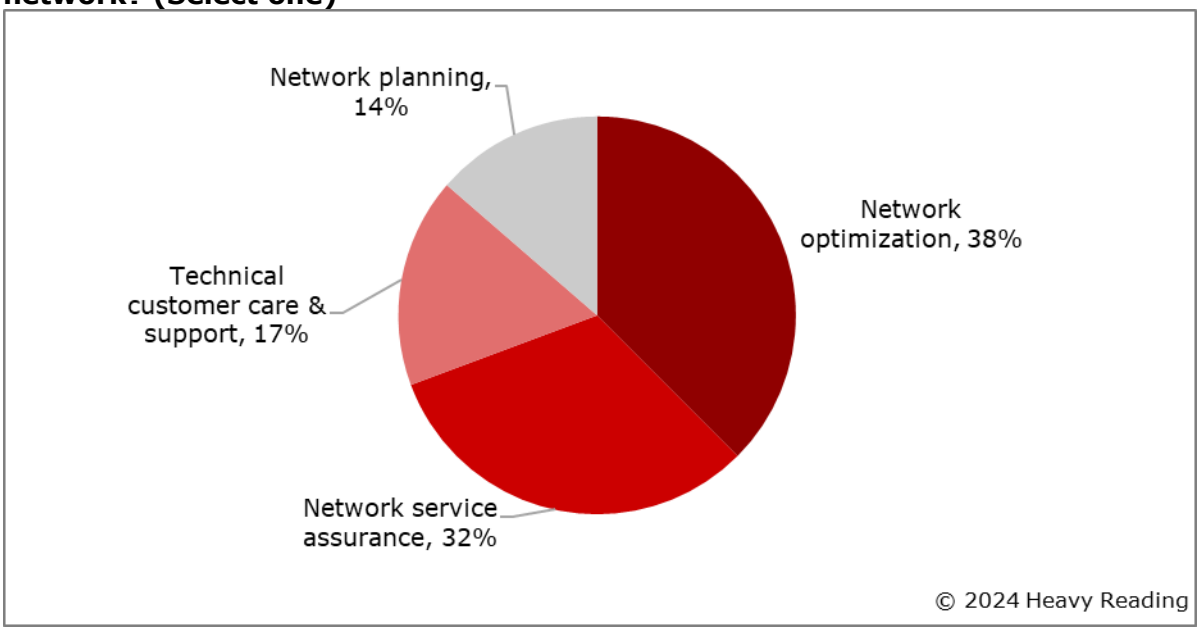
GenAI, a subset of AI, enables the analysis of differing forms of content and media (e.g., text, image, code, unstructured data, etc.). In contrast, traditional AI typically learns and analyzes datasets to enable predictions based on learnings and patterns and offers an array of new opportunities. The industry has generated a lot of recent hype around AI, particularly GenAI, but the technology aims to enhance multiple telco domain operational and billing processes. This section explores the applications and impacts of GenAI in the telco domain.

In the last year alone, the launch of various activities and ventures, including the Global Telco AI Alliance, has allowed the telecom industry to examine and accelerate GenAI benefits and increased productivity. Many initial GenAI use cases focus on customer care, but operators are looking toward growing capabilities in other domains, including the automatic generation of network configuration predicated on current network requirements and network templates, assisted fault diagnosis and resolution, etc. **Figure 8** explores which 5G network GenAI process will have the highest impact.

Operators believe GenAI will provide insights and efficiencies across multiple 5G network processes. More than a third (38%) believe 5G network optimization will offer the highest GenAI impact, followed by network service assurance (32%) and technical customer care and support (17%). These results may reflect optimism from early trials and the development of (for example) GenAI tools built on telco-specific large language models (LLMs). Such tools can consume massive datasets from existing knowledge bases and analytics to correlate them autonomously against live network data to support processes like network optimization, service assurance, and customer care and support. To keep pace with the real-time reactive nature of 5G networks and services, GenAI will offer the most significant impact in fully automated processes.

Network planning (14%) attains the lowest score, indicating AI may currently be under-prepared for the complexity of this role. It often requires site surveys, testing, cost analysis, and vendor management to ensure the capacity, coverage, and capabilities for the latest services and applications.

Figure 8: Which generative AI process will have the highest impact on the 5G network? (Select one)



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Source: Heavy Reading, 2024

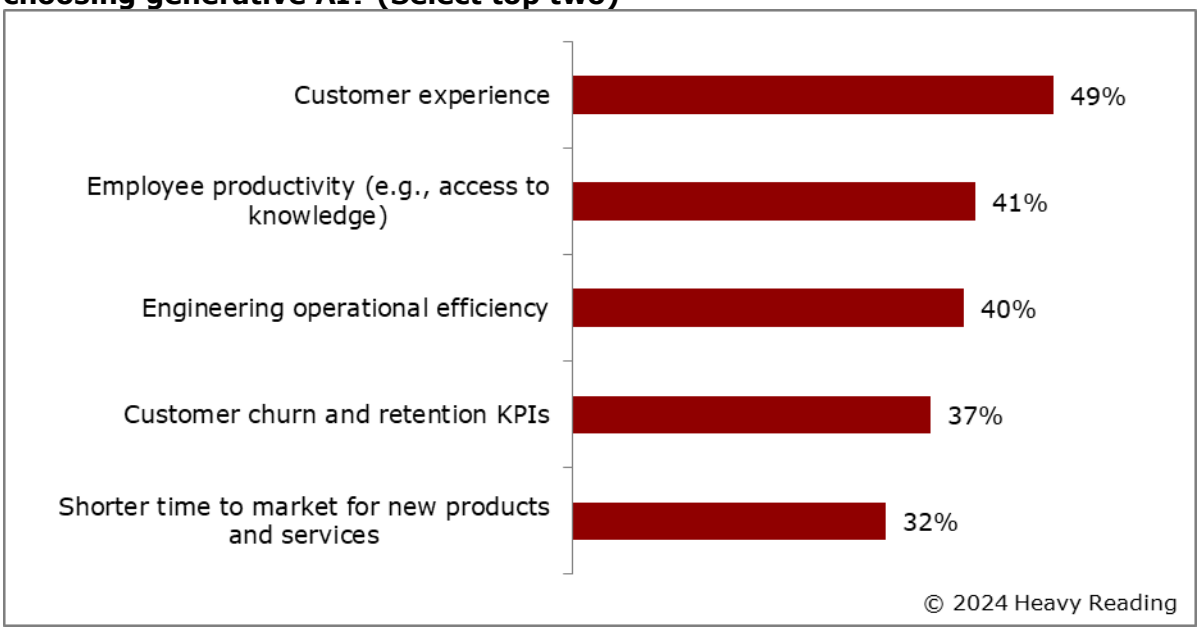
GenAI can process and analyze data that was previously less accessible, such as call center conversations and natural language chats. This capability creates more dynamic operation and network management opportunities through personalized customer experience and product suggestions, enhanced service optimization, efficiency, and increased employee productivity. **Figure 9** examines where operators believe GenAI will offer the greatest benefit.

Customer experience again leads in terms of providing the greatest benefit among operators, gaining 49% of the votes, further confirming that customer retention is a high priority for AI and GenAI capabilities. Also, operator voting for customer experience may be influenced by GenAI-enabled customer chatbots already in operation and gaining sophistication.

Employee productivity (41%) is second, narrowly ahead of engineering operational efficiency (40%), placing third. Using GenAI to assist employees in locating resources (e.g., for fault resolution investigations and replacing manual, repetitive jobs) can offer multiple efficiencies and increase employee productivity, and early use cases focus on these.

Customer churn and retention KPIs (37%) and shorter time to market for new products and services (32%) score the lowest. The results perhaps indicate these capabilities are less proven and quantified benefits at this time.

Figure 9: Where does your organization expect to gain the greatest benefit from choosing generative AI? (Select top two)



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Source: Heavy Reading, 2024

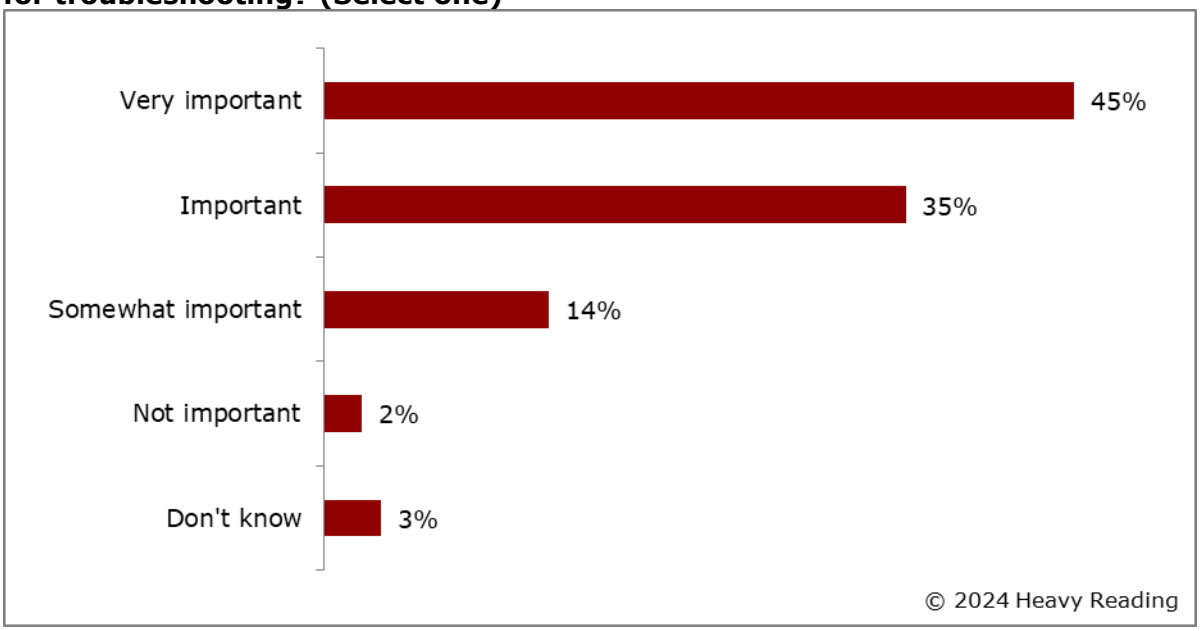
5G NETWORK ANALYTICS AND TROUBLESHOOTING

Analytics are already ingrained in network operations, amassing great data lakes to provide insights across multiple network and customer events. As early 5G SA services appear, the role of analytics in real-time performance monitoring, anomaly detection, security, and user experience analytics will enable operators to refine network slices and deterministic low latency services. **Figure 10** seeks to understand the importance of 5G end-to-end network analytics for troubleshooting.

94% of operators acknowledge the importance of network analytics for troubleshooting (based on an aggregation of "very important" [45%], "important" [35%], and "somewhat important" [14%]). The result recognizes that 5G troubleshooting is critical to assure real-time services. 5G is more complex than previous generations, requiring analysis across multiple layers, including cloud infrastructure, orchestration/containerized environments, network domains, and services, to analyze performance and pinpoint problems. More granular insights to manage experience (e.g., network slice visibility, service latency, session, user, location, etc.) will assist in troubleshooting but rely on AI-powered analysis for agility.

Heavy Reading expects automated analytics to play a significant role in troubleshooting as operators assemble solutions to give them more extensive insights across all services and cloud platforms. As 3GPP release 18 finalizes, maturing network functions such as the Network Data Analytics Function (NWDAF) may become more central within operator strategies. Additionally, AI-enhanced RAN will make the operation and management of the radio domain more intelligent to aid in troubleshooting and reliability.

Figure 10: How important is 5G end-to-end (i.e., RAN to core) network analytics for troubleshooting? (Select one)



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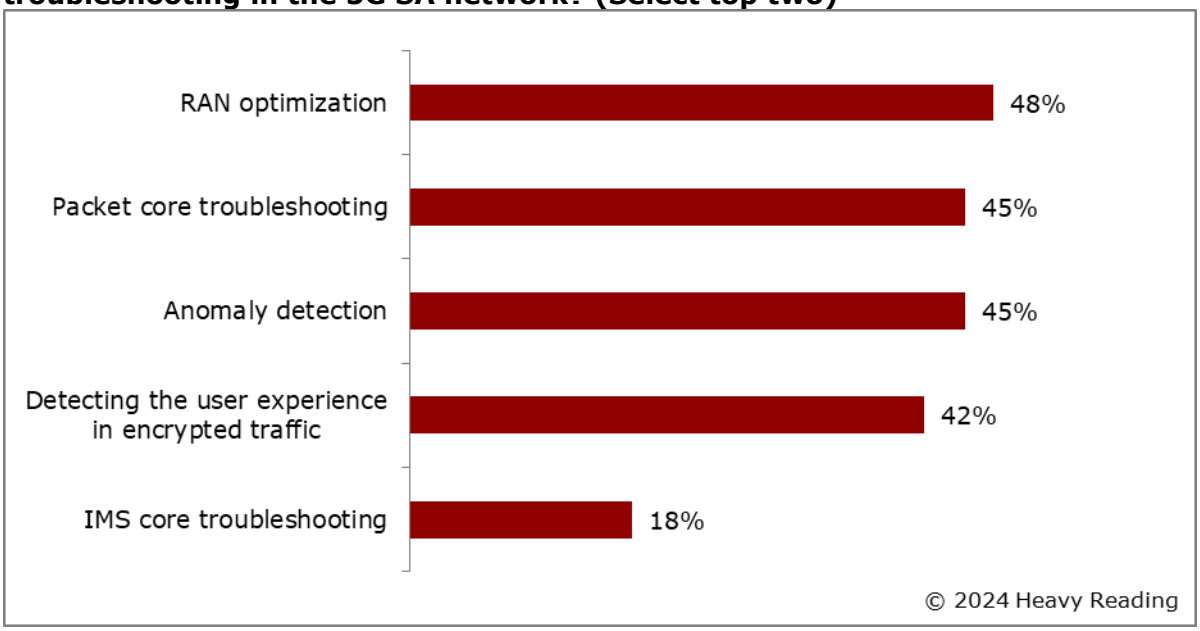
Source: Heavy Reading, 2024

In **Figure 11**, the survey shows that RAN optimization (48%) leads the voting for a second year (also chosen first in a similar question of the 2023 Heavy Reading survey). AI/ machine learning (ML) RAN-powered optimization, such as self-optimizing networks (SON), has been operating for some years. The RAN domain is also very complex, has a vast scale, and has many opportunities to achieve optimization efficiency. Several European operators, including BT and Orange, confirmed the deployment of ML technologies in their networks for RAN sleep power optimization this year.

Packet core troubleshooting (45%) and anomaly detection (also 45%) are close leaders in second. While anomaly detection was also a strong candidate in last year's survey (recognizing AI's superior speed and analysis over humans), packet core troubleshooting scored the lowest. Heavy Reading believes the shift reflects the increasing confidence in and readiness of 5G SA cores and the maturing of supporting network and service troubleshooting tools.

Detecting the user experience in encrypted traffic (42%) is fourth. This result suggests operators are still determining their strategy and weighing potential data privacy issues. They are managing the discovery of hidden threats, AI/ML computational resources, and data samples to build accurate models and determine whether existing methods work in the interim.

Figure 11: Where does your organization expect to use AI/ML technology for troubleshooting in the 5G SA network? (Select top two)



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Source: Heavy Reading, 2024

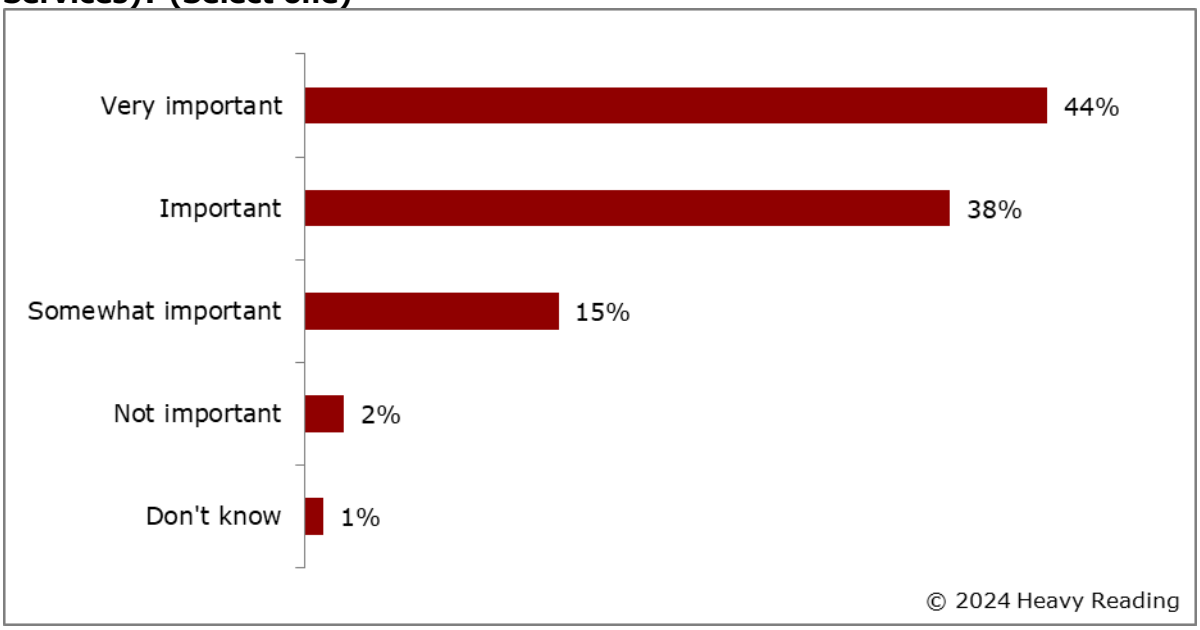
Telco/cloud partnerships are maturing, and operators increasingly value their capabilities, strengths, and allyship. On-prem telco cloud still dominates for the 5G core, but opportunities for peripheral IT services, enterprise portfolio products, and analytical services within the public cloud are increasing. Cloud resource agility and effortless resource scaling on demand reduce solution risk and can offer flexibility for analytics and assurance solutions requiring large data storage and CPUs.

The results in **Figure 12** illustrate operators' views on 5G network analytics integration with public cloud providers. Enthusiasm is high, with most operators confirming integration is "very important" (44%) or "important" (38%), with "somewhat important" (15%) in third, representing a combined total of 97% in favor.

Only 2% of operators think network analytics integration with the public cloud is "not important," suggesting an extensive role for public cloud in network analytics going forward. This migration from on-prem models marks a major change in network analytics.

Many trials and real deployments have also started this year, including by 3UK, which uses cloud analytics to optimize network performance.

Figure 12: How important is 5G network analytics integration with public cloud providers (e.g., Microsoft Azure, Google Cloud Platform, and Amazon Web Services)? (Select one)



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Source: Heavy Reading, 2024

BILLING AND CALL CENTER ANALYTICS AND AI

Call center criticism, inefficiencies, and the creation of more personal and accurate subscriber solution resolution have been ongoing challenges for operators. The growing importance of customer retention and satisfaction means operators require new tools to improve and streamline experiences.

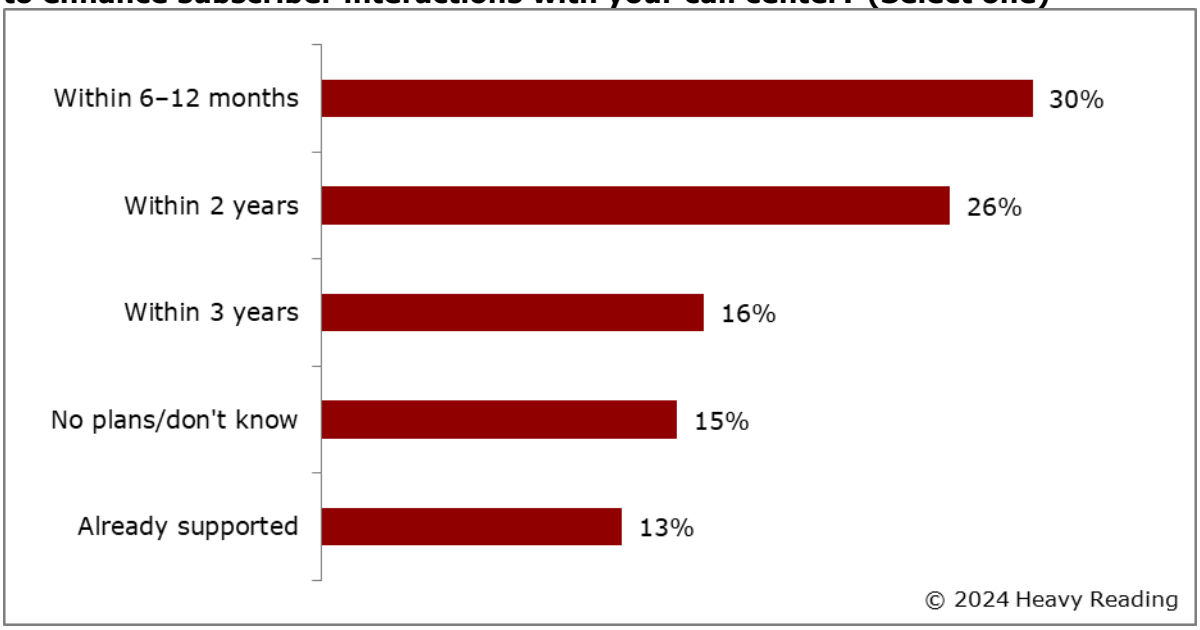
AI-driven call center operations are emerging as operators explore new solutions and pilots for better customer experience and call handling. Initial feedback hails the vast improvements in time to resolve customer journeys and the manpower savings by automating straightforward/repetitive cases to free up call center staff to tackle more complex issues. With a focus on the call center, **Figure 13** asks operators when they will have fully integrated AI-driven automation to enhance subscriber interactions.

In the next year, a combined 43% of operators expect fully integrated AI-driven automation to enhance subscriber interactions—12% already support and 30% will "within 6–12 months." These bolder timescales (compared to network operations) confirm early inroads of AI call center solutions concentrating on automated call protection, intelligent automated or assisted agents, and customer analysis. However, it is worth noting that the number of processes and maturity (e.g., launch, soft launch, or trial) may vary across respondents.

More than a quarter (26%) of respondents believe they will fully integrate "within two years," and 15% of operators appear to be willing to wait or assess the real-life benefits, as they have "no plans/don't know."

Respondents believe call center integration timelines are ahead of AIOps processes (see **Figure 20**). The US also has much more aggressive timelines when isolating respondents by region, as 45% of operators confirm integration "within 6–12 months."

Figure 13: When will your organization have fully integrated AI-driven automation to enhance subscriber interactions with your call center? (Select one)



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Source: Heavy Reading, 2024

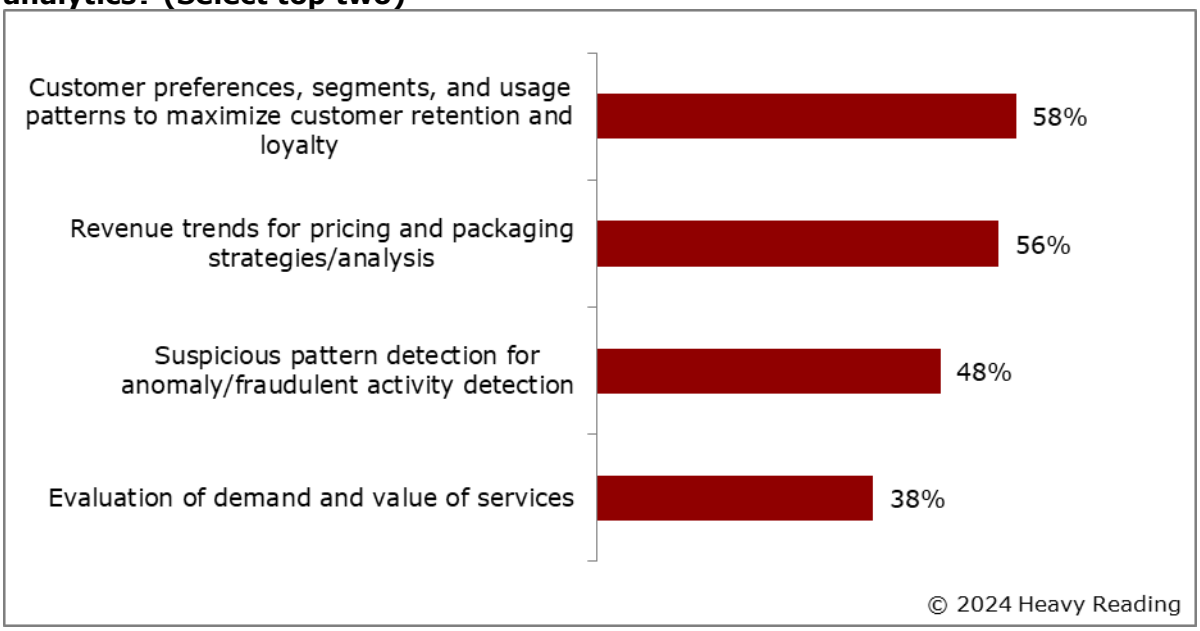
Data-driven decisions across all domains are now a necessity for operators to stay competitive. Billing is no exception, with advanced analytics enabling fast, tailored choices that can identify inconsistencies, trends, and future opportunities. **Figure 14** addresses the analytical billing system insights operators are currently lacking. Billing system analytics have multiple capabilities; this question asks respondents to select their top two.

Operators confirm they lack customer preferences, segments, and usage patterns to maximize customer retention and loyalty (58%), narrowly ahead of revenue trends for pricing and packaging strategies/analysis (56%). Retaining and building revenue is a top priority for operators, but often hard to achieve. These scores underline the importance of understanding the customer and their future needs. Also, they highlight the value of customer retention rate and churn reason analysis (often important billing KPIs) to help understand possible customer attrition.

Suspicious pattern detection for anomaly/fraudulent activity (48%) is third. The majority of operators already have some level of manual and/or automated process to detect anomalies due to the large impact this has and the time to rectify billing errors, which may explain the fewer votes.

The evaluation of demand and value of services (38%) places last. Its lower scoring is possibly due to similar insights being attainable from analyzing customer preferences and package strategies, which score higher.

Figure 14: Which insights are you currently lacking from your billing system analytics? (Select top two)



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Source: Heavy Reading, 2024

For many telecom providers, billing creates more subscriber exchanges than other departments, including billing anomaly queries, plan changes or cancellations, plan add-ons (for data or roaming), refund requests for poor service, etc. Systems hold and collect vast amounts of data covering customer interactions, accounts, spending, etc., making this a prime location to gain insights and cross-correlate data. 5G service creation and lifecycles will be more dynamic and shorter-lived than services in previous mobile generations. Keeping pace will require new AI methodologies to ensure billing functions are fast and accurate.

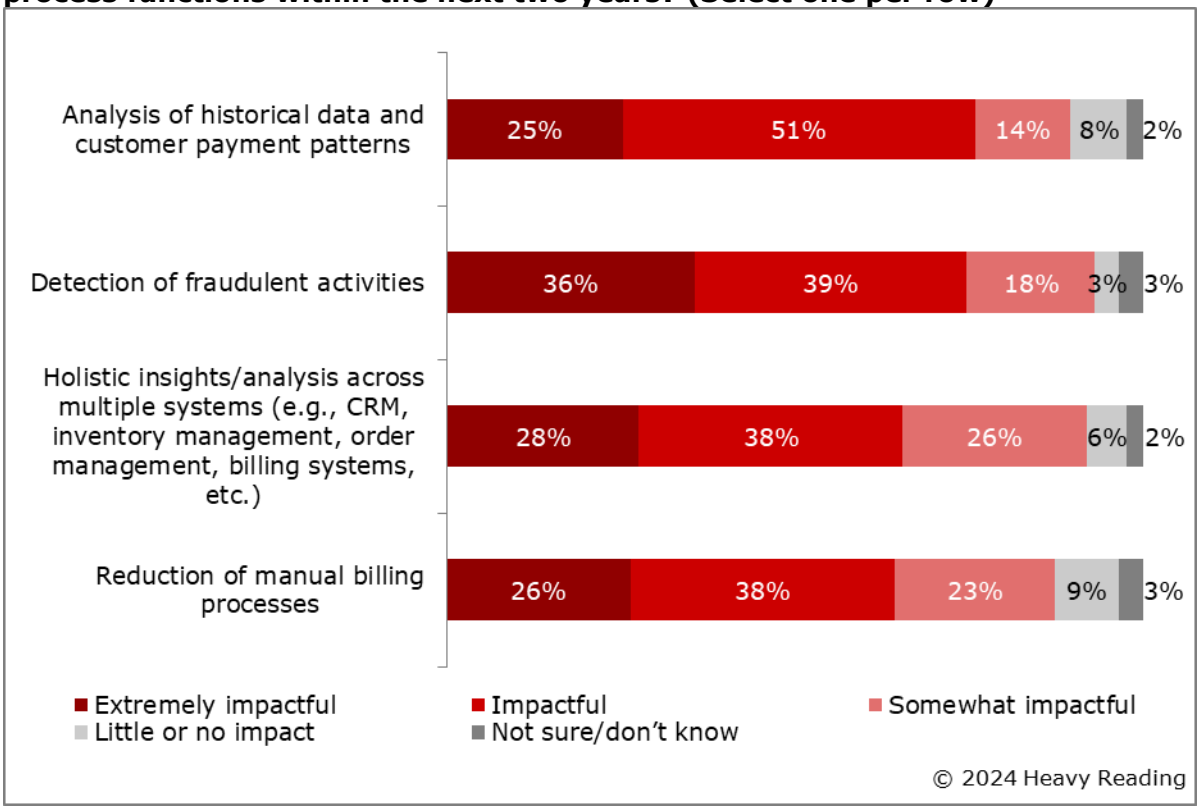
Figure 15 shows operators' expectations of the level of impact AI can add to subscriber billing processes within the next two years. Across all categories, "impactful" responses are more prevalent than "extremely impactful" responses, possibly indicating some ongoing billing system development and strategy.

The detection of fraudulent activities (36%) scores highest as "extremely impactful," suggesting time benefits, system interactions, and process savings to extract data, identify fraudulent activity, and issue refunds. Other "extremely impactful" processes are grouped closely: holistic insights/analysis across multiple systems (28%), reduction of manual billing processes (26%), and analysis of historical data and customer payment patterns (25%).

Combining "extremely impactful" and "impactful" responses indicates that 76% of respondents believe analysis of historical data and customer payment patterns is most important. This result is slimly ahead of the detection of fraudulent activities (75%).

When analyzing responses for "impactful," a similar trend is observed, with operators valuing the analysis of historical data and customer payment patterns (51%) ahead of the detection of fraudulent activities (39%). This implies that historical data and payment patterns are major resources for identifying customers' past services and spending for future upsell opportunities.

Figure 15: What level of impact will AI have on the following subscriber billing process functions within the next two years? (Select one per row)



n=87

Source: Heavy Reading, 2024

AIOPS MATURITY AND TIMESCALES

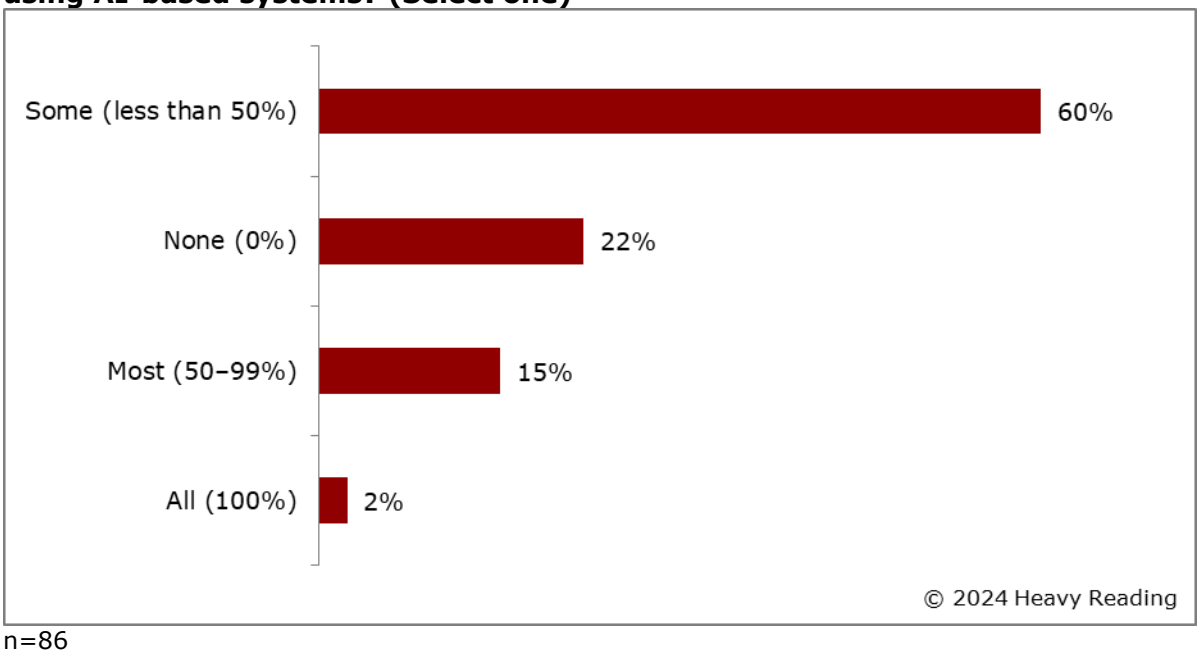
AIOps, already proven in the IT industry, aims to transform and streamline the telecom industry, too. Its strengths include the ability to utilize big data analytics, intelligent monitoring, and ML techniques to provide process automation and drive higher performance. As telco AIOps develops, the focus centers on data quality, AI standards formation, and the promise of proactive end-to-end network automation.

The first question in this section (**Figure 16**) addresses the current usage of AI-based systems for identifying and resolving network issues. The outcome reflects an immature but optimistic ecosystem.

Only 2% of operators confirm that all network issues "are currently identified and resolved" using AI-based systems, illustrating how immature AI operations still are. Yet, almost two-thirds of operators confirm they use AI for "some" (60%) issues. "Some" represents a very mixed landscape of integration maturity levels. But, as AI telco partnership announcements appear with greater frequency, there is no denying the eagerness for operators to integrate AI and reap efficiencies and savings. Heavy Reading believes operators are impatient to deploy AI widely but want to ensure accuracy, data governance, and regulatory compliance before fully scaling solutions.

By region, the Rest of World (RoW) records fewer network issues currently identified and resolved using AI-based systems. 33% of operators from that region chose "none," compared to the US with 8%, confirming regional technology confidence once more.

Figure 16: What proportion of network issues are currently identified and resolved using AI-based systems? (Select one)



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Source: Heavy Reading, 2024

Figure 17 asks operators to confirm which AIOps features they are currently supporting. Respondents chose 2.8 answers on average, with votes dispersed among all options, alluding to many developing strategies for AIOps.

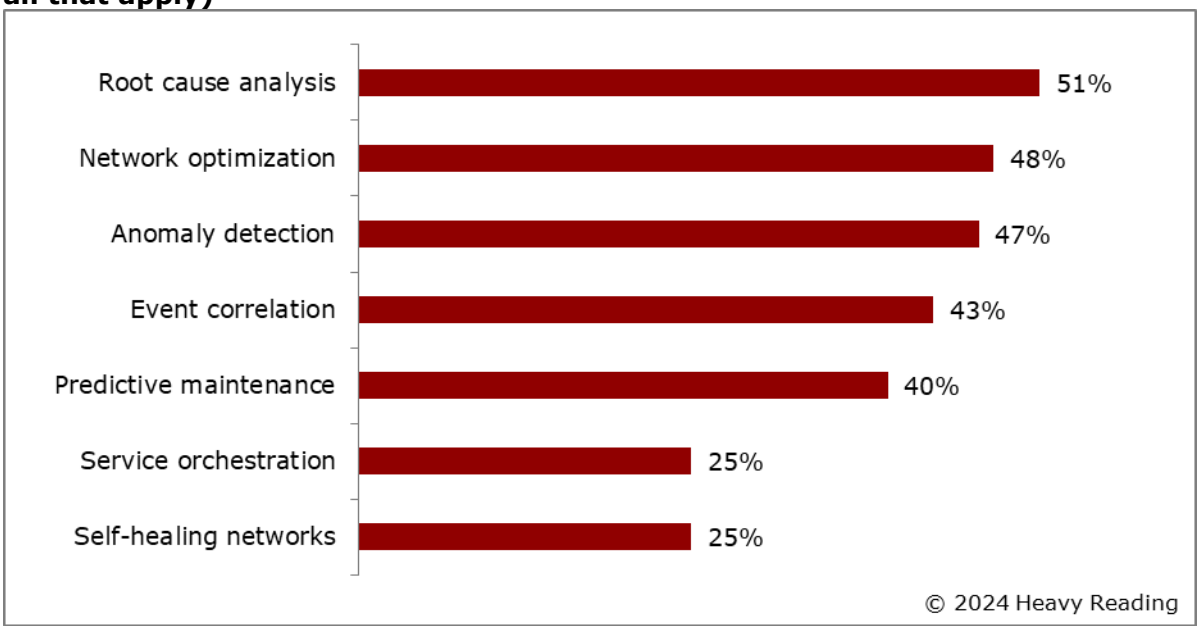
Operators confirm that AIOps features that prioritize the uptime and performance of their network are currently supported (reaffirming earlier survey conclusions for **Figure 6**). Root cause analysis (51%) is first, network optimization (48%) is second, and anomaly detection (47%) follows closely in third.

Event correlation (43%) is often the larger set of analysis techniques supporting use cases such as fraud detection, operational support, and root cause analysis. So, the lower score suggests respondents may have selected these subset use cases as priorities.

Currently, nearly all operators deploy preventive maintenance (e.g., scheduling via days in service, uptime, frequency of bugs/outages, etc.). Moving to AI-driven predictive maintenance can reduce downtime by intervening only as needed versus just in case. Accurately predicting maintenance relies on real-time network data to detect defects and enable timely repairs before failures occur. Predictive maintenance (40%) places fifth, indicating maturing data and analysis to support this.

Service orchestration and self-healing networks, scoring 25% each, are currently the least likely AIOps features to be supported and probably the least mature.

Figure 17: Which AIOps features does your organization currently support? (Select all that apply)



n=88
Source: Heavy Reading, 2024

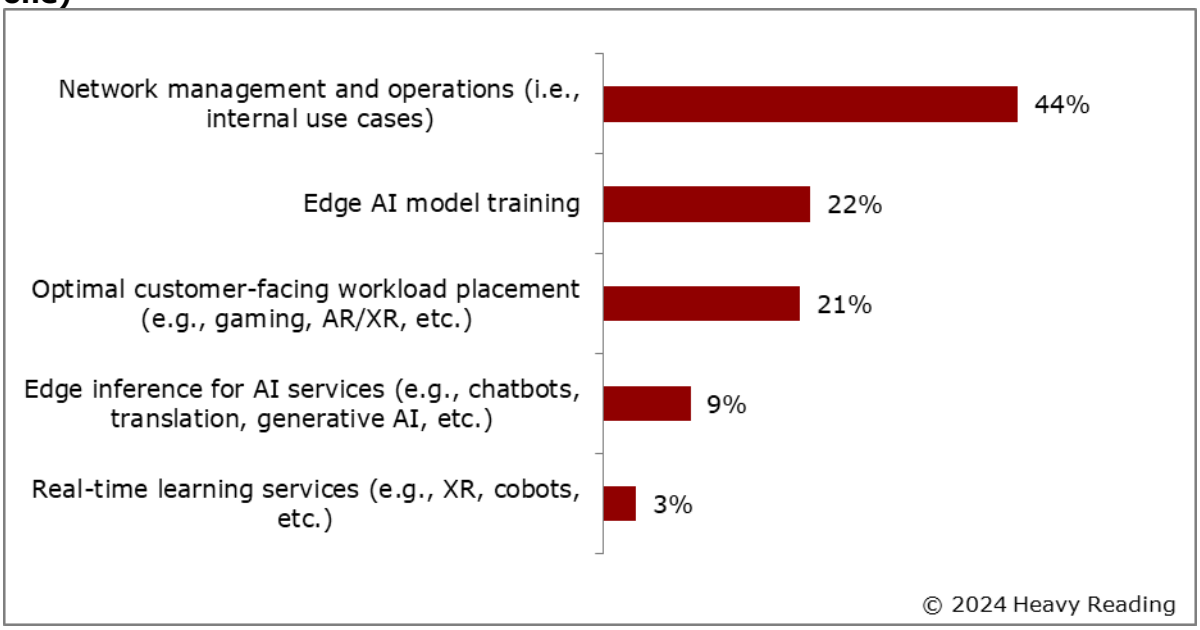
AI tool adoption is heading for a boom as multiple industries introduce AI workloads across their organizations to streamline business functions. The telecom industry is also eager to incorporate AI, and **Figure 18** looks at workload priorities within the next two years.

Network management and operations AI workloads (44%) represent the highest priority for operators within their core and edge deployments. The results underline how network availability and performance underpin all services, as well as the importance of AI-driven processes such as optimization, troubleshooting, anomaly detection, etc. AIOps platforms will centralize insights, visibility, and optimization offered via these workloads across the full telco estate, including cloud infrastructure, virtualization/containerization, and 5G network domains.

Edge AI model training (22%) is second, with the lower scoring implying edge data centers may not yet be ready for this workload. AI model training processes require substantial computing resources, often utilizing costly high performance GPUs to manage data volume and concurrent processes. This may require significant upfront investments in edge data center hardware.

The lower scoring of customer-facing workload placement (21%) hints at the limited service availability for applications such as gaming and augmented/extended reality (AR/XR). However, edge deployment will be important to meet service application latency and jitter requirements. Also, given the lack of support for edge inference for AI services (9%) and real-time learning services (3%), Heavy Reading remains cautious about the technology maturity and deployment demand within the two-year timeframe.

Figure 18: Which AI workload is your organization's highest priority to deploy at the distributed 5G core and edge data centers within the next two years? (Select one)



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Source: Heavy Reading, 2024

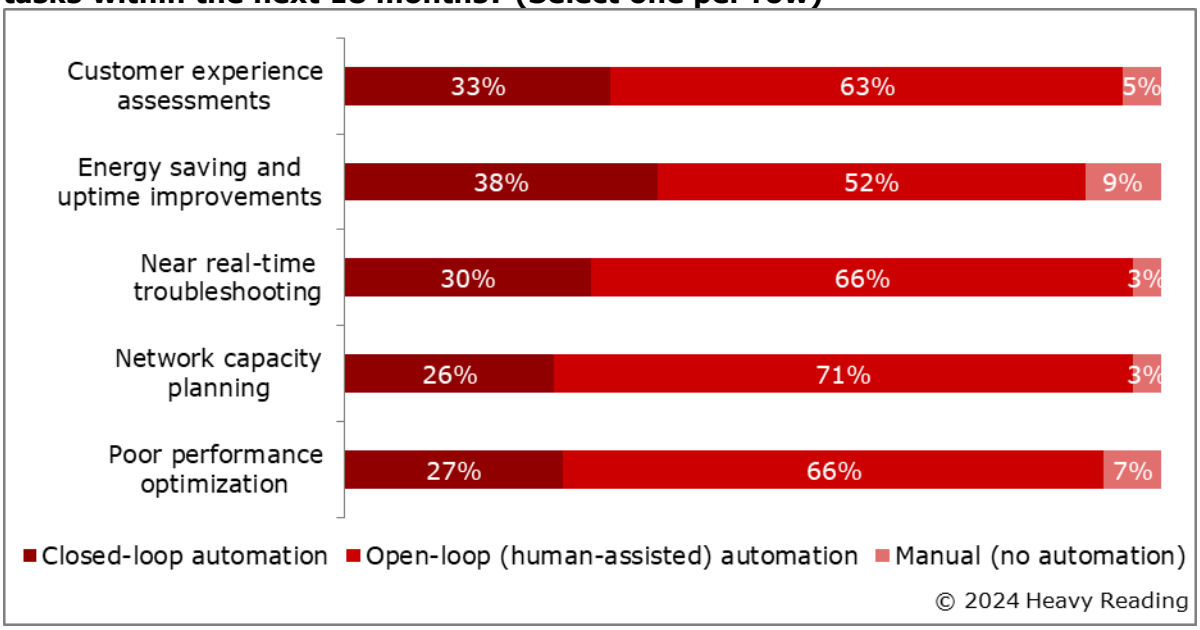
Figure 19 suggests that the majority of operators have the ambition to use some level of autonomy across all tasks within their organizations within the next 18 months. Manual operation scores the lowest in all categories.

Telecoms is a heavily regulated environment with potential penalties, and operators will be reluctant to hand over control immediately, keeping people in the decision loop for some time. Open-loop (human-assisted) automation is the leading mechanism across all categories.

Network capacity planning (71%) is the highest scoring, ahead of near real-time troubleshooting (66%) and poor performance optimization (66%), customer experience assessments (63%), and energy saving and uptime improvements (52%). Implementing all forms of automation will be a longer-term goal, with only a small number of tasks likely to support open-loop automation within the next 18 months. However, these survey results are also a strong indication that operators wish to ensure the accuracy of tasks by adding human input, training, and verification until proven and before full automation.

Energy saving and uptime improvements (38%) lead in closed-loop automation tasks. A third of operators (33%) will have closed-loop automation for customer experience assessments and near real-time troubleshooting (30%). However, poor performance optimization (27%) and network capacity planning (26%) are the least likely to be granted full autonomy in the next 18 months.

Figure 19: What level of autonomy will your organization grant to the following tasks within the next 18 months? (Select one per row)



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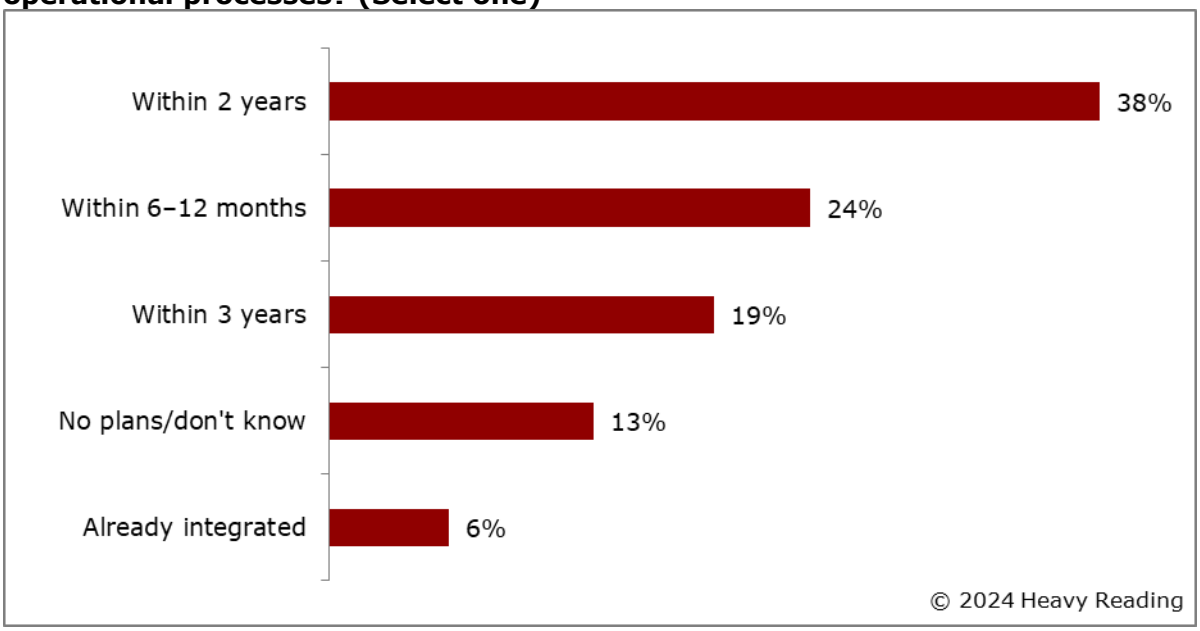
Source: Heavy Reading, 2024

Figure 20 confirms operator timelines for network operations AI integration. A confident 38% of operators will have fully integrated AI "within two years," and an eager quarter (24%) anticipate faster integration "within 6–12 months." Organizations will have varying "full AI integration levels," and readers should consider this when studying results. AI dominance across media, new service, trial, and partnership announcements may explain the overly confident timescales, as many operators are beginning to set up teams specifically for AIOps implementation.

Almost a fifth expect to fully integrate AI (19%) "within three years," and 13% indicate "no plans/don't know." Just 6% of early adopters have "already integrated" AI, confirming timelines for other domains differ; for example, the lead group of operators expects call center AI integration (as detailed in **Figure 13**) to be sooner. US operators again confirm earlier adoption timelines than the RoW operators.

Despite strong optimism, Heavy Reading believes several challenges exist that will extend timescales for full AI integration within network operational processes. Examples include the developing state of AI regulation, continued capability emergence, dataset accessibility, and the complexity of a highly regulated telecom environment.

Figure 20: When will your organization have fully integrated AI into its network operational processes? (Select one)



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Source: Heavy Reading, 2024

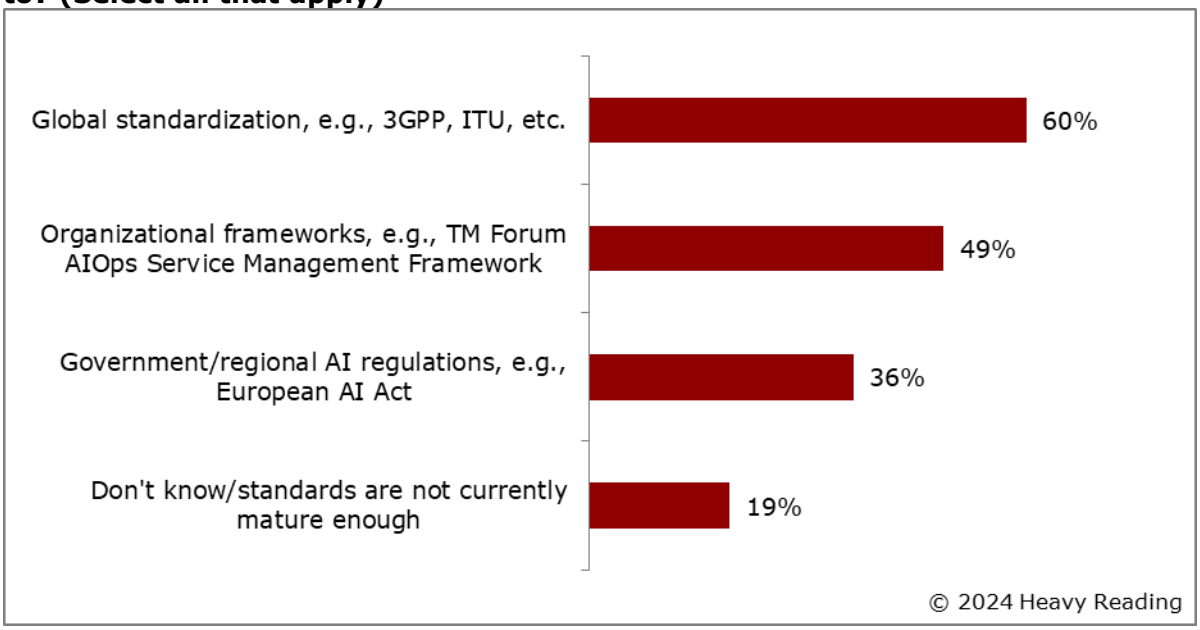
Operators must adhere to standards, frameworks, and regulations to ensure the interoperability and reuse of AI and ML algorithms and models with the telco domain. **Figure 21** seeks to understand operators' current opinions on which bodies or standards AIOps solutions will adhere to.

Global standardization, e.g., 3GPP, ITU, etc. (60%), leads votes, and this is likely to reflect several years of effort around AI/ML standards integration. One example is the introduction of the NWDAF in 3GPP Release 15, with subsequent releases adding further functionality, such as AI/ML data analytics, and new study items for AI in the RAN.

Industry body organizational frameworks (49%) place second. In the last few months, the industry has seen an acceleration in AI organizational activity. Examples include the TM Forum AIOps Service Management Framework and the AI Alliance's aim to support, develop, and benchmark standards and tools). Many leading organizations support these AI organizational efforts, which explains the high scoring.

Government/regional AI regulations (36%) place third, and many respondents also confirm they "don't know/standards are not currently mature enough" to decide which AIOps solutions will adhere to. AI regulation is immature, and the worldwide debate is in progress. The EU AI Act (February 2024) is the first comprehensive regulation around this. Heavy Reading believes the dominance and acceleration of AI integration will intensify the worldwide emphasis on regulation to protect privacy and provide greater protection.

Figure 21: Which of the following will your organization's AIOps solutions adhere to? (Select all that apply)



n=88

Source: Heavy Reading, 2024