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Chapter 9: Leveraging artificial intelligence to optimize telecom operations, efficiency, and profitability

9.1. Introduction

Telecommunication companies undoubtedly have the unique privilege of generating enormous amounts of data about their customer contacts and business processes. The networks they manage produce huge volumes of operational data on a daily basis, generating information about network status and customer behaviours in wondrous amounts. Additionally, telecoms have the capability of collecting data on customer contacts through online, telephone, and retail channels, as well as across customer care, sales, and technical support transactions. While much of the data related to customer contacts, service provisioning, and network status are currently retained, the overwhelming volume of user, operational, and contextual data means there is now a growing challenge about how best to manage, analyze and use the information available. Data Management for telecom operations has become a major challenge and directors of telecom operations optimization are now realizing that current approaches are extremely difficult to implement at scale, and that many of the existing tools for analyzing data have now become stale (GSMA Intelligence, 2021; Cisco, 2022; Ericsson, 2023).

Yet, partnering artificial intelligence and telecommunication operations, in general, has become very effective. AI tools now exist that no longer require massive investment and skill in implementing the AI tools; instead, telecoms can partner with AI tool companies who offer both proven tools at reasonable cost, and are able to act as collaborators in successfully tailoring the tools to the telecom operations context. In this paper, we discuss the many use cases for AI that are able to transform telecom operations. The first part of this paper discusses aspects of telecom operations that can be optimized using AI. The next section describes the many tools that exist for enabling optimization of

customer experience, customer care, service provisioning and back office processes, and network operations. The following sections discuss some initial prescriptive experiences of telecom use cases. We conclude by mentioning the lessons learnt from initial implementations of AI tools, and conclude by discussing the future of use cases for AI in telecom (ITU, 2020; Huawei, 2023).

Fig 9.1: Leveraging Artificial Intelligence to Optimize Telecom

9.2. Overview of Telecom Industry Challenges

The telecom industry has substantially evolved over the previous decade. With the onset of innovative digital technologies, the business environment of the telecom sector has undergone a tremendous change encompassing various segments of the industry. Apart from the arrival of new-age players, the sector is also witnessing a convergence of multiple communications and entertainment models with increased mobility, user preferences for on-demand services, changing industry dynamics, and stiffer competition. Telecom companies need to constantly work towards curtailing their operational costs to focus on new infrastructure deployments, the emergence of new technologies, and increasing consumer demands for high-quality services. In order to

sustain their market position and ensure profitability and performance, telecom companies need to effectively respond to the challenges posed by the ever-evolving business environment.

To this end, they must rethink customer engagement and innovate their service offerings in order to better cater to the changing needs of their customers. They must invest in areas such as next-generation infrastructure, products, and service platforms, but these investments can often be expensive. IT spending by telecom companies is also estimated to more than double globally over the next five years. In this regard, the importance of IT in the development of innovative products, enhanced sales, speedier delivery, and higher profitability cannot be neglected. Hence, telecom players must zero in on the right IT levers to gain competitive advantages while ensuring service excellence through the appropriate application of advanced IT capabilities across the telecom value chain, with an emphasis on the customer. It is, therefore, no wonder that the telecommunication sector is regarded as one of the most IT-intensive industries, with IT spend being the key for funding growth across all segments in the next few years.

9.3. Understanding Artificial Intelligence

Artificial Intelligence is a broad and frequently-used term referring to hardware, software, and systems that are able to think intelligently. AI is currently being used in various business functions across industries, with its applications and impact growing significantly over the next decade. Created a number of years ago as an industry-specific solution to enable computers to think better and help humans with decision-making, the definition has since morphed. AI is now considered a wider interconnected range of technologies that have the capability to simulate human thought or behaviors. The core element of AI is a solution that can independently drive decisions capable of being AI are groups of systems that enable technology to provide intelligence, including faster processing of large amounts of data that could never be handled manually; machine learning; computer vision; knowledge representation; and natural language processing.

AI has many applications in telecom operations. Customer-facing uses include virtual agents, call routing, and forensics and fraud prevention. Telecom security uses include threat detection and behavioral analytics. Telecom support functions employing AI range from infrastructure deployment, optimization, and management to network security and order processing. Yet there are important issues that need to be resolved before deployment — privacy, data quality, talent, and an overzealous devotion to use. The advantages are significant, but must be weighed against the pitfalls.

At the same time, AI also incorporates a notion of emergence, whereby existing computational technologies, such as vision and speech recognition or autonomous

systems may scale to levels that change the market-share and portfolio mix for telecommunications companies – from infrastructure development to customer management and entertainment products. For instance, the admission of AI as a paradigmatic shift has significant implications for the present and future market strategies of telecommunications carriers, content producers, and customer-engaged enterprises. In the short term, the implications of AI go beyond the incorporation of pre-existing AI solutions for individualized customer experiences, such as Natural Language Processing within customer interactions or deployment of chat bots to handle support issues.

Fig 9.2: Optimize Telecom Operations, Efficiency, and Profitability

9.3.1. Definition and Scope

Artificial Intelligence (AI), defined as the simulation of human intelligence by machines, is a technology-driven imperative characterized by technology ecosystems comprising interconnected hardware and software systems that use data to model and deploy patterns that sense, engage, enhance, and automate services delivered to individuals, groups, and

society as a whole, whether physical or virtual. Further, AI may also manage the speed, volume, and structural complexity of corporate and market-level problems for which human intelligence may already be perceived as inadequate. The rationale for such an exhaustive view of AI includes several facets. First, AI exceeds the capabilities of earlier computing paradigms in the modeling, learning, and deployment of a set of human skills that were perceived as unique abilities of either humans or intelligent systems. These skills include the sensory-acquisition of information, formation of patterns, linking of patterns to categories, continuous updating of patterns in the presence of data chaos or inconsistency, deployment of improved patterns, and the supporting of decision-making via recommendations or shaping of choices through engagement mechanisms. Second, the economics of AI technology development has also simplified access to AI tools and capabilities. In particular, a multitude of off-the-shelf products, open-source toolkits, and cloud-enabled architectures now provide customized solutions to AI tasks that previously required years of effort and heavy investment.

9.3.2. Types of AI Technologies

In the past 20 years, the term "AI" has evolved to encompass various technologies from previously separate fields. In common terminology today, an autonomous or semi-autonomous agent exhibiting behavior that we would call "intelligent" would likely use many such technologies at the same time. Chatbots use natural language processing to interact with the user, perhaps summarizing previous conversations or looking up information in a knowledge base also using natural language processing. They rely on machine learning to get better at their assigned response task over time. Chatbots may automate a significant fraction of customer service inquiries. Automated speech recognition gets the user's words into the chatbot so it can use natural language processing on them. Text-to-speech gets responses back from the chatbot to the user and into a human-like voice.

AI has become unavoidably multi-disciplinary. Natural language processing has become a subfield endeavor, with separate but related work on text parsing, dependency parsing, word-sense disambiguation, text coherence, text summarization, and conversational agents who do turn-by-turn dialogue with the user. Machine vision uses machine learning, automated speech recognition also uses machine learning. The backbone technology of modern AI is machine learning, and machine learning's main technology is deep learning, which has also caused AI's huge resurgence. Deep learning models—neural networks with many more layers and more computational parameters than past neural networks—use enormous training data sets segmented into hundreds of thousands or millions of labeled examples. The training task is to derive high-level activations via

the lower-layer model parameters for the input data that can be related by a simple model with only a few parameters to the labels.

9.4. AI Applications in Telecom

Telecom companies are already facing an onslaught of customer complaints due to long wait times for customer care and service difficulties. AI can help address these issues in a variety of ways. Here are a few specific advantages seen from AI deployment in telecom: Impact on Efficiency, AI has the potential to help increase and innovate new products and services, resulting in additional revenues for telecom firms. Deployment of AI technology may lower firm operating, labor, and maintenance costs within the telecom industry. AI can accelerate the pace of network roll-outs. Network Lifetime Management, Telecom network growth is approaching its capacity to maintain profitability. Intelligence can add incremental growth by allowing for better lifetime management of existing components, forecasting growth in specific areas, and scheduling maintenance while reducing overall network costs and capital investments.

Managing Volume of Data Generated, Seemingly unrelated events can be tied together. AI can manage significant volumes of data generated; for example, telecom data management became a new hot area in AI in the past year. AI has been invested in over the past several years, in a push toward greater efficiency, and is being used to crop costs in several businesses and areas. AI will affect how wireless networks are built and operated. AI can assist in the network design process, for example deciding whether a network will be optimally arranged in a ring, star, or other configuration. AI can help automate a number of mundane routine decisions, such as provisioning bandwidth to customers or rerouting calls during periods of congestion. AI-based decision systems are increasingly used in automating decision processes already delegated to human operators. AI techniques can further personalize services. Start-ups using AI to offer new angles on customer service or brand marketing are exploring concepts such as predictive analytics tools that offer retail-focused telecom firms' customers suggestions on how best to personalize their mobile offerings.

9.4.1. Network Optimization

AI applications in Telecom are vast. Although, predictive maintenance benefits via anomaly detection and offloading simple or complex tasks to edge AI have been covered; however, there is no description of AI and network optimization. In this Section, the Network optimization methods using AI are discussed in detail.

For a decade, the telecommunication industry has invested billions of dollars to deploy high capacity, low latency internally switched-by-software datacenters with associated infrastructure such as smart programmable optical transport. Distributed Artificial Intelligence (AI) is responsible for the significant computation. The Data Centers are efficient for Enterprise and Application Service Providers. Some of the service providers use those services to optimize their internal processes while offering Network as a Service to Enterprises. Network as a Service has not matured today such that the Enterprises do not own any applications related to their businesses up to high level of specificity. Therefore, industry-leading telecom corporations have become utility service providers. The AI services related to voice, text, video, software applications and Enterprise data storage on Cloud are subsiding voice and text business as free and low fee services. The low return on network operation investments, which are solely Telecom Service Provider owned, is driving companies to consider either merging, spinning-off the datacenter business or divesting the Telecom SBU.

Significant breakthroughs commercialized in a decade such as SDN, NFV and Cloud RAN STL are aiding Telecom Service Providers flourish due to low COGS and flexible CAPEX. Because of the evolved investments, Telecom Service Provider is responsible to guarantee end-to-end elastic data networking service deliveries while coexisting with Enterprise Services on the common capitalized physical infrastructure. Multiple Autonomous Agent-based AI Infrastructure software modules can flourish such activities for both business clients. Helper Agent implementations can offload significant client-side workloads via heuristics to edge-devices for efficiency reasons.

9.4.2. Customer Experience Enhancement

The telecommunications industry thrives on the relationships it develops with both customer bases and niche markets, and through the use of advanced artificial intelligence-based technology, is rapidly moving to enhance these relationships in a customer-centric context. While the strictures of the past constrained operators to view mutual relationships through a data and revenue lens, the new technology is facilitating a focus on value and cumulative experiences that can yield rewards for both sides. Personalization of the telecom experience can achieve a wide range of positive results for both customers and operators.

One area where A.I. is being successfully deployed is through the use of Chatbots which allow operators to deal with multiple inquiries at the same time, while also assisting customers in routine but time-consuming tasks such as billing and payments. A.I.-driven virtual assistants bring convenience, efficiencies, cost savings, and satisfaction benefits to both the customer and the operator. The nascent technology is rapidly evolving to allow solutions to be developed in less time and at less cost, and the capabilities are

being enhanced to accommodate long-term relationships built on trust and satisfaction. The resulting experience improvement can drive both loyalty and profitability through customer retention, upselling, and cross-selling.

Telecom customers are increasingly frustrated by the poor quality of service they receive. Sudden unpredictable surges in calls at particular times, and inaccessibility of customer support personnel, are reducing willingness to recommend the operator to others and to recommend different services. By using advanced analytics applied to automated insights, telecom operators can proactively identify developing problems with customer satisfaction scores and initiate corrective measures. Machine learning-based solutions can both pre-emptively detect emerging customer satisfaction issues associated with various groups of service offerings and recommend tactics to ameliorate them.

9.4.3. Predictive Maintenance

Predictive maintenance is another key area in telco operations that is increasingly being used. Telecom equipment is complex and of enormous scale, and any downtime, especially on core networks, is costly. Predictive maintenance analytics seeks to detect faults in telecom equipment, and to take corrective action to prevent equipment failure, which leads to costly downtime. Predictive analytics uses historic data of maintenance incidents and its associated cost in conjunction with machine learning and AI techniques to detect anomalies indicative of aging and fault detection. Telecom companies are increasingly deploying a phalanx of sensors on their entire infrastructure from cable networks to core towers with the objective of gathering near real-time data. It is now common to see sky surveys by high-end cameras mounted on drones, helicopters and satellites to ascertain the status of cell towers and the cable network. All of this information is fed into predictive maintenance systems powered by machine learning and AI. Heavy, unexpected rain showers sweeping through an area can damage and knock out power for hours from cell towers. Hence, telecom companies are now collaborating with weather information vendors to alert companies. If a cell goes down, telecom companies dispatch their field technicians immediately to prevent customers from experiencing service outage. Since telecom customers increasingly have multiple communication devices, companies are also implementing policies to minimize downtimes via credits whenever customer-defined thresholds are breached. The real-time outage notification coupled with efficient dispatching of teams reduces the duration of service outages. A faster outage resolution increases customer satisfaction as research shows that consumers are likely to switch providers if service outages persist beyond 48 hours. Moreover, companies can charge penalty fees from vendors if they often breach the outage window, resulting in financial gains from reduced provider timeoffs. Also, if

a device goes out of order a few times, telecom companies are increasingly recommending a replacement in the interest of customer service.

9.4.4. Fraud Detection

Telecom companies have long been considered as easy prey to fraudsters. In fact, in the past years multimillion dollar frauds have been investigated in various telcos around the world. Telecom fraud is one category of organized crime that is highly lucrative due to its operational uniqueness and anonymity, and there is no physical border or town fence that can restrict its activities.

Fraud detection is challenging at the parental level, since the customers are distantly disconnected from the source of services – anytime, anyway and anyhow. Moreover, the efforts needed to hide and fake the fraud activity are much lower than those needed to design and deploy security devices to prevent or capture the fraudsters. One of the assets of telecommunication networks is the anonymity of the customers, which encourages the human traffic at telco service providers able to reach the maximum fraud impact. Moreover, the services provided via a telecom network are close to any networked activity that does not require a real-time approach in order to mask the fraud activity's visibility. The result is that fraud detection is nearly impossible to solve in the time-window when the fraud costs have a high percentage impact and the consequences cannot be remedied.

Telecom frauds usually occur for long-distance services and for premium services. The detection of telecom fraud starts by listing possible causes in a fraud activity classification. The data for the fraud detection can consist of Call Detail Records, containing detailed attributes for each dichotomized call available, or can also be business KPIs relating to the collection—from those who call by telco resources to those who are affected by the cost request. Both types of data might be historically stored and be queried and analyzed for anomalies patterns, which are considered as signals of potential fraud activities.

9.5. Data Management and AI Integration

Telecom operations and services generate large volumes of data, including calls records, usage trends, fault management, subscriber details, tariffs, etc, from several sources such as radio access, core and accomplishment systems. Managing and processing this data to glean insightful knowledge and create efficient Machine Learning models and then deploy these models on an ongoing basis is a challenge. To utilize AI in the best way for telecom operations, companies must have a clear integration strategy and the expertise

needed to identify opportunities and implement solutions. Telecom companies need skills in software engineering, cloud computing, data analytics and software development, alongside development of domain knowledge required for understanding business KPIs. Considerations around Cloud Deployment, Data Architecture and Ingestion, Data Scaling, AI Readiness and Support for Analytical Use Cases, are relevant when embarking on a data-driven approach for telecom operations. Telecoms should search to centralize their data in a Data Lake design which allows them to ingest diverse data types from multiple data sources in real-time and batch modes. Data democratization and effective data visualization across the organization are other objectives. The Data Lake must contain a data mart for analytical use cases; it should include commonly used third-party as well as enterprise-wide data sources; and it should be easy to consume and built by domain experts without technical assistance. Companies should also monitor model performance, and decouple features from models to detect data drift.

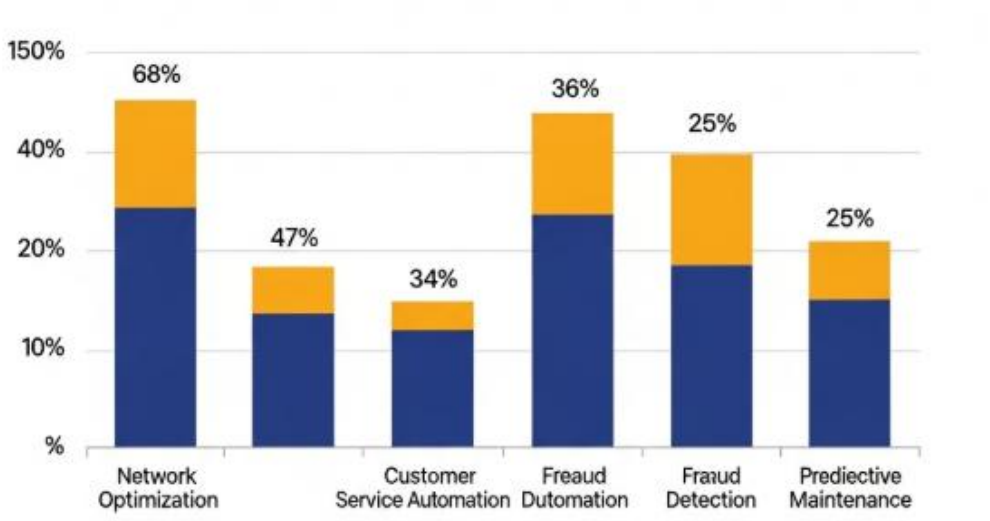

Fig 9.3: Leveraging Artificial Intelligence to Optimize Telecom Operations, Efficiency, and Profitability

9.5.1. Data Collection Techniques

Data is the central magnet drawing A! modules around it. Data collection is an extremely critical task in the data management process. Consider these scenarios for a telecom service provider, a common customer of its triple play service, voice, video, and data, uses multiple devices in the home. In another scenario, a prepaid customer using a mobile phone for voice has a cloud service provider as its enterprise. Digital transformation has triggered TSPs to stop thinking of their services in silo. The above

scenarios with multiple services and devices break the traditional service silo data collection mechanisms. Newer mega event scenarios require event-driven data collection.

Telecom operations data is growing at an exponential rate and it is growing in complexity too because of the fact that the digital world is immersed in the physical world. Till now, telecom data was considered on traditional telecom services of voice, video, and broadband for individual consumers and enterprises. ML and AI get triggered because of the ability of data to predict the future around physical world services. Data for hinterland infrastructure and intelligence acts as a core component of a digital organization's business and operation models. Its customers, from provisioning to billing support could be a foil or fuel for adoption of AI to deliver tangible business value. For AI to succeed, it is all about quality data. And to build quality data, one needs to collect various data with different quality metrics. Quality data acts as an enabler for quality decisions.

Telecom data in its physical and logical form is considered as being in 2D: 2D represents 2 aspects – structure and design. But the digital version of telecom data involves 4-dimensional data. 4D representation models the physical as well as logical aspect with a multi-dimensional concept: space, time, service, and device. 4D has the ability to track change in logical data mapping over time.

9.5.2. Data Analytics Frameworks

Data analytics frameworks are typically designed to help groups of data and analytics professionals solve enterprise business problems that require analytics to define and refine the business problem, find and prepare the data, build and deploy the predictive analytic or machine learning models, interpret the results, and take informed action informed by the analytics. Effective data analytics frameworks also drive cross-functional collaboration and communication, as well as improve scalability. Analytics initiatives that cross data management, technologies, and teams need a blueprint for collaboration that enables participants to quickly understand the approach and work together to make it successful.

The creation and management of an analytic infrastructure are critical to a successful implementation of analytics. An analytic infrastructure includes the supporting executive sponsorship, organizational structure, technology, and resources that drive the delivery and use of analytics to improve business performance. Critically, the effectiveness will depend on carefully defining processes that enable business collaboration on defining business problems, obtaining, preparing, and extracting value from data; on a direct business accountability for a number of business performance metrics; and on sharing

resources including consultants, technical support, software tools, and best practices for managing technical complexity and enabling skill development.

In different enterprises, some or all of these supporting components will be formalized using an analytic framework. The typical analytic framework components are a new technology that provides the necessary power and organizational capability to put data-driven decision making at the core of an enterprise. This might include algorithms that deliver more accurate predictions faster and overlook resources associated with executing them at scale digital architecture that provides the requisite database management systems, high-performance computing, and delivery infrastructure to efficiently handle preparation and implementation workforce and create a new business specialty area focused on data-driven predictions. Specialized software tools for creating predictions faster and deploying them reliably for specific business problems, usually enabling development of solutions which business groups can implement with relative ease and confidence.

9.6. AI-Driven Decision Making

Decision making is at the core of telecom operations. Telecom executives, managers, and professionals encounter two types of decision making in the day-to-day operations of a telecom service provider. It can be either operational decision making or strategic decision making. Operational decision making involves decisions made on a day-to-day basis to enhance the day to day operational efficiency. Such decisions usually fall into the area of operational analytics. For example, connecting calls to the right technicians to repair field faults or keeping cash balances such that service quality does not get impacted. Strategic decision making involves higher level decisions that would impact the telecom company's strategy in terms of sales, operations, etc., for some time in the future, at least a few weeks or months or more. Such decisions are usually made less frequently than operational decision making and fall in the area of financial and revenue forecasting.

While operational decision making uses real-time data and is ongoing, gives people at all levels in the organization the push to take actions to improve operational efficiency, strategic decision making has periodic timescales and supports management-quality decisions that affect the company's performance much longer term. With the tremendous amount of data available for a telecom service provider, AI can provide valuable assistance to both operational and strategic decision makers in terms of providing guidance and recommendations. For operational decision making, AI can determine the future course of action to be taken at any user touchpoint. For example, if a customer calling in has a certain characteristic, what will lead to the best outcome? For more strategic decision making, AI has the ability to simulate various input assumptions to see

how different values of the input variables impact revenue generation and costs. AI can consider numerous variables simultaneously, well beyond the typical pretend-and-compare techniques used in decision-making in the telecom industry.

9.6.1. Real-Time Analytics

Real-time analytics is the automatic process of computing data analyses at the moment the data is created, enabling the instant delivery of the insights obtained, without delay. Thanks to real-time analytics, companies can promptly make use of actionable information, able to instantly drive their business decisions, thus dramatically improving the efficiency of their operations. For telecommunications operators, the main innovation in modern analytics solutions is the possibility of deploying systems able to provide predictive answers at the speed of operations recorded. In this domain, Artificial Intelligence (AI)-enhanced approaches are the most promising and pervasive, and yet successfully adopted by many telecommunications operators worldwide. These solutions allow using complex models as interpretable predictive engines, able to fit and deliver information upon customers, products, and services for which reasoning required the use of unfathomable models, too complex and demanding for companies to use, and whose outcome was unlikely to be ready at the moment the decision was made. The combination of AI and real-time analytics could modify the landscape of telecommunications operations. By smoothly and effectively blending classic operational rule-based systems with AI-enabled learning and reasoning capabilities, telecommunication operators are able to modify the current paradigm of service management and analytical insight. AI-enhanced solutions, augmenting the actual decision automation, can assist, or eventually substitute, decision makers by providing actionable information about customers and systems features, with respect to the problem being solved, permitting the operator to maximize, if not completely automatize, the return on investment of existing telecommunications assets.

9.6.2. Automated Reporting

Automated reporting refers to the automated or semi-automated procedure of reporting SLAs and KPIs by generating texts using AI models. For most people, reporting is an unappealing activity. Reporting is not limited to just documenting. It involves indicating and describing deviations from the expected values of SLAs or KPIs, analyzing the reasons for such deviations, making suggestions for corrections, and potentially implementing positive corrections. These activities are primarily performed in the areas of finance, general reporting, operations, procurement, security, and risk.

Having defined how to monitor SLAs and KPIs, analysts and specialists spend their time preparing reports to indicate deviations from compliance. Automated reporting may reduce the time taken to prepare reports, as AI systems may be able to indicate violations and potential causes much faster than the analyst or specialist preparing the report. An analyst may be able to easily edit or modify an AI-enabled report, rather than starting the report from scratch.

9.7. Conclusion

A critical examination of the AI capabilities and telecom use cases with proper current limitations and implementation issues leads us to conclude about the benefits future AI-assisted telecom operations are expected to fabricate. Implementing AI-based intelligent operations management approach will help the telecom as well as the user create and grow effective ecosystems. AI's user experience personalized focus and optimization of partners collaborating with the telecom organization promise to rebuild the telecom business's promises of technology, improvement in innovative offerings, efficient service delivery, and attractive sustainable profits. AI-enabled tools will enable operational automation, smooth process workflows, and effective utilization of telecoms' skilled executive manpower by managing the network-related operations management on a continuous basis. Telecom companies will be able to maximize business success through improved consumer engagement and reduced service overheads. Proactive and predictive management will bring stability to the overall addressable telecom landscape. Additionally, the effectiveness of AI-assisted telecom operations would magnify the effect of the predicted next wave of telecom capability expansion, where telecoms would shift from being purely utility service providers to become "connectivity-enhancing and facilitating" digital organizations acting as enablers of life, work, and play. AI has the potential to mask the complexity and technical overspill of telecom technology and service features, thereby providing users easy-to-consume new services that enhance their lives and work while the telecom services facilitate monetization for the telecom as a builder and optimiser of ecosystems with aligned participants. The economic advantages along with the predicted user focus would assure the telecoms of engaging attractive profits. Hence the question is not about whether AI would be tried for telecom operations efficiency but rather how soon and to what extent. AI will soon be the driving tool, not just an assistant.

9.7.1. Future Trends

While the telecom industry has pioneered and embraced many technological innovations in the past, it is currently challenged by several disruptive trends. The proliferation of

smart devices and the meteoric rise in streaming services have brought bandwidth-heavy data usage to the forefront, piling pressure on operators to deliver service reliability and QoE. Currently, 5G deployment, often to enable new use cases outside of core telecom businesses, has presented unprecedented production and operational challenges. Future communication networks will need to address these trends faster, better, and cheaper, while also remaining resilient to deal with further disruptions. Telecom operators will look to service and business innovations that bundle services across multiple industries as an alternative to new infrastructure-centric technologies for new revenue-generation opportunities. AI will take center-stage, as improving the margin of existing services becomes the priority to address ever-escalating costs. Data abundance, coupled with unprecedented AI innovation accelerators both in terms of volumes and capabilities, conventional wisdom on AI applications getting embedded in software solutions is being challenged. More operators will apply foundational AI to create cross-functional operational efficiencies that translate into improved profitability. Apart from these generic trends, there are several sector-specific trends relevant to telecom operators.

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