INTELLIGENCE IS IN THE AIRWAVES FOR TELECOMS FIRMS

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"Scale, complexity and continued growth make the telecommunications industry a great candidate for automation. It is expected that telecoms networks will expand 10,000 times or more in size in the digital age, hugely outstripping the capacity of human beings to manage them. So the emergence of highly sophisticated, intelligent automation technologies couldn't have come at a better time.

Using automation and Artificial Intelligence (AI), telecoms companies can seriously pull back operating cost, while improving speed of service and quality of customer experience. AI is already enabling the core of the telecoms business, with machines doing intelligent human tasks like reading network content to decide how to route traffic. But this is only the beginning. The next stop is the self-optimizing network, where once the designer sets goals and limits, the network control software will structure the network based on existing conditions. The impact will be no less dramatic at the front end. Today, analytics is still doing relatively simple things; the next goalpost is to read obscure and not very visible data patterns to usher a change in customer service, security and every other function."

– An Infosys viewpoint

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SOURCE: AMPLIFYING HUMAN POTENTIAL - TOWARDS PURPOSEFUL ARTIFICIAL INTELLIGENCE

INTRODUCTION

The telecommunications sector is undergoing unparalleled change. User habits have shifted from fixed line to mobile, from voice to data. At the same time, pressure on profit margins is intense.

The rise in over-the-top (OTT) services, such as video streaming, has transformed consumption and dissemination of audio and video. With more people turning to OTT services, demand for bandwidth has never been higher. However, while the likes of Netflix, Spotify, Amazon and Hulu thrive at the expense of traditional linear broadcasters and prerecorded media formats, their success also creates financial and operational pressures for telcos and internet service providers alike.

For the telecoms community, carrying ever-growing traffic from OTT services creates higher operational expenditure (OpEx). Ever fatter pipes to and from the internet are needed to satisfy consumer and business demands, yet the revenues for many of these services bypass the telcos and go straight to the OTT service providers. This is just part of why the modern telcos need to be agile and lean.

Using AI to reduce the human intervention needed to configure, provision and maintain networks and services can help the telecoms sector to reduce operating cost, and onboard customers faster while bringing new products and services to market in much shorter time.

As part of its study *Amplifying Human Potential: Towards Purposeful Artificial Intelligence*, Infosys commissioned independent research to investigate the approach and attitudes that senior decision-makers in large organizations have towards AI technology and how they see the future application and development of AI in their industries. As part of the research, 10 industries were surveyed, including Retail, Fast Moving Consumer Goods (FMCG), Utilities, Financial Services, Healthcare, Pharmaceuticals and Life Sciences, Manufacturing, Telecoms, Automotive and Aerospace, and the Public Sector.

What follows is a glimpse into the findings specific to the telecoms sector.

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USING AI TO BUILD BETTER NETWORKS AND SERVICES

The advent of AI and automation technologies offers a variety of opportunities for financial, efficiency and capacity improvement across many industries. In the telecoms sector, while all of this is equally valid, it also offers the opportunity for triggering business and digital transformation by enabling more customer self-service, more automated orchestration of products and operations, and creating a more dynamic network structure based on software defined networking (SDN) technologies.

By abstracting the software layer from the physical network infrastructure, AI is well placed to take over many mundane and repetitive operational tasks. The impact of this is that valuable and skilled engineers can be freed up from low-level monitoring and configuration tasks to work on more critical and higher-value activities including building new and expanded network infrastructure, physical repairs, research and development, and more.

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BOOSTING COMPETITIVE ADVANTAGE WITH AI

In our study, some 31 percent of the respondents expect AI to deliver competitive advantage in an increasingly bullish and commoditized market. To do this, 64 percent of the telecoms respondents are investing in big data automation to drive AI, 55 percent in predictive analytics and 48 percent in expert systems. This is a response to the fact that most telcos with a degree of legacy have significant amount of valuable data to mine for insights, while there is also a constant flow of new data coming in both from customers and from the OTT services that use their networks to transport content and soft services.

Furthermore, 59 percent are investing in machine learning, 43 percent in neural networks and almost a third (30 percent) in interactive voice response technologies to deliver cost and time-saving automation and self-service capabilities.

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AUTOMATE WITH AI TO REDUCE OPEX

Telecommunications is a logistically challenging and costly infrastructure business. It is reliant heavily on cables and manual intervention to lay them. Whether that infrastructure is within a datacenter, under the sea, under a road, on poles, or flowing to cell masts, capital expenditure (CapEx) is high. It in turn creates a need to reduce operating expenditure (OpEx) wherever possible. This is even before organizations get to flow services over the networks to end users. AI has the potential to drastically reduce OpEx through automation of many manual configuration and service provisioning tasks. With SDN, whereby the hardware and software layers sit independently of each other, physical configuration and rerouting of network traffic can be done entirely with software. This can be easily automated and driven by informed data analytics, traffic and trend analysis. Cost reduction is a strategic objective for many telcos, with almost a third (30 percent) seeing it as a top priority.

What was the driving force behind deploying AI solutions?

Competitive advantage	31%	**Customer demands**	7%
Particular business, operational or technical problem	20%	**Unexpected solution to problem**	5%
Executive-led decision	19%	**Offshoot of another project**	4%
Internal experiment	14%		

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What benefits has your organization experienced from the use of AI?

Cost savings	56%
Automated processes and tasks	50%
More informed business decision-making	49%
Increased in productivity	44%
Predictive/prescriptive analytics	44%
Increase in revenue	43%
Increased in innovation	33%
Expansion of employee knowledge and skills	31%
Faster resolution of business problems	31%
Faster delivery of new products and services	29%
Ability to identify new revenue streams	27%
Ability to design and test new ideas with customers	24%
Attracting new talent	13%
I am not aware of any benefits	1%

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AI, IN SERVICE OF CONSUMERS

Respondents to our survey think AI will benefit customers by providing faster access to both existing products and services (57 percent) as well as by speeding the development and deployment of new ones (60 percent). Some 50 percent believe consumers would benefit if their organizations were to adopt predictive technologies. By association, this would provide a boost to underlying sales and reduce the risk of lost business to rivals that can connect a line, create an account or upgrade a line speed faster than an incumbent. It is why 54 percent cite an improved customer experience as a strategic priority for the next three years along with developing new products and services (45 percent) and improving customer satisfaction (43 percent).

What are your organization's top three strategic priorities over the next three years? Combination of responses ranked first, second and third

Improving the customer experience	54%	**Recruit and retain employees**	22%
Growing sales channels	49%	**Identifying new customer needs**	21%
Developing new products/services	45%	**Ensuring regulatory compliance**	16%
Customer satisfaction	43%	**Demonstrating shareholder value**	11%
Cost savings	30%	**Responding to significant competitor threats**	9%

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While AI technology is still very much in its infancy, the telecoms sector is enthusiastic about its transformational benefits. Some 27 percent of the respondents expect their organizations to hit "mature AI adoption" in terms of technological capabilities and the use of AI by employees and customers in the next two to three years. Almost a third (31 percent) expect the same in three to five years, indicating the longer-term view the sector is taking compared to many other industries and the overall trend of the survey. Another quarter (26 percent) are looking further out at five to 10 years. Together, this makes for a long-term CapEx plan for AI, on top of the average telco AI spend of US$5.5 million in the last year.

However, a lack of AI skills within the wider telecoms sector continues to pose a challenge. Some 46 percent admit to a lack of in-house capabilities to implement and manage AI systems. It means the sector will need to invest more in training as well as pay more to recruit experienced skilled employees to support any further AI expansion or development. This also means that they will be increasingly reliant on trusted, external skills such as professional services organizations, consultancies and agencies to help them successfully understand and deliver on AI projects.

How much has your organization invested in AI technologies in the last year?

Less than $1 million	0%
$1 to $4 million	38%
$4 to $6 million	20%
$7 to $10 million	27%
More than $10 million	1%
Don't know	13%
Average amount the respondents' organizations have invested in AI technologies in the last year	$5,465,753

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ETHICS AND AI

Historically, the telecoms sector has always been at the intersection of technology and people. Underpinning the very connectivity that makes the sector operate is an extensive workforce, from front-line customer service personnel to engineers working in datacenters, at street cabinets, on cell masts and telegraph poles.

Any application of AI to automate or to simplify processes and repetitive tasks in this sector needs to fully consider the ethical implications and impact on the existing workforce. The telecoms sector continues to be highly unionized, so while the opportunities for automating many manual tasks are plentiful, there will be a clear need for both consultation and demonstration that ethical objections are being heard and addressed to ensure cooperation and support from the workforce that will be redeployed, retrained or otherwise elevated into other roles where people will oversee, manage and augment AI and automation systems.

The need for this is already manifesting in the sector, with 34 percent of the telecoms respondents surveyed reporting that their organizations have already fully considered the ethical issues of implementing AI. A further 35 percent say they have partially considered the implications. While this is on par with other industries, such as financial services, the telecoms sector lags behind more progressive industries, such as pharmaceuticals, where ethical concerns are even more front of mind. This presents an opportunity for education as well as professional services guidance to help the sector escalate its ethical evaluation of the impact of AI on the workforce, customers and suppliers.

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Nearly 87 percent of telcos have deployed some form of AI or automation technology today. Considering that, there is a considerable amount of ethical debate yet to take place that could shape the overall AI strategy of the business and take it on a different path.

There are also reservations about safety, privacy, the need to retrain and whether employers expect their workforce to continuously learn or multi-skill. More than four in 10 (41 percent) telecoms professionals express concern around the safety of data, while more than a third (36 percent) cite a perceived impact on privacy. Uncertainty about human dignity is a consideration for almost three in 10 (29 percent) telecoms professionals, with the group worried that any AI adoption might not take into account the need to preserve the respect and self-worth of the workforce. Employees need reassurance that they are respected and valued by employers, and that an AI project will not undermine or demean them. A further fifth (22 percent) is concerned about the accountability of AI and whether AI decision-making will be transparent and justifiable in the same way that human decisions are.

Ethical concerns extend beyond the employee base and any successful AI project must also take into account the external perception of AI and the impact it will have on users not employed by the organization. Within the telecoms sector, 39 percent of the respondents cite a lack of customer and supplier understanding of the use and benefits of AI, with the same number also stating a general mistrust of AI in the workplace. This trust issue is a significant challenge that any telecoms operator will need to overcome to achieve a successful rollout of any AI or automation technology. Customers and suppliers may be impacted by the loss of person-to-person interaction, something that almost half (46 percent) the respondents raise as an issue.

Any technology that impacts the human aspects of an industry that is heavily based on human activity and intervention is going to be a difficult one to transform with AI. Failure to adequately consider and address ethical concerns, as noted by more than half (52 percent) of the respondents, can significantly undermine the effectiveness of AI.

In all cases, people will expect to be treated fairly, honestly and with respect whenever new technology is inserted into their working day or personal time.

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CONCLUSION

The adoption and use of AI represents both a logical next step as well as an opportunity to modernize and reduce cost and complexity across the telecoms sector. Given the inherent sophistication of voice and data networks, and the industry's move towards more SDN platforms, telecoms is ripe for AI adoption and advancement. Leveraging AI provides opportunities to provision and deploy connections, self-heal problems, leverage data analytics to better understand trends and spikes in demand and do all this much faster than human beings.

Despite being in its infancy, AI is already helping the telecoms sector to drive both the customer-facing aspects of the business as well as automate the wholesale back end. Nonetheless, careful consideration must be given to how AI coexists and interacts with the workforce.

Nearly two-thirds of telecoms professionals agree that a long-term role for AI in the sector is inevitable. At the same time, a similar number agrees that AI can achieve positive societal and economic change, but only if projects and deployments are done in lockstep with the rest of the organization and with clear understanding and education.

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