WHITE PAPER

Building the Business Case for 5G

A study into the dynamics driving the adoption of enterprise 5G

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INTRODUCTION

Simply put, we can expect 5G to become one of the most impactful and transformative innovations to hit the modern enterprise. Entire industries brace for significant disruption to the way they do business, from business unit upheaval to transforming the way existing technologies, people, and processes interact with each other.

Crucially, the benefits are clear for many – with executives building investment business cases around more responsive, secure, and stable networking capabilities. The majority anticipate real opportunities to boost services, drive down costs, and open new revenue streams while in the process enabling new digital capabilities – from greater sensor density on the shop or factory floor to the extension of operations beyond their traditional comfort zone.

Industries from Retail to Travel to Healthcare are pushing ahead on their adoption journeys. Many are already far into their roadmaps, benefiting from detailed and thoughtful strategies that align existing operations and technologies with the evolving possibilities presented by 5G. Many more are experimenting and exploring, finding experts and partners to help them build out a coherent plan. And others remain locked in a 'wait and see' stance, reluctant to invest or unsure of the right path to follow.

What remains clear from this research is that all are ready for considerable change – recognizing the significant impact the technology will have either directly on their core business model or indirectly through their partners and customers.

But how ready are the Telecommunications firms to meet this growing demand for enterprise 5G? While strategies are clear for many, several major market obstacles will make the next 24 months challenging for early adopters. Many are targeting industries that are still in the earliest stages of their adoption roadmaps. More pressingly, the earliest enterprise adopters are planning on Telecommunications partners bringing market-ready solutions to the space long before telcos intend to deliver.

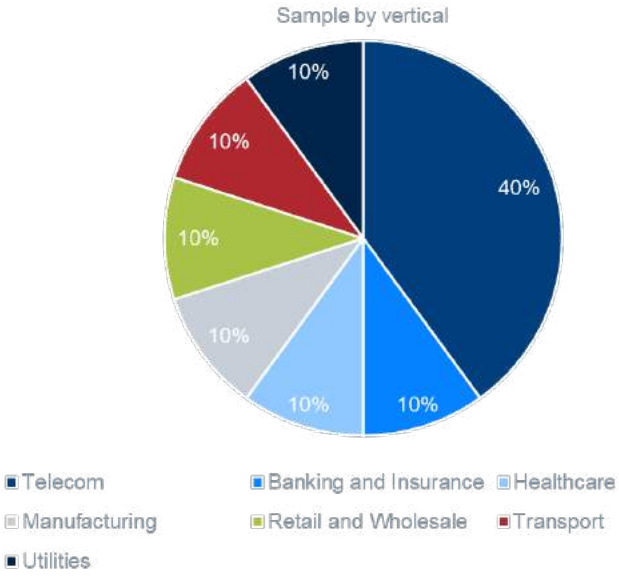
Evolving market dynamics will be analyzed deeply throughout this report as we seek to build a clear picture of how the market is developing.

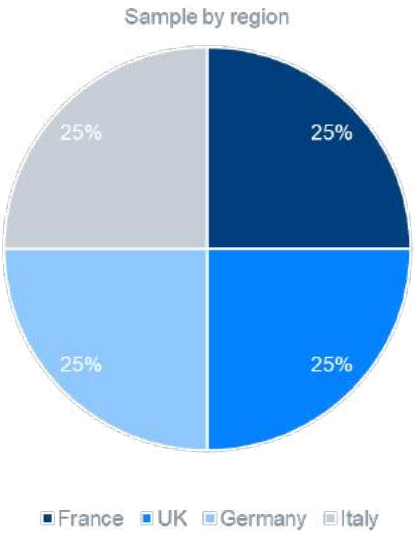
We have separated this report into three sections to help us get to grips with a complex and evolving space. The first paints a picture of the broader structure, motivations and visions across enterprise and telecommunications executives, enabling us to compare and contrast the journeys from both the buy-side and the sell-side. The second section digs deeper into the enterprise sector and how our cohort of executives across verticals are pushing ahead with their 5G roadmaps. And finally, we conclude by analyzing the ability of the Telecommunications sector to meet the demand for enterprise solutions.

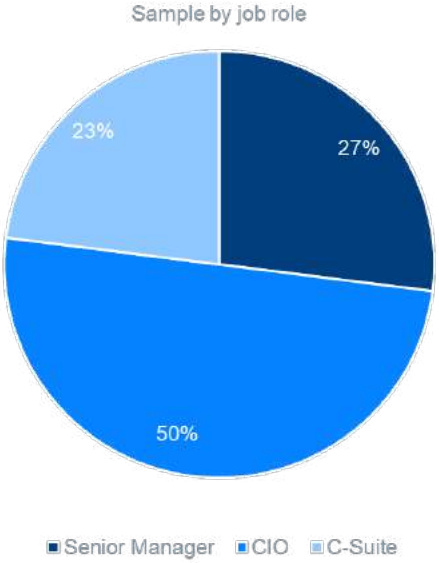
METHODOLOGY

In this report, we have gathered data and insights from an extensive survey designed to deliver a detailed picture of the complex enterprise 5G market across Europe. To do this, we interviewed over 200 senior business leaders in France, Germany, Italy, and the UK. To help paint this picture, we also track the differences in demand and maturity across key verticals such as Healthcare, Banking, and Manufacturing, enabling us to balance a diverse cohort of enterprise executives with leaders from the Telecommunications space.

Furthermore, to track differences in decision-making, strategy and vision across the region, we have balanced the sample between IT and Technology leaders and business executives. Ensuring we can round out our view of this complex and rapidly evolving market without bias to a specific stakeholder group. Teknowlogy and the study sponsors conducted this research in 2021 – and all respondents advised they are decision-makers in their companies' ongoing 5G projects.







KEY FINDINGS

- **Enterprise optimism is high,** with 85% of respondents expecting 5G to transform the sector they operate in for the better

- **…but many enterprises don't have clear strategies** to support their 5G roadmap. Only 34% of enterprises have a clear plan, and many more are still at an early experimental phase.

- **And telcos aren't much better.** Only 35% of telcos have a clear strategy in place for 5G. The majority are exploring the value 5G can offer alongside their other investments.

- **Nevertheless, executives from both sides are clear on measuring success;** the majority of enterprises and telcos will attach revenue generation targets to 5G to measure the success of their projects.

- **Enterprises and telcos also agree on the revenue they anticipate,** with both sides of the market expecting revenue boosts in excess of 5% over the next five years.

- **Project timelines are tight –** most enterprises plan to implement 5G solutions within the next 24 months, and half plan to implement in less than a year.

- **Worryingly, telcos are following similar timelines.** The majority plan to implement 5G solutions within 24 months, creating a potential overlap between buy-side demand and the sell-side supply.

- **IT still runs the show,** despite 5G becoming more central to business narratives. For both enterprises and telcos, the CIO's office remains the center of decision-making.

PART ONE: UNDERSTANDING THE EVOLVING ENTERPRISE 5G LANDSCAPE

ENTERPRISES UNDERSTAND THE IMPACT OF 5G ON THEIR BUSINESS

It is becoming increasingly clear that enterprise leaders recognize the impact 5G will have on their business. Indeed, according to our research, very few enterprises – ranging from 2% to 5% - believe 5G will have no impact on their business or sector.

The vast majority, then, are clear on the road ahead. Almost all participants in our survey recognize that 5G will transform their sector, and many more believe it will open up new opportunities for them. Moreover, this level of enterprise optimism extends to the specific opportunities they anticipate, including bullish expectations around boosted revenues and the potential to reduce costs.

The picture across the sample is positive, and as we will establish later in this report, translates to an almost insatiable demand for many of the capabilities tied directly to 5G technologies. Despite this, respondents across Europe are also keen to emphasize that the technology also presents challenges for their business. Indeed, a fraction of the executives surveyed believe they won't see any challenges when implementing the technology in their enterprise.

On a regional basis, there are some minor differences. In Italy, for example, executives are far more enthusiastic about the potential of 5G to transform the sector they operate in for the better. In Germany, respondents were more likely to anticipate the technology bringing fresh opportunities for their business. In France, executives are marginally more pessimistic, with more than the regional average advising they don't believe 5G will impact their business or are unsure what the impact will be. Meanwhile, across the channel, UK executives are particularly keen on leveraging the technology to boost revenues.

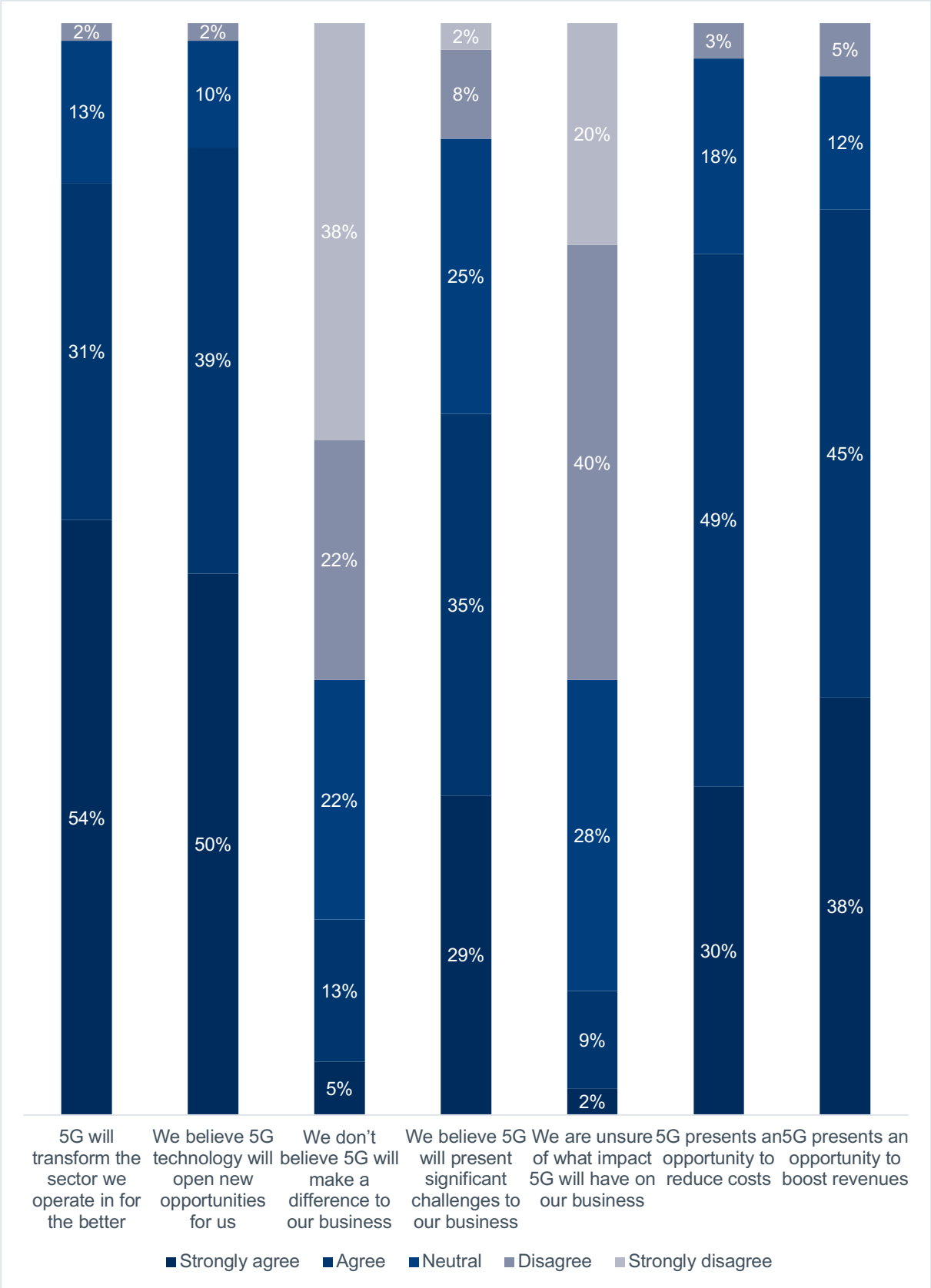
There are also minor differences at an industry level. The Banking and Insurance sector is the most optimistic about the impact of 5G on their business, while we can see more muted responses from the Transport sector. However, even these differences are marginal, and, for the most part, all industries align in understanding the opportunities and impact of 5G on their sector.

Digging into the Telecommunications sector (Exhibit 2) – where 5G arguably offers the most immediate opportunities and presents the most significant initial impact – we can see more pronounced optimism, albeit broadly in line with enterprise respondents. It is noteworthy then that both enterprises and telcos are united in the view that 5G presents real opportunities to the business community.

54%

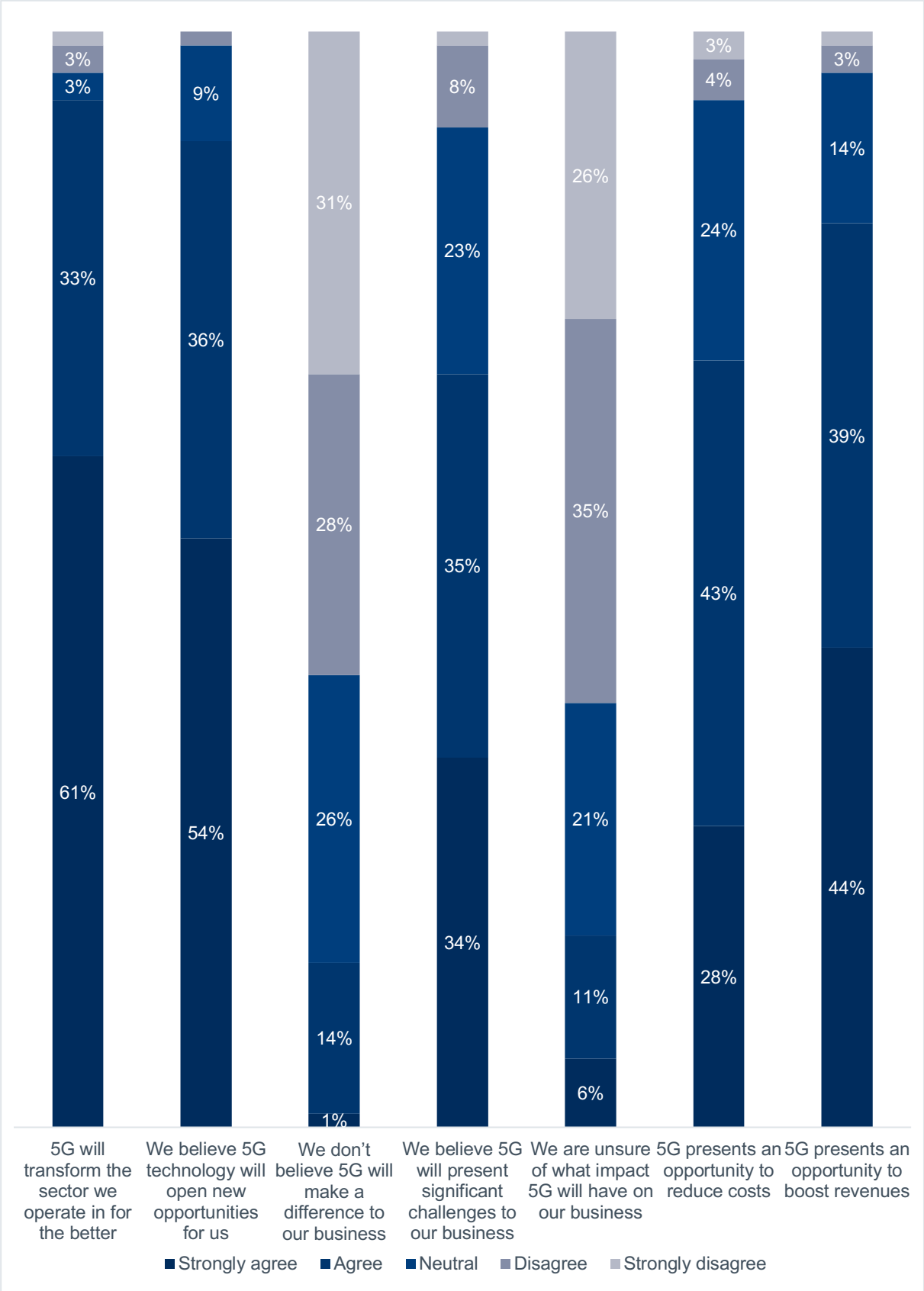
of enterprises strongly agree that 5G will transform the sector they operate in for the better and 50% believe it will open new opportunities for their business.

Exhibit 1: How much do you agree with the following statements? (Enterprise cohort)



Source: N=120 Enterprise Executives

Exhibit 2: How much do you agree with the following statements? (Telecom cohort)



Source: N=80 Telecommunications Executives

TECHNOLOGY ESTATES AND EXISTING INVESTMENTS FACE CONSIDERABLE UPHEAVAL

With most enterprises expecting 5G to transform their business considerably, and in the process, present significant challenges, it's vital we understand how this change will manifest on their existing technology investments.

Unsurprisingly, many believe the technology will have the most impact on their networking and communications systems, with data management and analytics capabilities a close second.

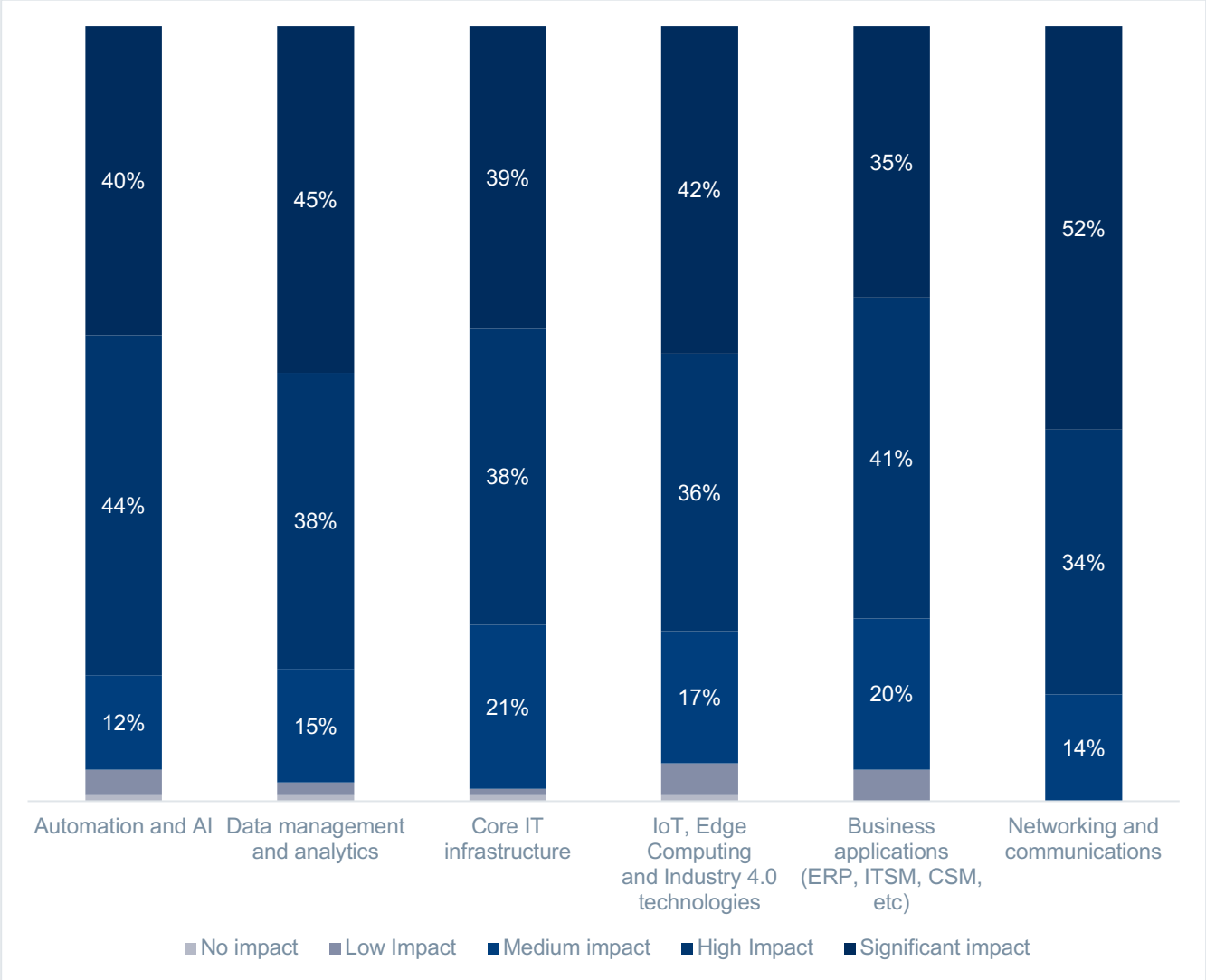
New digital technologies have a place in the modern 5G-powered business. With some variances by industry, executives highlight IoT, Edge Computing, and Industry 4.0 technologies as an area likely to see 5G-fueled transformation. With others highlighting Automation and AI, powered by access to more data from the periphery of the business.

These technology groups are, perhaps, the most obvious candidates when examining the immediate and direct impact of 5G. However, as implementations mature, the need for transformation spreads into the heart of the modern enterprise. As a result, more mature enterprises and industries are rapidly acknowledging that there will be a vital modernization effort to bring existing IT infrastructure and business applications up to speed. Particularly as 5G enables greater investment at the edge of the business and powers new data-hungry capabilities such as AI. In this environment, legacy ERP and ITSM systems, for example, will struggle to keep pace with the latest technological environment.

52%

anticipate significant impact to their existing networking and communications estate. And 45% anticipate a similar impact for data management and analytics technologies.

Exhibit 3: How much do you think 5G will transform the following business technologies? (Enterprise cohort)

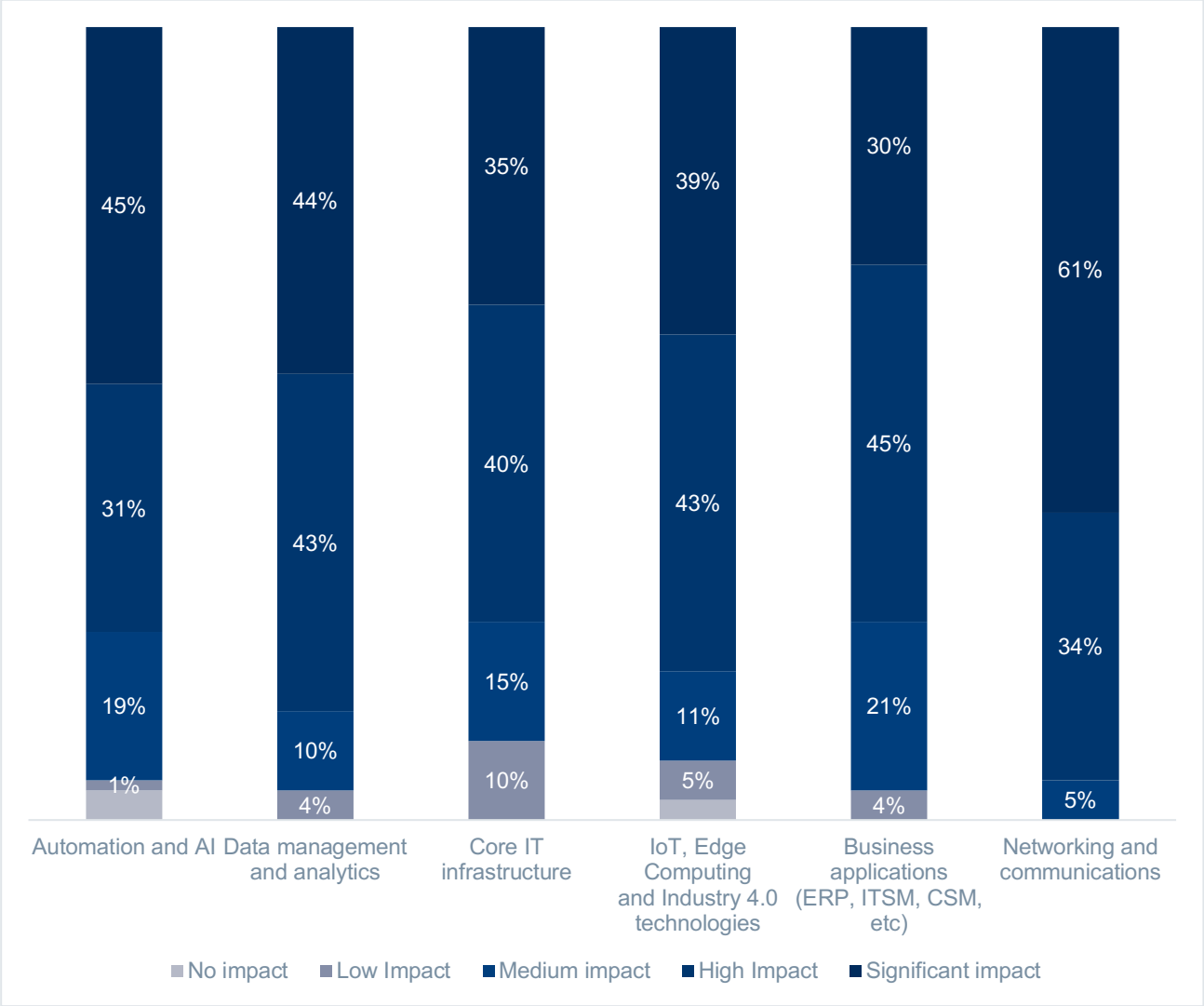


Source: N=120 Enterprise Executives

When mapping the spread of the technological transformation at the heart of the modern business, we can see a clear picture emerging. First, executives are building a new communications layer alongside evolved data management capabilities – effectively the core infrastructure they need to ship data more fluidly and securely around their business.

Then they are working to build out new digital technologies at the periphery of the enterprise – such as IoT and Edge Computing. But, to reap the rewards, they must also transform their core. Greater sensor density on the factory floor, for example, connected via 5G to the heart of the enterprise, means core business applications will play a substantially different role to the one they've played in the past. Modernizing the core, then, becomes a strategic imperative for any sustainable and scalable transformation project.

Exhibit 4: How much do you think 5G will transform the following business technologies? (Telecom cohort)



Source: N=80 Telecommunications Executives

The call for urgent transformation will hit the Telco community too. Indeed, for many, modernizing their core is essential to producing and delivering the 5G services anticipated by the enterprise community.

Understandably the sector is most in tune with the transformative role 5G will play in their networking and communications technologies. However, there is also broader recognition of the impact on technologies such as Automation and AI, alongside data management and analytics.

While the call for modernizing core business applications and infrastructure is not felt as acutely or pressingly in this sector when compared to broader responses, there is still an understanding by the vast majority that the transformative impact will be considerable.

ENTERPRISES AND TELCOS ALIKE BRACE FOR SWEEPING CHANGE FROM THE FRONT OFFICE TO THE BACK

Sweeping technological change fuels accelerated business transformation – and enterprises are bracing for the impact. The consensus from enterprise respondents is clear, with the majority expecting supply chains and front office operations to see the most significant impact. Albeit followed closely by production and back-office functions.

However, at a regional level, we start to see interesting differences emerge. The UK and Germany are broadly similar in their expectation that supply chains will face the most disruption. In France, however, the expectation is for the greater impact to fall on front-office functions, while Italy anticipates a significant change in sales and marketing functions.

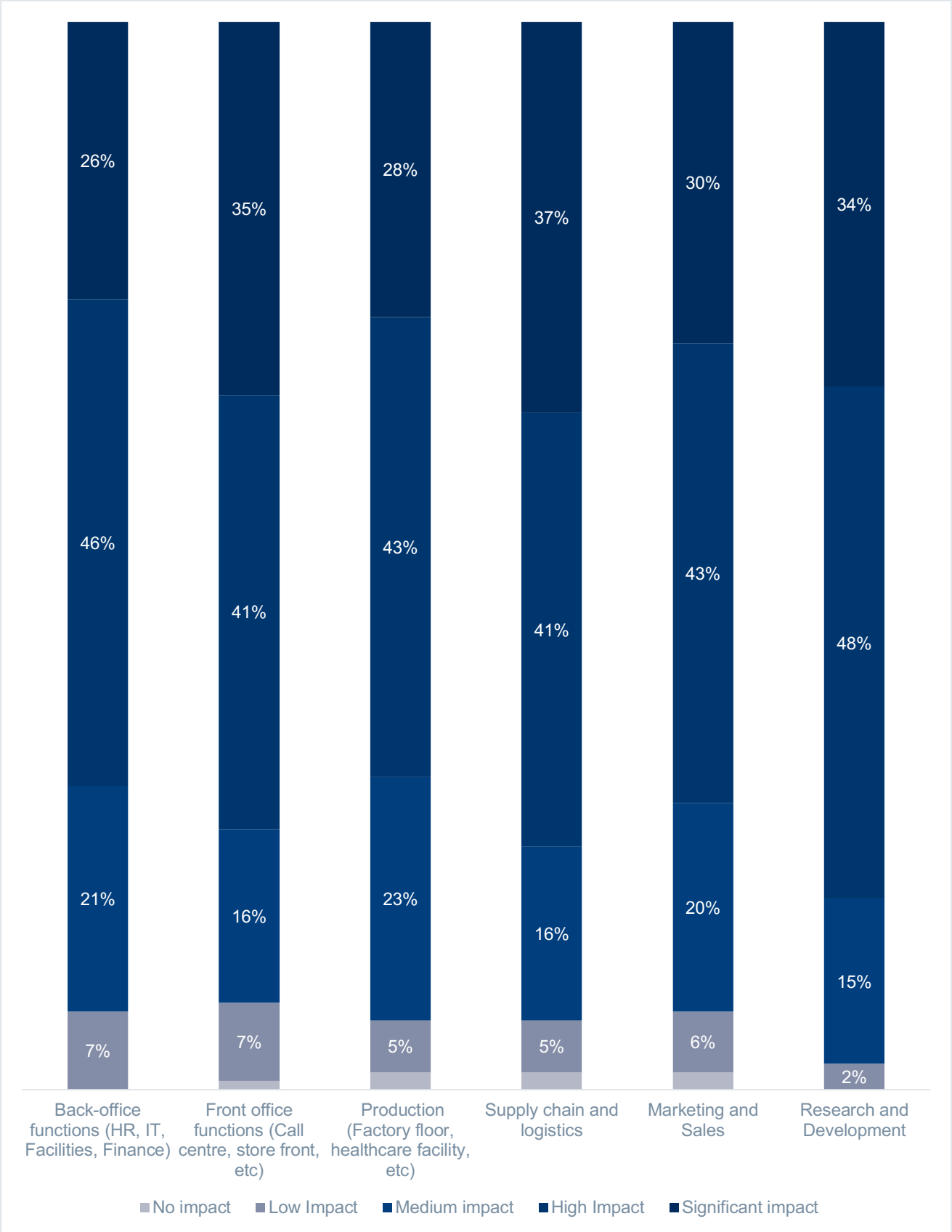
By industry, the Banking and Insurance sector places back-office functions higher up the list. At the same time, Manufacturers and Transport firms believe their supply chains and logistics business units will feel the most impact. Retail organizations highlight sales and marketing, while Healthcare, Telecom, and Utility firms expect Research and Development teams will face the most disruption.

Regional and vertical nuances aside, it's clear that very few executives expect little to no impact – indeed, less than 1% believe back-office and research and development functions in their business will see no effect, and for all other functions, less than 2%. It's clear then that regardless of region or vertical, 5G will profoundly impact the business units that are critical building blocks of the modern enterprise.

37%

of executives believe supply chain and logistics business units will see significant transformation as a result of 5G.

Exhibit 5: How much do you think 5G will transform the following business units?



Source: N=200 Enterprise and Telecommunications Executives

DISRUPTION AND CHANGE AHEAD – BUT DO YOU HAVE A STRATEGY TO TACKLE IT?

By now, it's clear that 5G heralds a period of considerable change and opportunity for enterprise executives, but how many have a coherent strategy designed to manage the transformative impact of the technology?

While trailblazers are forging ahead with a strategy for integrating 5G into their business, the vast majority are either at very early experimental stages or are uncertain how they should tackle the subject. Regional differences break away from this picture to an extent, with executives in France far more likely to have a strategy in place; in comparison, close to half of the respondents from Italy and the UK advise they are exploring the potential of the technology alongside other investments. Meanwhile, in Germany, almost a quarter of respondents report that they are unclear on their 5G strategy, far above the regional average.

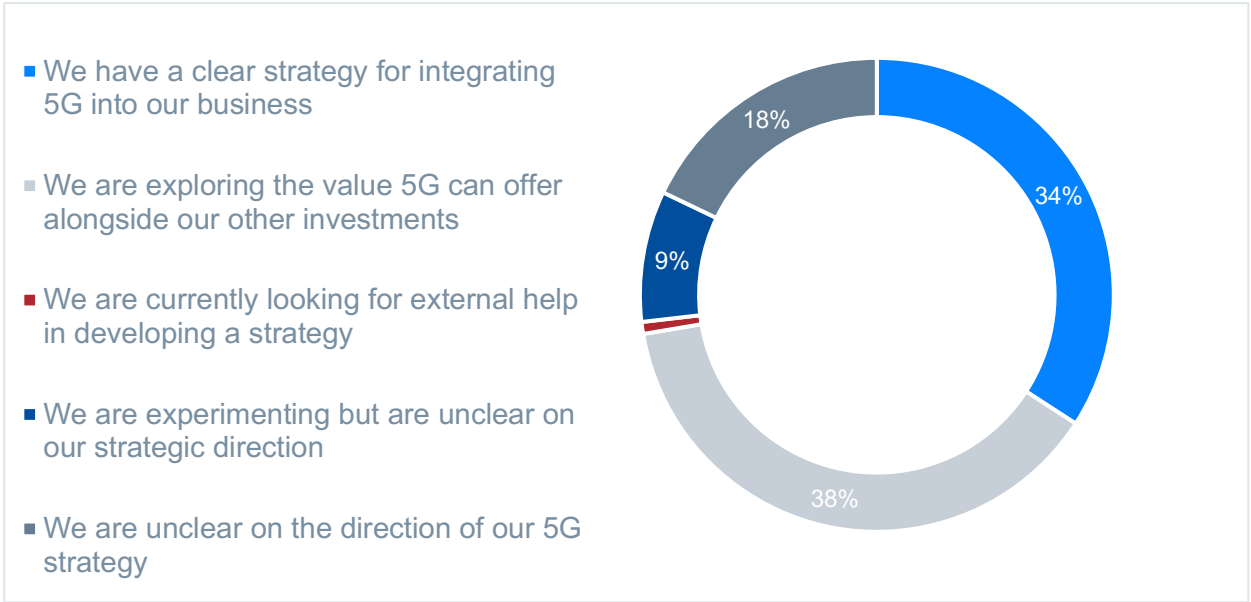
There are also significant differences by industry. In the Healthcare sector, almost three-quarters of respondents advise they are exploring the value of 5G in their business, with no respondents describing a clear strategy for the technology. In comparison, the Banking and Insurance, Manufacturing, and Retail sectors all have high average proportions of respondents with a plan in place.

Given the significant disruption spotted in previous sections, those with a strategy and a clear understanding of how they will work the 5G into their business operations are likely to have a much smoother journey than those who, despite recognizing the impact, are still in the earliest stages of reacting to the looming change.

34%

of enterprises have a clear strategy for integrating 5G into their business

Exhibit 6: Which of the following statements best describes your 5G strategy? (Enterprise cohort)



Source: N=120 Enterprise Executives

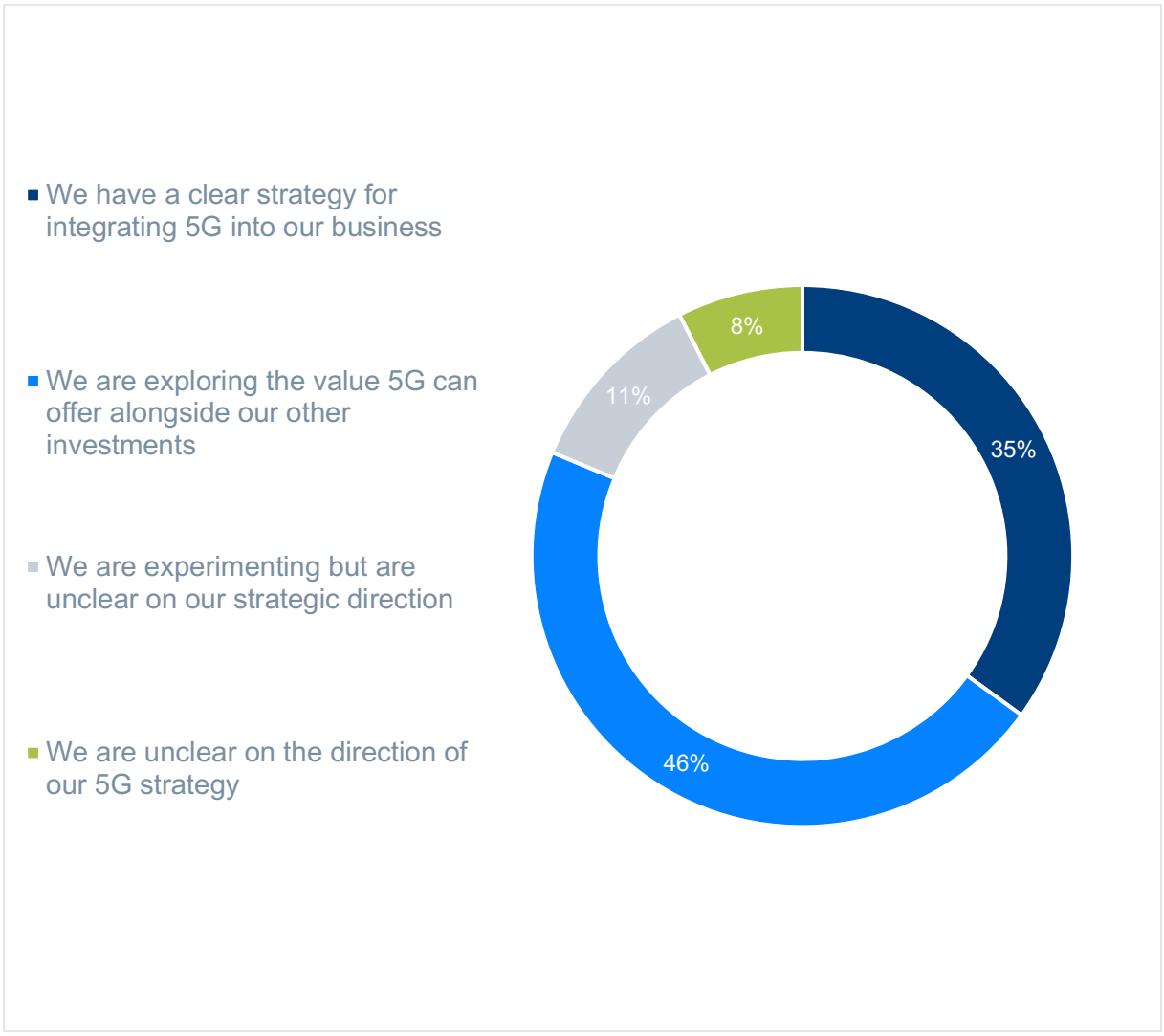
In the Telecom sector, most respondents either have a clear strategy or are exploring the value of the technology. However, there are still large segments of the market that remain relatively immature – an important theme throughout this report – particularly as enterprises ramp up demand for services.

The diversity of response in this sector is somewhat alarming. Later in this study, we will examine the demands and timelines expected by enterprises and telecommunications firms alike, with a concerning overlap. Given the speed at which enterprises are planning their adoption roadmap, many telecommunications firms who have yet to plot a clear strategy for 5G in their business will likely miss the peak demand for enterprise services. And in a competitive and rapidly evolving market, many of the slowest to respond to this enterprise demand will struggle to recover.

46%

of telcos are exploring the value 5G can offer alongside their other investments

Exhibit 7: Which of the following statements best describes your 5G strategy? (Telecom cohort)



Source: N=80 Telecommunications Executives

THE ROUTE TO MEASURING THE SUCCESS OF 5G PROJECTS VARIES BY ENTERPRISE

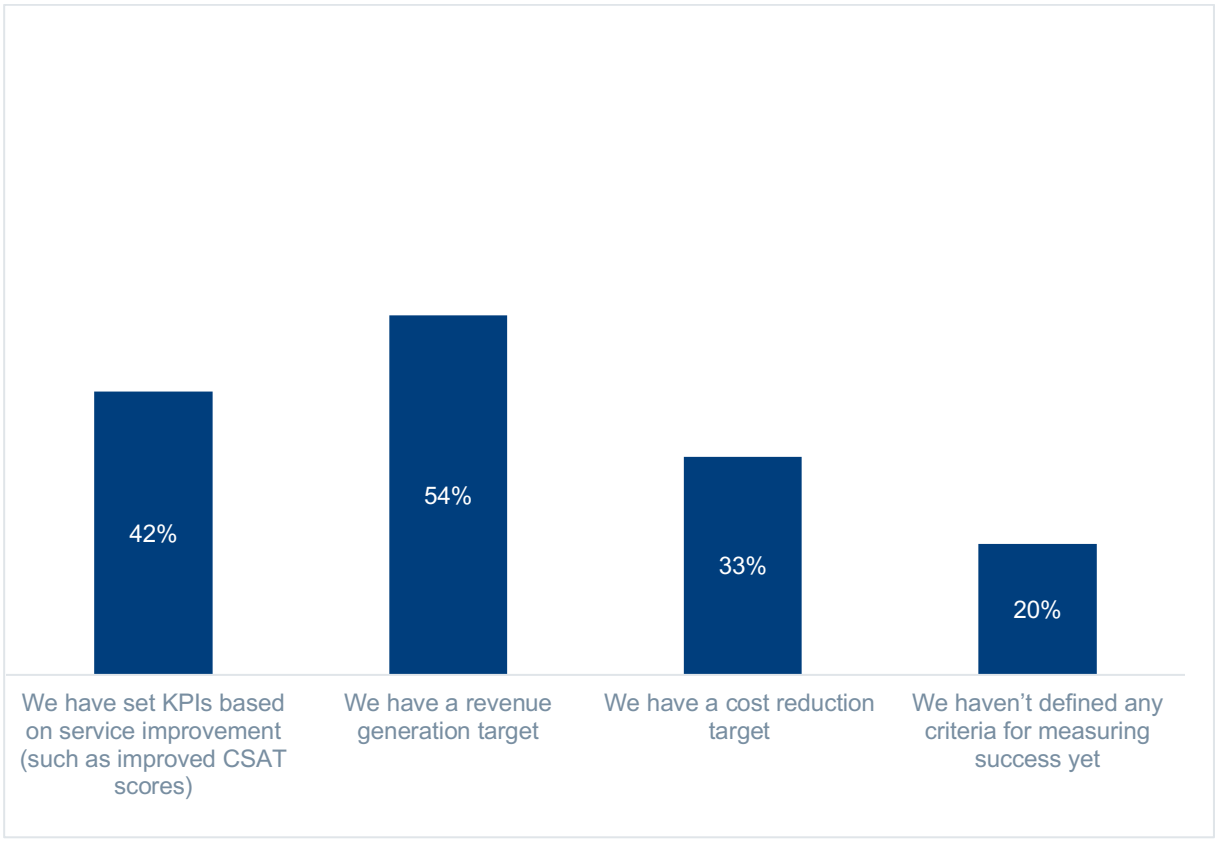
Although their 5G strategies are far from set in stone for many executives, there appears to be a more rigorous approach to set criteria to measure the value and success of 5G investments. Most respondents have at least one measure in place, with more than half advising they have a revenue generation target. In contrast, a third will target cost-reduction to measure success.

In some industries, there are stark differences. In the Retail sector, 85% of executives expect to target revenue generation to measure success, far above the average. In comparison, the Banking and Insurance sector sit above average for basing success around KPI's based on service improvement. Meanwhile, the Healthcare and Transport sectors are the most likely to have no specific criteria in place currently – and in most cases, are the least mature sectors across a range of data sets covered in this report.

54%

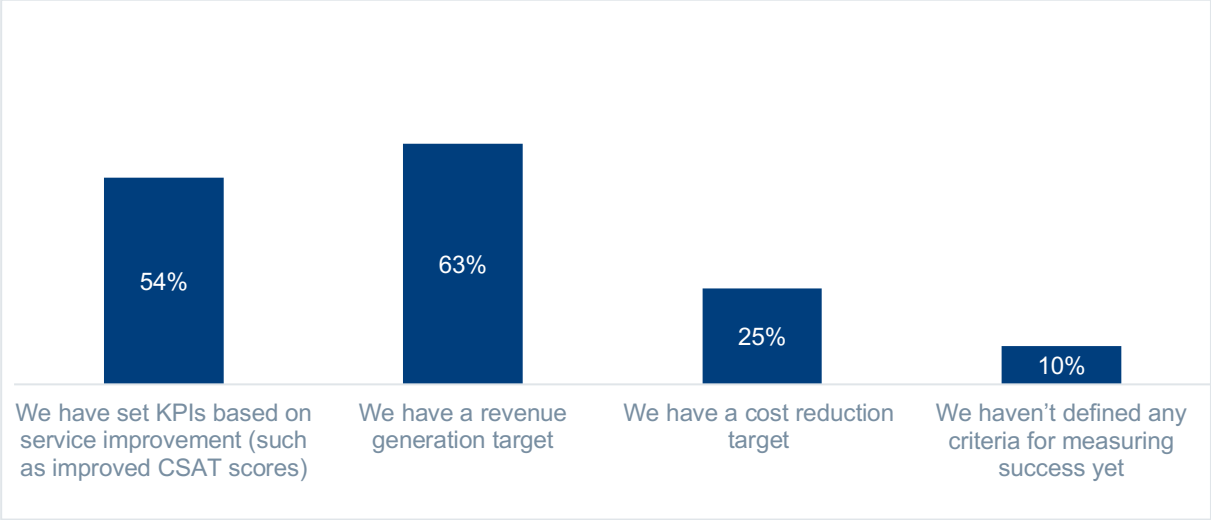
of enterprises will measure the success of their 5G projects with a set revenue generation target

Exhibit 8: How do you plan to measure the benefits and success of 5G-Based projects? (Enterprise cohort)



Source: N=120 Enterprise Executives

Exhibit 9: How do you plan to measure the benefits and success of 5G-Based projects? (Telecom cohort)



Source: N=80 Telecommunications Executives

Comparing enterprise responses to the Telecom sector specifically, we can see a much broader spread across the different methods for measuring project success – with a greater weighting on both revenue generation and service improvement focused KPIs. The sector is also the least likely to have no specific criteria in place.

REVENUE GAINS ARE TOP OF THE AGENDA – BUT HOW MUCH DO ENTERPRISES ANTICIPATE GENERATING?

At just under half of all responses, the consensus is between 5% and 10% revenue generated from 5G or 5G augmented products and services over the next five years. A small minority are far more bullish, anticipating over 20% in additional revenue generated by the technology.

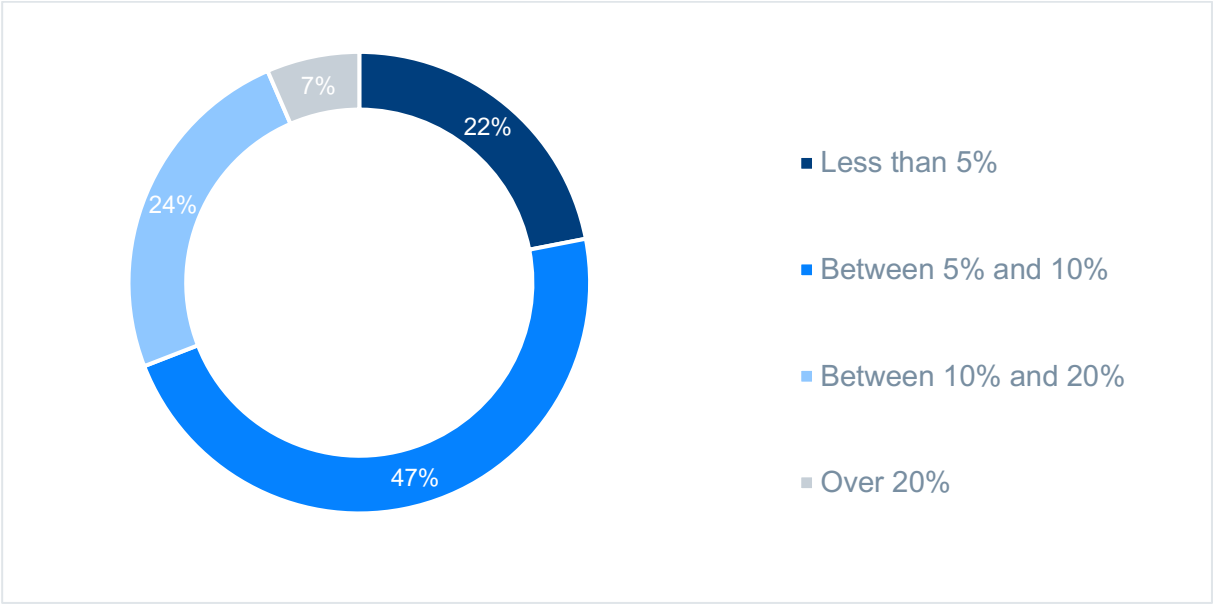
Surprisingly, when examining differences by industry, Healthcare is one of the most optimistic sectors, with respondents far more likely to expect additional revenues above 10%. In contrast, Manufacturing and Utility firms bucked the trend. They were more inclined to expect revenue generation to sit below the 5% mark – perhaps because of the sector's traditional focus on cost-reduction measures. By region, enterprises in the UK and France were more bullish on their revenue forecasts, with Italy and Germany more grounded and sticking to the lower percentages.

We can also see profound differences in the Telecommunications sector, with a broader spread across executive expectations and a larger proportion of respondents expecting to see revenues increase above 10% over the next five years.

7%

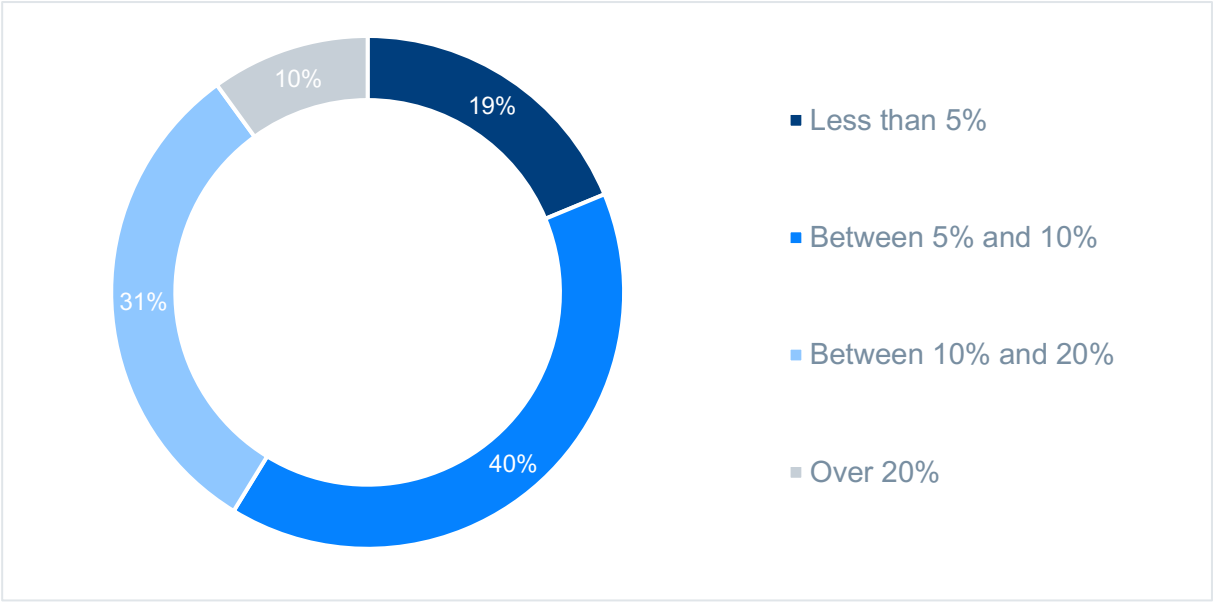
of enterprises and 10% of telcos expect to generate more than 20% revenue from 5G and 5G augmented products over the next five years.

Exhibit 10: How much revenue do you expect to come from 5G, or 5G augmented products and services in the next five years? (Enterprise cohort)



Source: N=120 Enterprise Executives

Exhibit 11: How much revenue do you expect to come from 5G, or 5G augmented products and services in the next five years? (Telecom cohort)



Source: N=80 Telecommunications Executives

BULLISH FORECASTS FOR REVENUE GROWTH, BUT WHERE WILL THE MONEY COME FROM?

To meet these ambitious revenue growth projections, enterprise executives have diverse approaches to monetize 5G, and 5G augmented products and services. The majority of respondents have isolated at least two potential sources of new revenue streams, with well over half planning to use the technology to reach new customers and expand their operations. Enterprises in France and Italy are the most eager regions to follow this approach. At a vertical level, enterprises in the Retail and Healthcare sectors are also keen to grow revenues by reaching new customers.

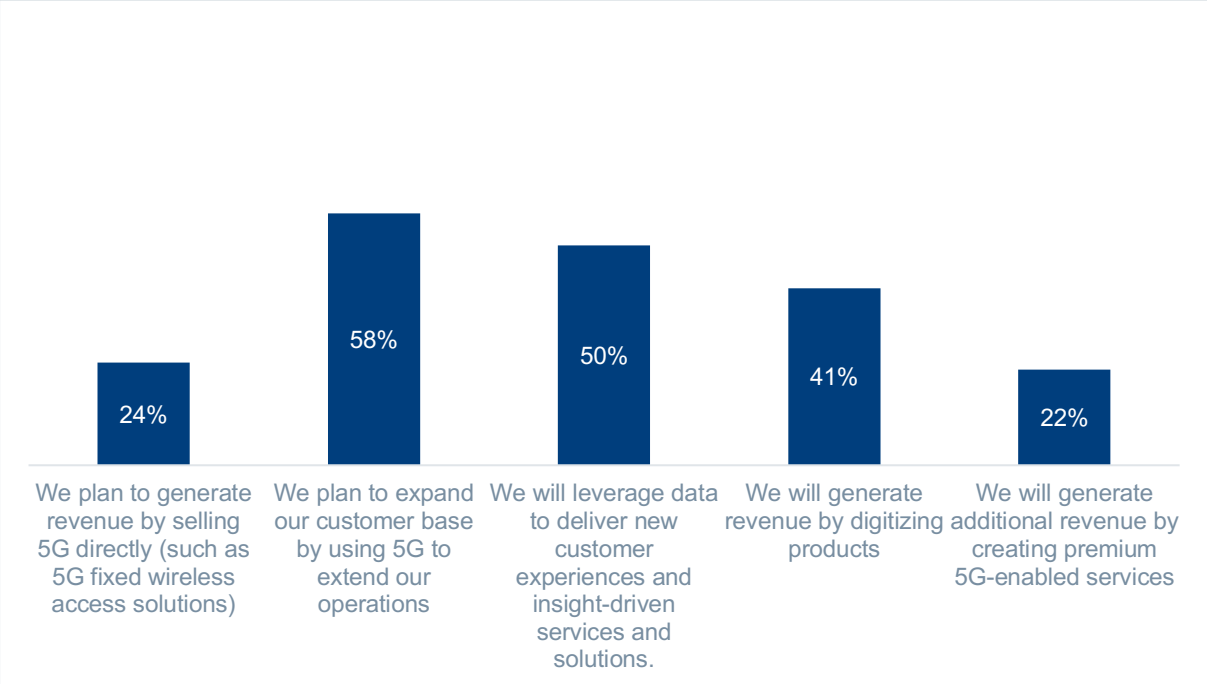
Generating revenue by leveraging data to deliver new customer experiences and insight-driven services and solutions is a close second across the board. In particular, the Healthcare and Utilities sectors are keen to generate revenue through this approach.

Generating revenue by enriching products and creating premium 5G-enabled services are the least common approaches. However, the Retail sector stands out from the crowd, with over half of respondents advising they planned to digitize products. Meanwhile, Manufacturing, Utilities, and Telecom enterprises are more likely than average to generate revenue by creating premium services.

58%

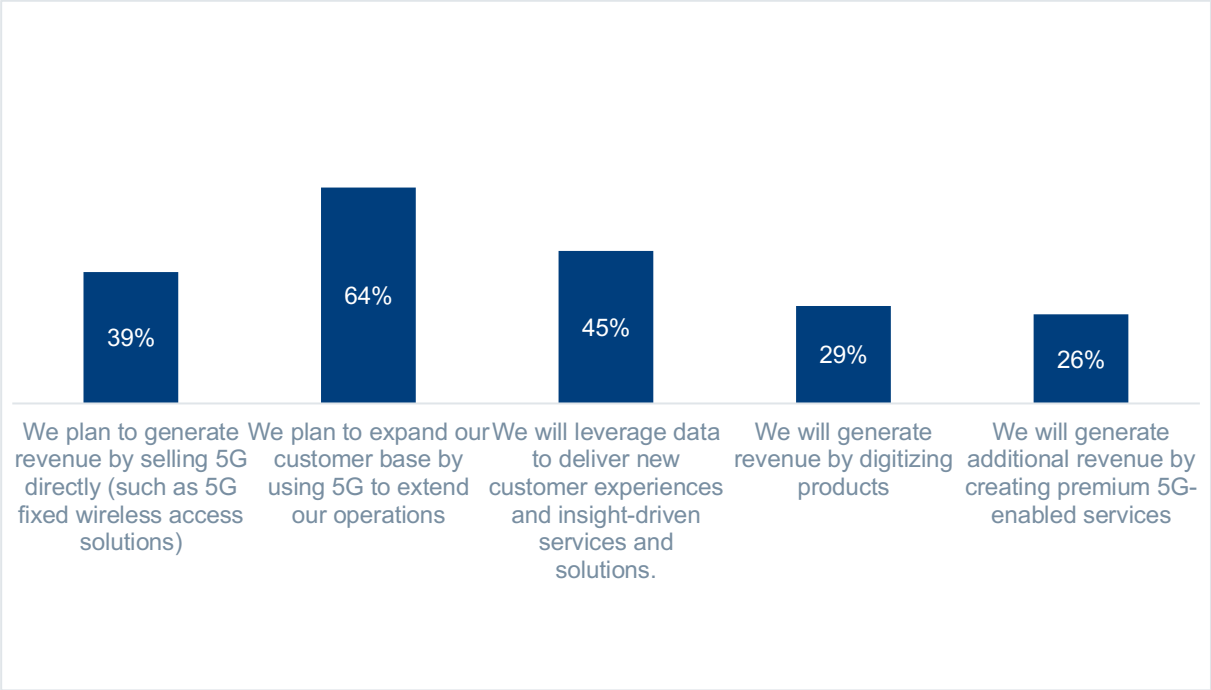
of enterprises plan to monetize 5G by expanding their customer base and extending their operations.

Exhibit 12: How do you plan on monetizing 5G? (Enterprise cohort)



Source: N=120 Enterprise Executives

Exhibit 13: How do you plan on monetizing 5G? (Telecom cohort)



Source: N=80 Telecom Executives

Digging into the Telecom sector in more detail, we can see executives in the space working on expanding their operations and reaching new clients to generate new revenue streams. Telcos also plan to leverage data to improve customer experiences and – perhaps unsurprisingly – are far more likely to generate revenue by selling 5G directly.

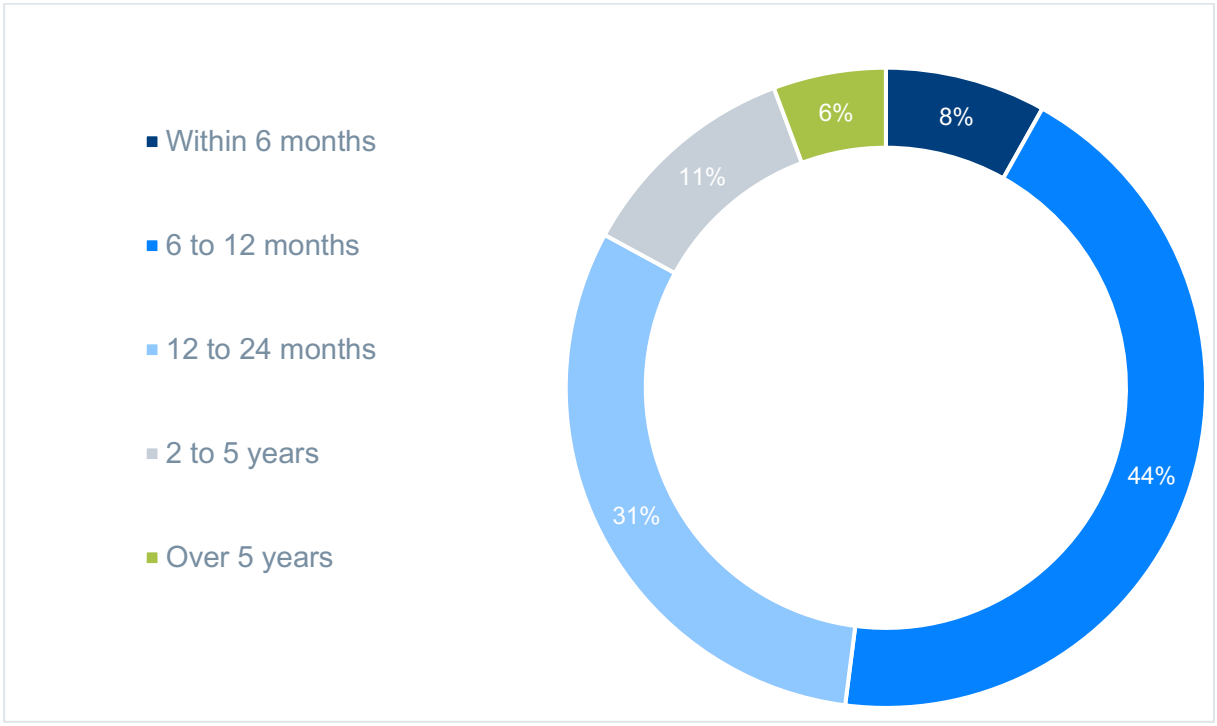
TIMELINES ARE TIGHT WITH MANY PLANNING TO IMPLEMENT OVER THE NEXT 24 MONTHS – BUT CAN TELCOS DELIVER IN TIME?

With ambitious revenue targets set out, strategic plans in place, and revenue streams selected, enterprises are keen to implement 5G technologies on a short timescale. Well over three-quarters of respondents anticipate implementing 5G-Based solutions within their business within the next 24 months. Enterprises in Italy and France are moving on the most aggressive timeline, with more than half of respondents in both regions expecting to implement solutions within 12 months. On the other hand, in Germany, respondents were far more conservative in their estimates, with over a quarter – well above the average for Europe – advising they expected implementations to last well over two years.

52%

of enterprises expect to implement 5G solutions within the next year.

Exhibit 14: Over what timeframe do you expect to implement 5G-based solutions within your business? (Enterprise cohort)



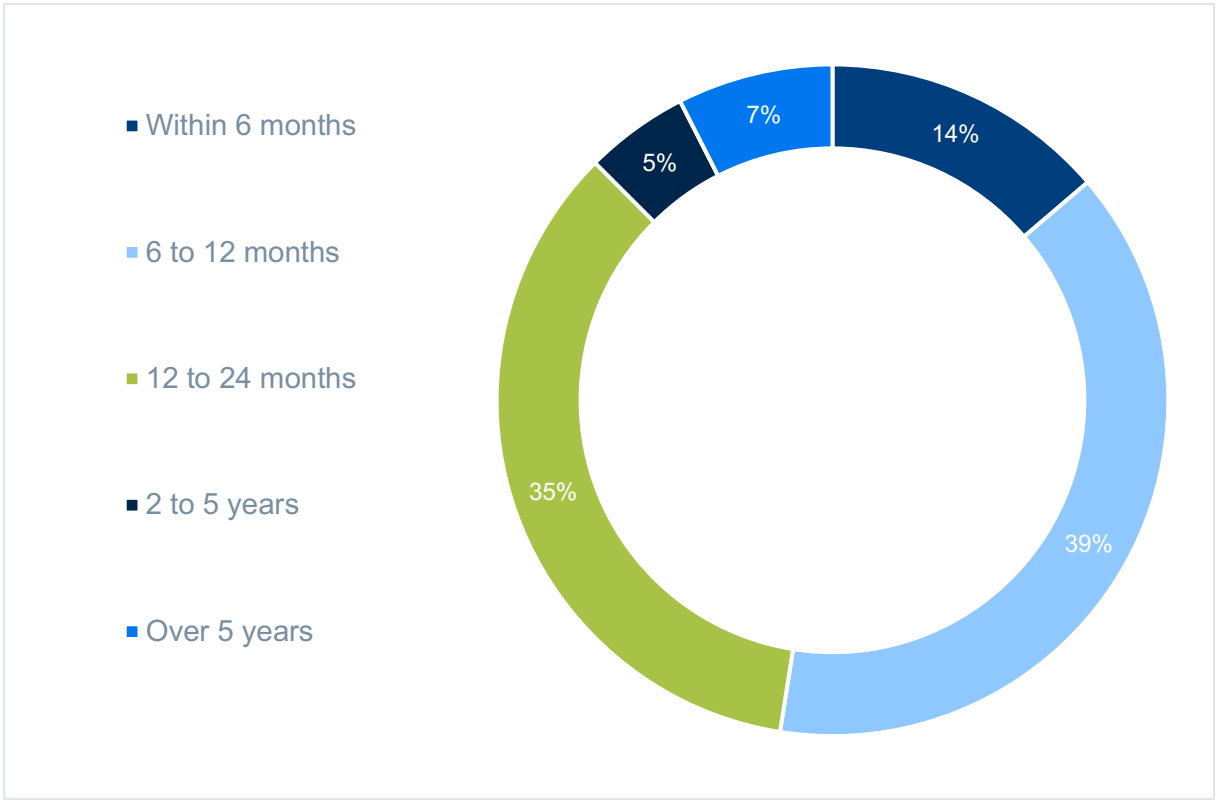
Source: N=120 Enterprise Executives

The transport sector is the most ambitious, with almost three-quarters of respondents anticipating implementation within one year, followed closely by respondents from Retail. On average, the Manufacturing industry plans to take the most time over 5G implementation, with a quarter of respondents expecting implementations to last over two years.

The Telecom sector – which will undoubtedly be the foundation of many of the 5G implementation roadmaps drawn out by the enterprise space – has a more balanced spread, with over half anticipating swift implementations in under a year, but a sizeable proportion of respondents expecting projects to extend beyond 12 months.

And while this aligns with the broader objectives of the enterprise space, there is room for some concern. Specifically, is the sector moving fast enough to meet the growing demand for enterprise 5G solutions? With the majority of enterprises anticipating implementation roadmaps that coincide, and in some cases, out-accelerate plans from the sector that is a critical part of powering those solutions, it calls into question the fundamental viability of enterprise 5G roadmaps.

Exhibit 15: Over what timeframe do you expect to implement 5G-based solutions within your business? (Telecom cohort)



Source: N=80 Telecom Executives

Furthermore, as the space evolves, we may see a winner takes all market emerge in which the fastest moving telecommunication firms tap into enterprise demand long before some of the laggards. Many of the regions across Europe have several leading Telecommunications firms that are structurally integral to the market. Assuming these companies can rapidly scale up solutions and meet ambitious enterprise demands, the overall impact of these overlapping implementation timelines may be relatively small – and limited to minor supply and demand challenges and a reduction in the broad choice of partner for enterprises. However, if the flagship firms are slow to bring solutions to the market, the chain reaction on enterprise projects will be considerable.

5G DECISION-MAKERS: A BUSINESS-LED ACTIVITY, BUT IT STILL RUNS THE SHOW

As the enterprise understanding of 5G evolved, we have increasingly viewed the technology through a business lens rather than a technology one. Over time, use cases tied to specific business goals evolved from theory to tried and tested capabilities, from enabling greater customization on the factory floor to powering employee safety solutions on an oil rig. With this in mind, it is a surprise, although perhaps not a huge one, to see IT still plays the leading role in 5G decision making, with very little decentralized to roles that, in theory, have the most value to offer.

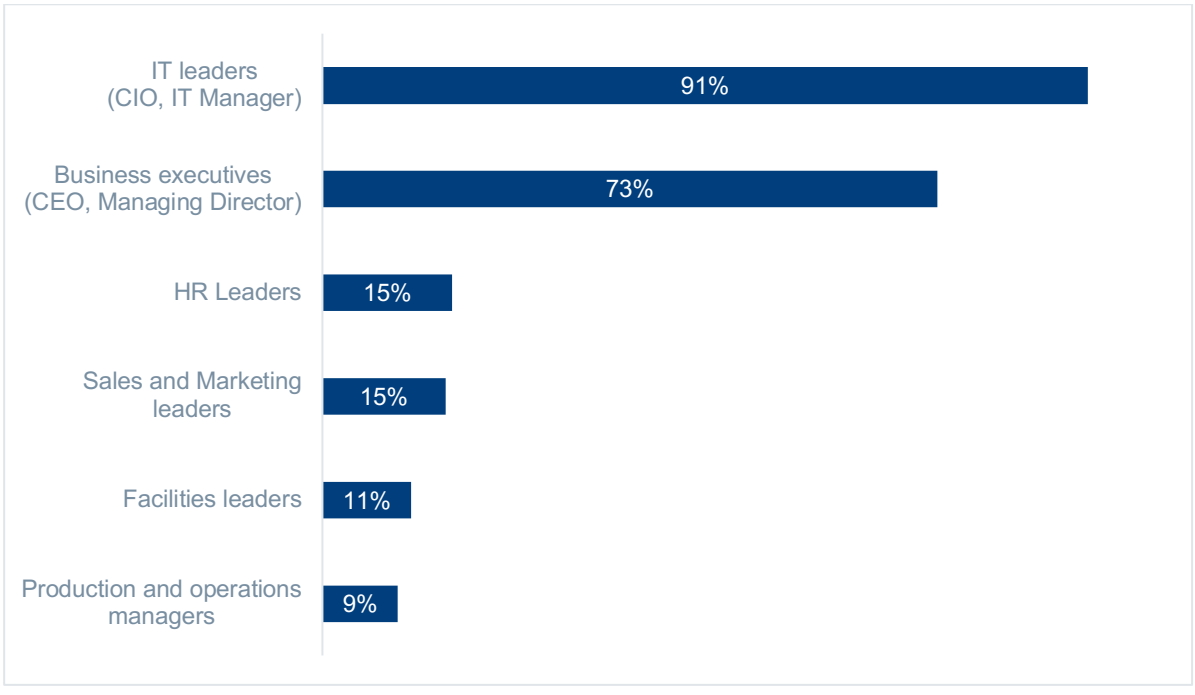
Despite enterprise leaders recognizing the significant technology and business impact associated with 5G implementations – established in the previous sections of this report – it seems very little of the actual decision-making trickles down to the operation layer.

Digging into the data, we can see some variances by industry and region, with some more likely to pull in insights and expertise to support decision-making from across the business. In Germany, executives are more likely to pull in leaders from back-office and production business units to support projects – albeit still under the pretext of an IT-led engagement. In the UK, enterprises are less likely to have input from C-Level executives, with more or less all respondents advising the CIO is the key decision-maker for all 5G initiatives.

In over 90%

of enterprises IT leaders are the key decision makers for initiatives relating to 5G.

Exhibit 16: In your organization, who are the key decision-makers for initiatives relating to 5G? (Enterprise cohort)

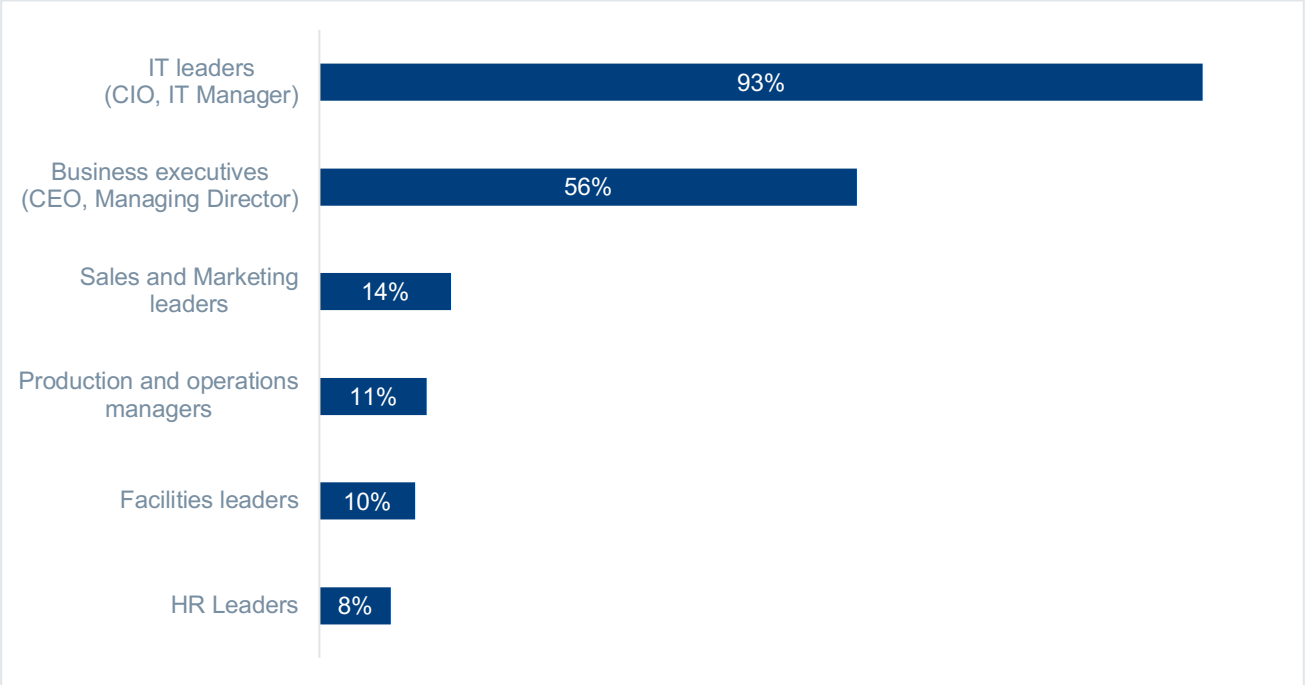


Source: N=120 Enterprise Executives

We can see more profound differences at an industry level. The Banking and Insurance sector is more likely than any other sector to bring Sales and Marketing executives into the decision-making process, followed closely by the Retail and Wholesale sector. In the Healthcare sector, HR and Facility leaders make the cut. In comparison, the Utility industry is eager to pull production and operations managers into the room. The Transport sector is the most collaborative, with the least C-Suite representation, but the most diverse overall spread across different business units. Meanwhile, IT runs the show in the Manufacturing space with limited decision-making outside of the CIO's office.

Looking at the Telecommunications sector specifically, it's clear to see a similar trend to that described by enterprise respondents, albeit a more directly led IT initiative with much less stakeholder input garnered at the C-Suite or decentralized to other functions. In later sections of this report, we will examine the likely reason for this trend in the Telecom space (and the broader across the different enterprise verticals). Still, as a snapshot, it's becoming increasingly clear that the Telecom sector understands there will need to be significant technological changes internally before they can derive real value from 5G investments, and by extension, deliver those services to the enterprise market. Explaining to some extent why IT remains the critical decision-maker for a technology that will fundamentally impact the entire Telecommunications business.

Exhibit 17: In your organization, who are the key decision-makers for initiatives relating to 5G? (Telecom cohort)



Source: N=80 Telecommunications Executives

ENTERPRISES HAVE A PLETHORA OF OBSTACLES TO OVERCOME BEFORE REACHING THEIR 5G UTOPIA

For enterprises, the road ahead is bumpy. Understanding the obstacles and challenges they will need to overcome to realize their 5G ambitions is critical. In line with the challenges identified earlier in this report – specifically that Telecommunications firms aren't moving as swiftly as enterprises demand – we can see the most significant challenge identified by enterprises is the overall maturity of 5G solutions on the market. Regulatory and compliance concerns, almost certainly linked to the structural challenges of managing and securing the additional streams of data enabled by 5G capabilities, ranks as a close second.

Aside from these specific challenges, we can see the range level out across a large cluster of obstacles, many focused on issues around technology and complex business environments. Talent, too, is highlighted as a challenge by many, particularly as the nascent labor market for 5G services and solutions struggles to meet rapidly accelerating demand.

The challenge encountered the least by enterprise respondents is access to capital and resources to invest in 5G adoption – emphasizing the value enterprises place on 5G as they build out their technology investment strategy.

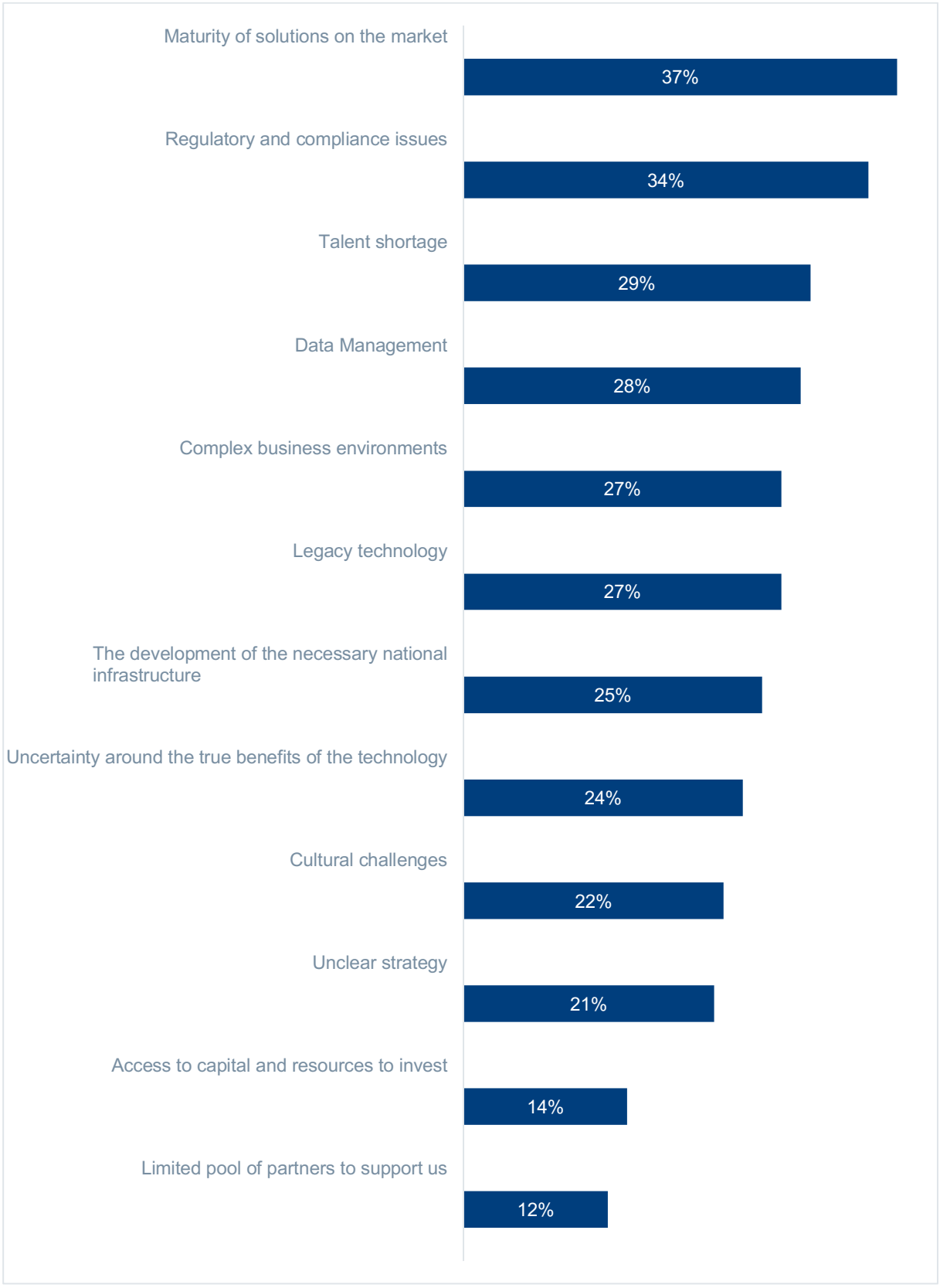
The greatest obstacle identified by respondents varies considerably by region. In Italy, respondents are grappling with compliance challenges and highlight specific issues encountered with the maturity of solutions on the market. In France, too, compliance challenges stand out well above all the other obstacles highlighted. In Germany, the biggest perceived challenges are a looming talent shortage and broader data management issues. While in the UK, grappling with legacy technology sits at the top of the list.

By industry, Data management ranks as the most significant challenge for Banking, Insurance, and Healthcare sectors. Manufacturers feel the talent shortage the most acutely – an ongoing industry challenge as executives look for employees that understand both IT and Operational Technology environments. And Retailers struggle with the maturity of existing solutions on the market.

37%

of executives believe the maturity of solutions on the market is the biggest obstacle to the adoption of 5G in their business.

Exhibit 18: Please select your top three obstacles to the adoption of 5G in your business? (Enterprise cohort)



Source: N=120 Enterprise Executives

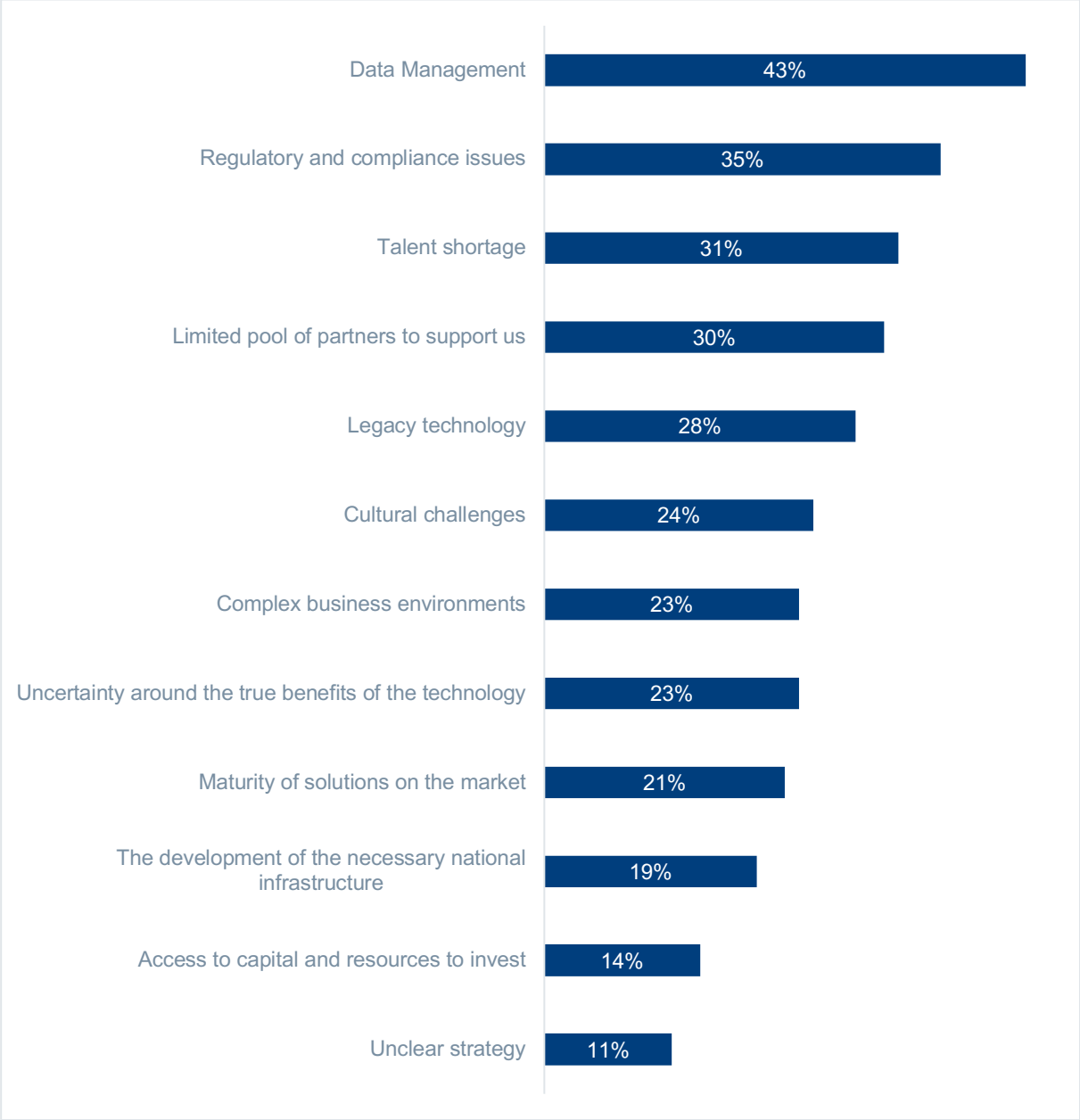
Shifting to a focus on the obstacles highlighted by Telecommunications firms, Data management ranks the highest by a significant margin, followed by regulatory and compliance issues. The sector also anticipates issues surrounding talent. Close to a third of enterprises advising a talent shortage is one of the main obstacles to adopting 5G within their business.

As we move through the later sections of this report, we will uncover the significant emphasis many telcos are placing on building out strong partner ecosystems. Notably, a large proportion of firms in the space believes the limited pool of partners to support them will be a significant challenge moving forward.

43%

of telcos believe data management will be the biggest obstacle to 5G adoption in their business.

Exhibit 19: Please select your top three obstacles to the adoption of 5G in your business? (Telecom cohort)



Source: N=80 Telecommunications Executives

PART TWO: ENTERPRISE APPETITE MEETS OBSTACLES TO 5G ADOPTION

We now know the overall market structure – and how both enterprises and telecommunications firms are building out their roadmaps to implement 5G. To build on this foundation, we will explore the motivations, visions, and obstacles anticipated by the Enterprise space in the following section. It will quickly become apparent that enterprises expect to pull in significant support from third parties to support their journey as they race to implement 5G and realize the considerable benefits of the technology.

64%

of enterprise executives say greater speed and throughput of data is a very important 5G capability for their initiatives.

ENTERPRISES ARE APPROACHING THE 5G MARKET WITH AN EXHAUSTIVE SHOPPING LIST

The motives driving enterprise adoption of 5G solutions vary considerably. There are several clearly influential factors when plotting out the long list of benefits tied to the technology. The most highly prized 5G capability is the greater speed and throughput of data the technology enables. Many of the leading enterprise use cases in the space are tied to greater data throughput, from building out smart factories to harnessing and processing more customer data in Retail outlets.

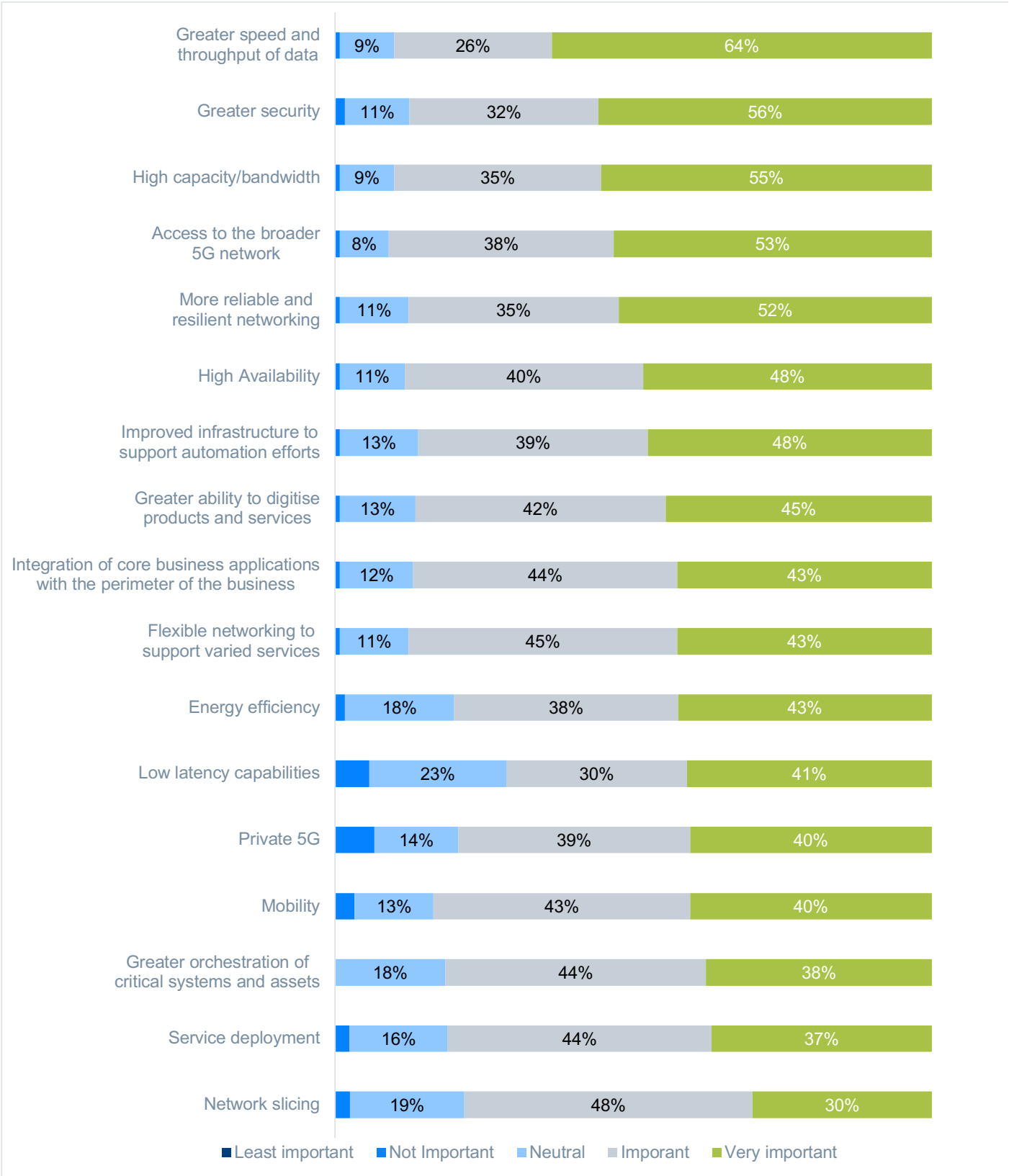
Other critical capabilities identified by enterprises link to this push for a more potent communications layer driving new business and technological capabilities. High capacity, bandwidth, availability, and more reliable and resilient networking all sit at the top of the list of important factors.

The follow-on requirement to this uptick in the transmission and processing of data is the need for greater security, which also ranks highly as a critical capability.

The regions studied agree to varying extents on the importance of these capabilities, with some minor differences. In Italy, for example, high capacity and bandwidth ranked the highest, while the other regions emphasized the importance of greater speed and throughput of data.

Speed and throughput of data ranked highest for several industries, too, with Utilities, Retail, and Banking and Insurance sectors rating this capability the highest. For the Manufacturing industry, access to the broader 5G network was of the most importance, while for Transport, higher availability received the most votes.

Exhibit 20: How important to your 5G initiative are the following capabilities?



Source: N=120 Enterprise Executives

CLOUD AND MODERN INFRASTRUCTURE IS THE CRITICAL TECHNOLOGY BUILDING BLOCK TO SUPPORT 5G

While the capabilities of 5G are set in the minds of enterprise executives, examining the other side of the coin is also essential. When asked which fundamental technological building blocks they need to have in place to unlock the true value of 5G in their business, more than half advised cloud solutions, and modern infrastructure is critical.

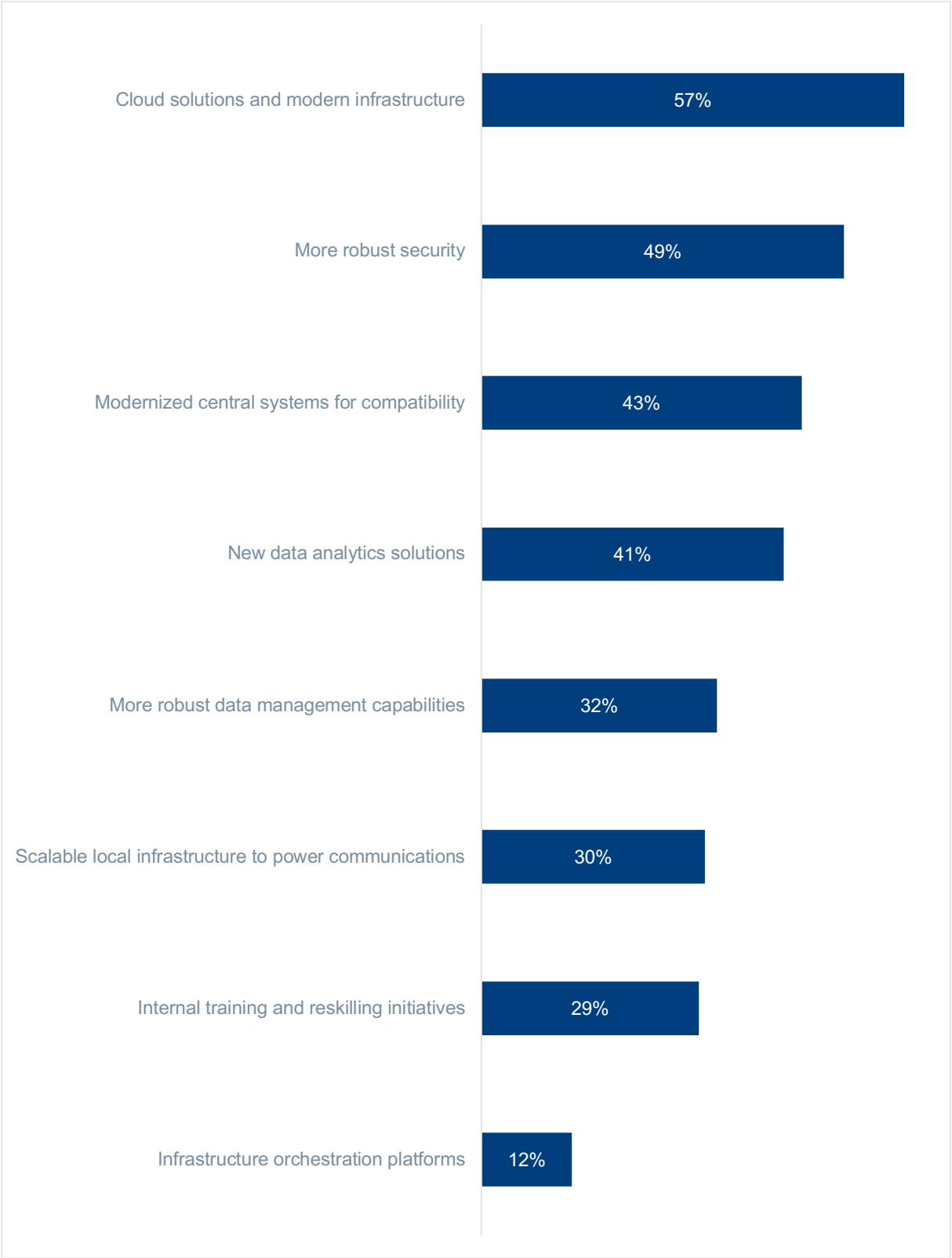
In a close second, and in keeping with the broader recognition that greater security will be essential to driving 5G initiatives forward, is more robust security capabilities, followed by modernized central systems for compatibility. Indeed, the most pressing need, according to executives, is this internal effort to modernize applications and infrastructure to integrate with the 5G-powered communication layer and enable greater throughput of data from other technology investments, such as IoT or Edge Computing.

In terms of new capabilities, executives are keen to bring in new data and analytics solutions and more robust data management tools - aligning again with the enterprise imperative to support new analytics activities as 5G connects more areas of the modern enterprise. The lowest on the list of building blocks are infrastructure orchestration platforms by some margin. However, it is a little higher up the list that we can see an area of considerable concern – less than a third of enterprises believe they will need to conduct internal training and reskilling initiatives to unlock value from 5G.

57%

of respondents highlight cloud solutions and modern infrastructure as a critical building block to unlock the value of 5G in their business.

Exhibit 21: Which technology building blocks need to be in place to unlock the value of 5G in your business?



Source: N=120 Enterprise Executives

MANY ENTERPRISES LACK THE TALENT AND SKILLS TO DRIVE 5G PROJECTS FORWARD – PARTNERS WILL FILL THE GAPS

With less than a third of enterprises recognizing the need for internal training and reskilling exercises, it's concerning to see the majority of enterprises acknowledging that their in-house capabilities are limited. Close to half of respondents believe they have a team capable of tackling specific aspects of their 5G projects and plan to lean into partners to handle the rest. And a smaller cohort advises they have minimal in-house capabilities and will use partners either to help scale up capability or support them through the entire project.

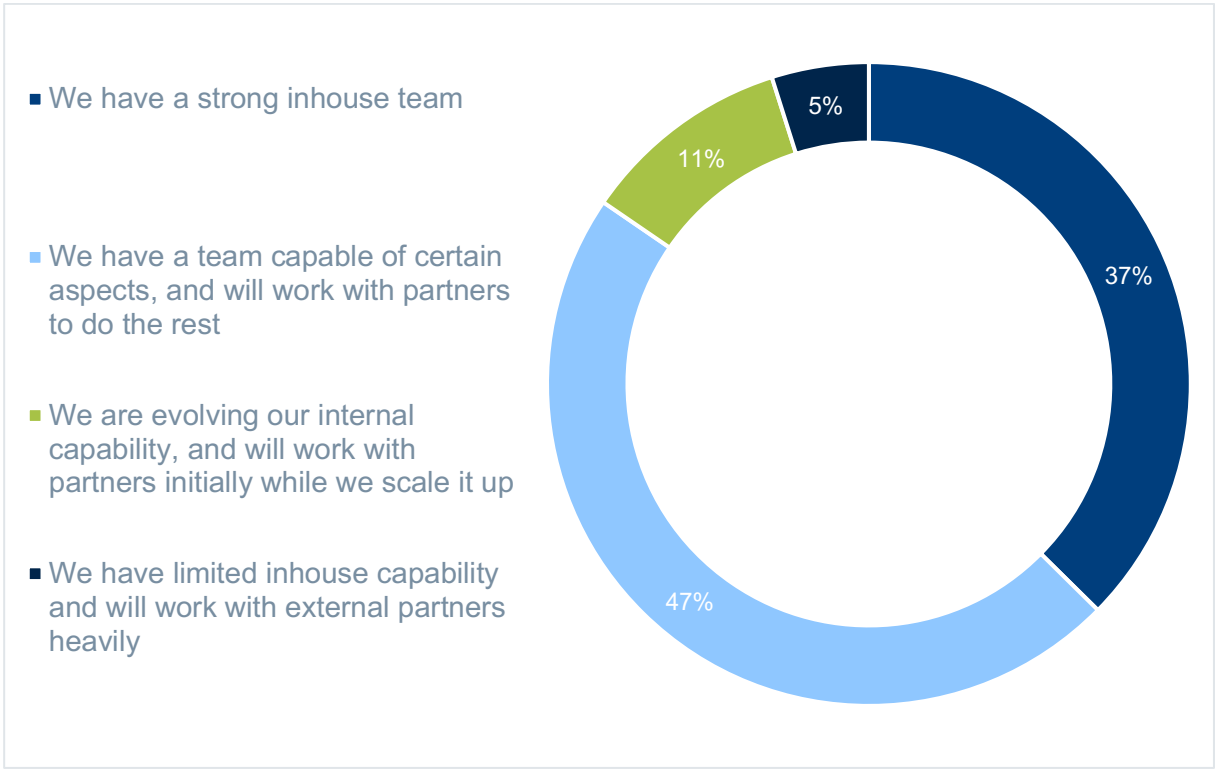
By industry, the Banking and Insurance sector and Retailers have the best-equipped talent pools – with over half of enterprises in both sectors advising they have a solid internal team. There is limited variation across the different regions – demonstrating the universal nature of the ongoing talent and skills market across Europe.

It's clear from these results that partners – whether telecommunications firms, service providers, or consultancies – will be in high demand as the bulk of enterprises seek to supplement their capabilities and hand significant portions of their 5G projects to external parties.

63%

of enterprises will need to work with partners to support their 5G initiatives to varying extents

Exhibit 22: To what extent do you have the talent and skills to leverage 5G technologies in your business?



Source: N=120 Enterprise Executives

TELECOMMUNICATIONS AND IT SERVICES FIRMS HAVE THE EDGE – BUT DEMAND FOR PARTNERS IS SET TO SPREAD ACROSS THE BOARD

With an apparent demand for third-party support as enterprises move forward on their ambitious 5G projects, it's critical to understand which partners enterprises are planning on selecting. The perceived capability across the board is relatively high, and there is an explicit acknowledgment that Telecommunications firms, more than any other group, are the best prepared to support enterprises on their 5G journey.

Enterprises also view software providers with specific 5G solutions as capable of supporting their journey, followed by IT services firms who have a marginally more muted response. While still viewed positively, Consultancies are recognized as the least prepared to support enterprise 5G plans.

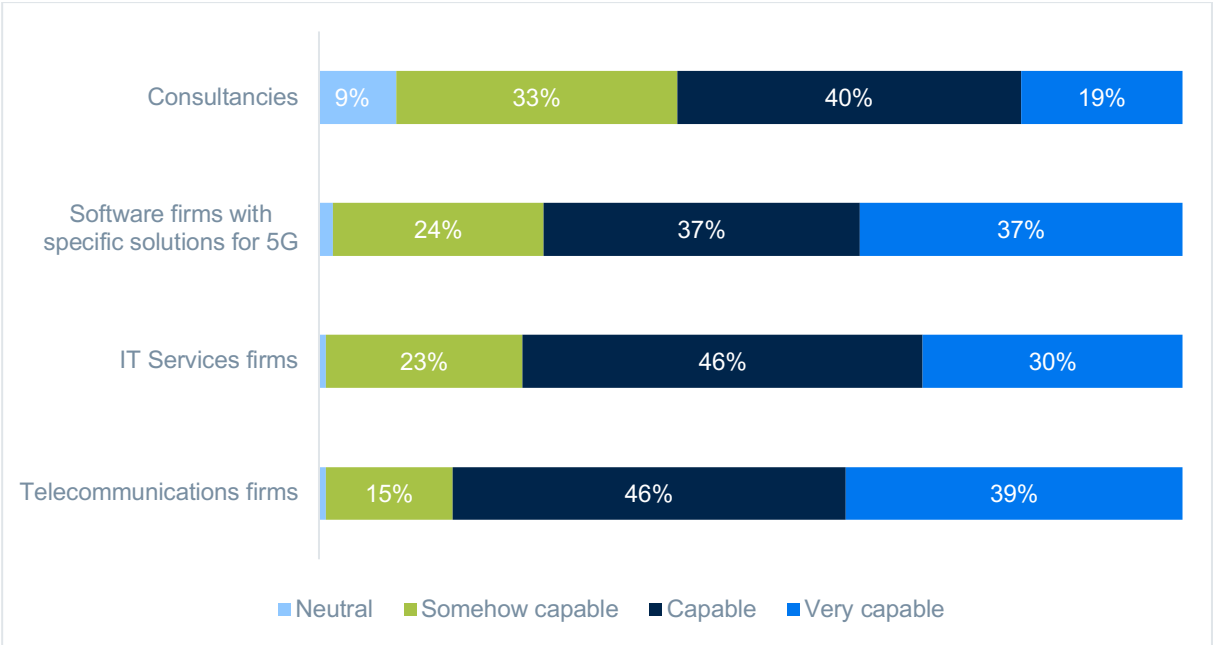
However, there are some interesting regional variances. In France, executives have a far more balanced spread across all categories, in stark contrast to responses from Germany, which places far more value on the capabilities of software vendors. In Italy and the UK, however, respondents rate the ability of Telecommunications firms higher than all other categories.

By vertical, too, we can see some interesting differences. Manufacturers and Banking firms believe telcos are the best equipped to support them. In contrast, respondents from the Utilities and Healthcare sectors have a higher perception of software companies.

39%

of enterprises believe telcos are the best equipped to support their 5G plans.

Exhibit 23: Which of the following providers do you believe is best equipped to support your 5G plans?



Source: N=120 Enterprise Executives

IT RUNS THE SHOW – AND HOLDS THE PURSE STRINGS

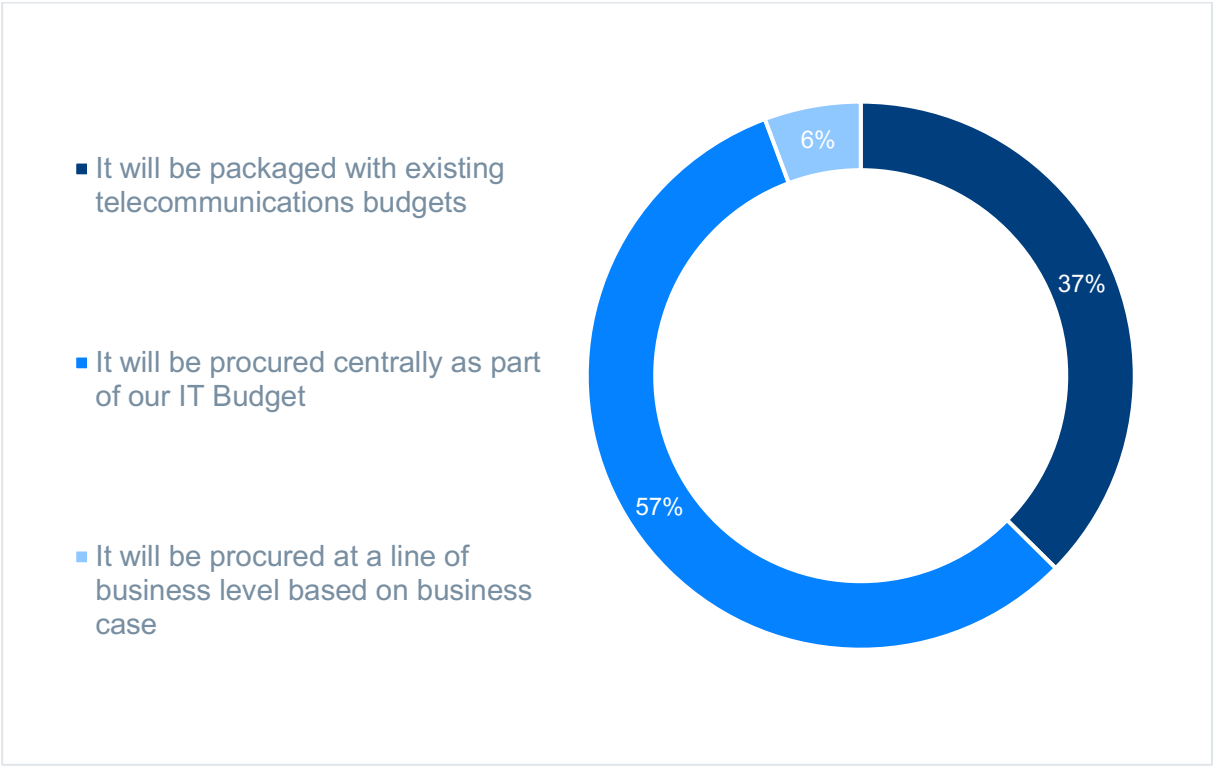
In a previous section, we revealed that the CIO's office is running the show across industries and regions when it comes to 5G projects. Perhaps unsurprising then, 5G initiatives will be procured centrally as part of their IT Budget for more than half of respondents. We can expect to see 5G projects funded from existing telecommunications budgets for over a third of respondents. In contrast, a small proportion of respondents advised they would procure 5G services at a business level based on specific business cases.

We can spot some minor differences by region. In Italy, respondents are far more likely to package the costs of 5G initiatives within IT budgets, but broadly speaking, there is little regional difference. However, at a vertical level, there are pretty significant variances. In the Manufacturing and Banking sectors, three-quarters of respondents plan to package 5G initiatives within central IT budgets. Compared to less than a third in the Utility sector, who are far more likely to procure through existing telecommunications budgets. The industry is also the most likely to procure solutions at the line of business level, although this remains a relatively small group of enterprises.

57%

intend to procure and pay for 5G services through their central IT budgets.

Exhibit 24: How do you intend to procure and pay for 5G services?



Source: N=120 Enterprise Executives

PART THREE: HOW WILL TELCOS DELIVER THE SERVICES CRAVED BY ENTERPRISES?

In the final section of this report, we will examine how prepared Telecommunications firms are to deal with solid enterprise demand for 5G services and solutions. In previous sections, we have established several areas of concern as the market for 5G evolves. As we move through this section, we will uncover other disconnects between the enterprise strategies described in the previous sections and an industry accelerating investment to bring the services and solutions craved by a growing market.

39%

of telcos believe enhancing security capabilities is the most important factor to the evolution of their network

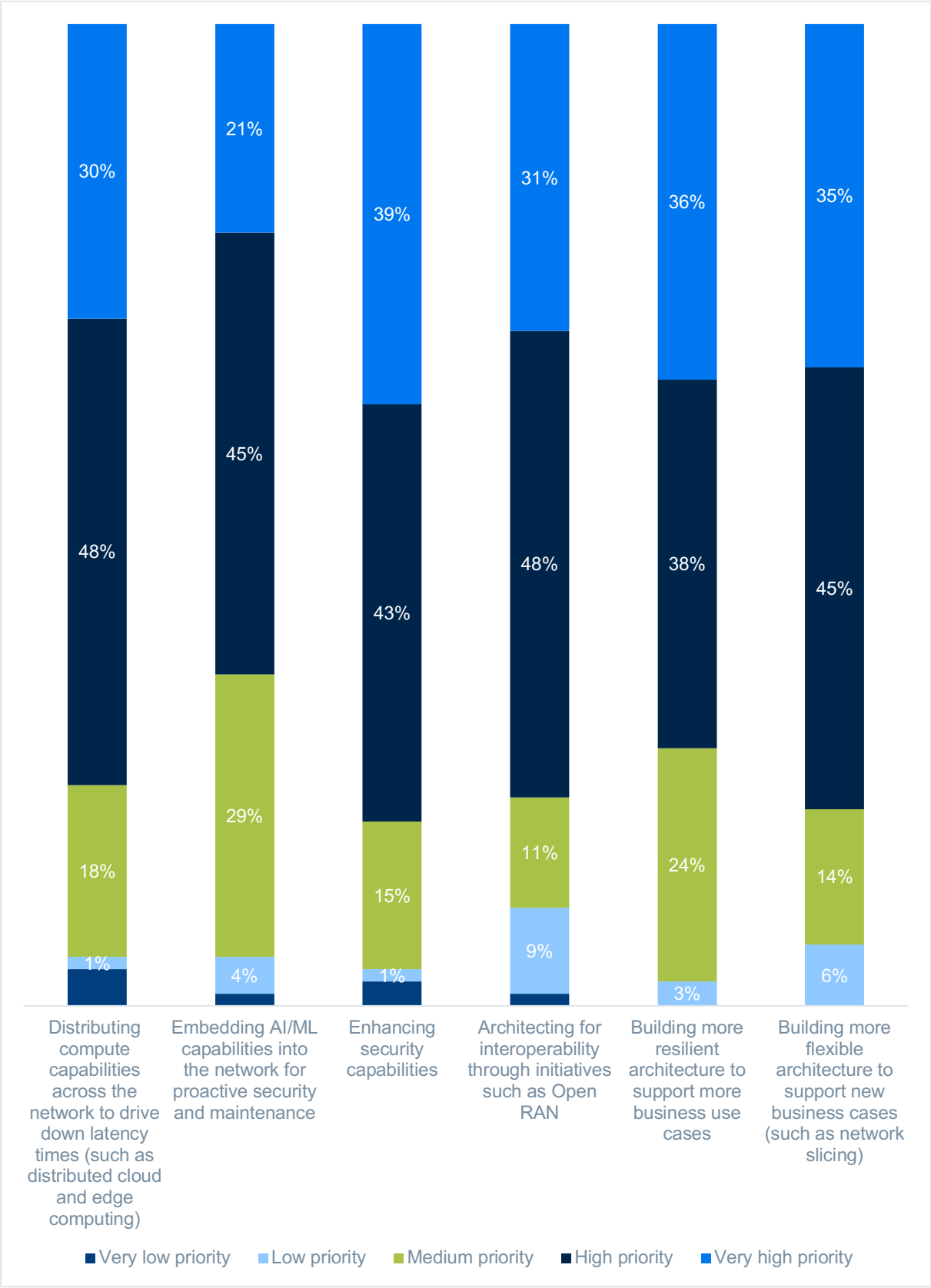
SECURITY AND FLEXIBLE ARCHITECTURE ARE CRITICAL TO 5G GO-TO-MARKET

Telecommunications firms have a clear list of capabilities they want to bring to the market through 5G services and solutions. Across the sector, the highest priority is on building more flexible architecture to support new business cases – a critical area of investment given the vast shopping list of capabilities enterprises are looking for when building out their 5G roadmap.

Security also ranks high, aligning well with a strong enterprise demand for greater security capabilities embedded into their networking and communications layer. And crucially, given the significant emphasis placed on speed, it's encouraging to see distributing compute capabilities across the network to drive down latency also recognized as an area of high priority in the sector.

Priorities vary to some extent by region. All regions recognize the importance of supporting more business use cases with resilient architecture, with companies in France the most focused on this goal. Outside of this goal, companies based in Germany are the keenest to enhance security capabilities. Italian firms also place a high value on improved security. Still, they are setting a higher priority on embedding AI and ML capabilities and dragging down network latency by distributing compute power. In contrast, in the UK, architecting for interoperability through initiatives such as Open RAN sits high on the agenda.

Exhibit 25: Please rate the following statements based on their importance the evolution of your telecommunication network.



Source: N=80 Telecommunications Executives

MANY PLAN TO BRING SOLUTIONS DIRECTLY TO THE MARKET, BUT MOST SEE WORKING WITH PARTNERS AS THE KEY TO THEIR GO-TO-MARKET.

Focusing on how to prioritize solution development is only one piece of the puzzle for Telecommunication firms. Unlike communication and networking layers before 5G, the capabilities demanded by enterprises stretch far beyond simple connectivity requirements. As a result, go-to-market strategies must adapt beyond traditional approaches.

For most respondents, this means building out a more substantial partner ecosystem, whether that's to augment their existing portfolio with enterprise-ready solutions or teaming up with IT service providers to sell 5G alongside their enterprise packages. Given the ambitious roadmaps outlined in the previous sections of this study, teaming up with software and IT services giants who already have a solid enterprise-focused offering is a wise move. Particularly as they can work to bite off some of the complex requirements to enable new thresholds of value from 5G investments.

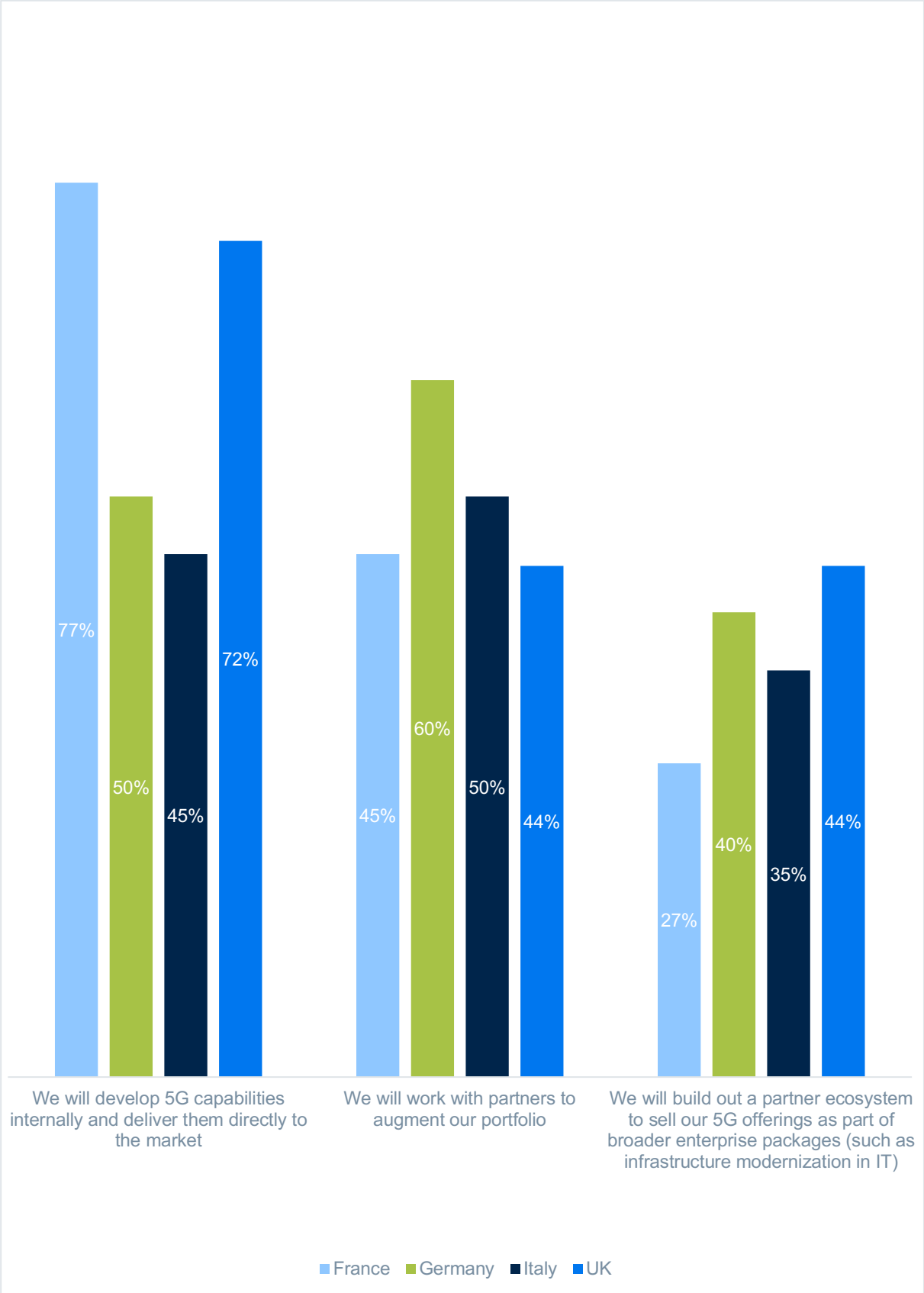
That being said, a large proportion of the market plan to develop 5G capabilities internally and sell them directly to the market. As the market evolves, it's likely enterprises will have greater choice, working with a mature partner ecosystem to bring 5G into existing digital transformation activities while also buying in 5G directly to support other use cases.

At a regional level, companies in France and the UK are far more likely to build out solutions internally and bring them to market, supplementing capabilities with their partner ecosystem as required. In contrast, Germany and Italy are more inclined to build a robust partner ecosystem to support their go-to-market.

Over 70%

of telcos in France and the UK plan to develop 5G capabilities internally and deliver them directly to the market

Exhibit 26: How do you intend to bring 5G products and services to the enterprise market?



Source: N=80 Telecommunications Executives

TELCOS KNOW 5G PRESENTS A SIGNIFICANT OPPORTUNITY TO DEVELOP NEW SERVICES AND SOLUTIONS

It may seem somewhat obvious, particularly when moving through the data in the previous sections of this report, that 5G presents a significant opportunity for the Telecommunications sector. Unsurprisingly then, most respondents from the industry recognize that the technology will enable them to develop new services and solutions. Similarly, given the shift in the go-to-market approach highlighted by telcos, we can see a clear push from respondents recognizing the need to develop a rich ecosystem to help them bring solutions to the enterprise market.

Crucially though, this data reveals a crucial area of alignment between the buyer and seller markets in the 5G space. Telecommunication firms perceive a willingness from enterprises to work directly with them to embed 5G capabilities into their business. Encouragingly – as established in previous sections of this report – enterprises recognize that telecommunication firms are the best equipped to help them on their journey, albeit with a consensus that many third parties – such as IT services firms and software vendors – also have significant value to offer.

For the Telecommunication industry, this shift extends beyond a closer relationship with the enterprise market and a more strategic shift enabled by 5G. The traditional role played by telecommunications firms in the enterprise space is delivering bandwidth and core communication capabilities. Still, many anticipate a new position in building out and providing high-value services.

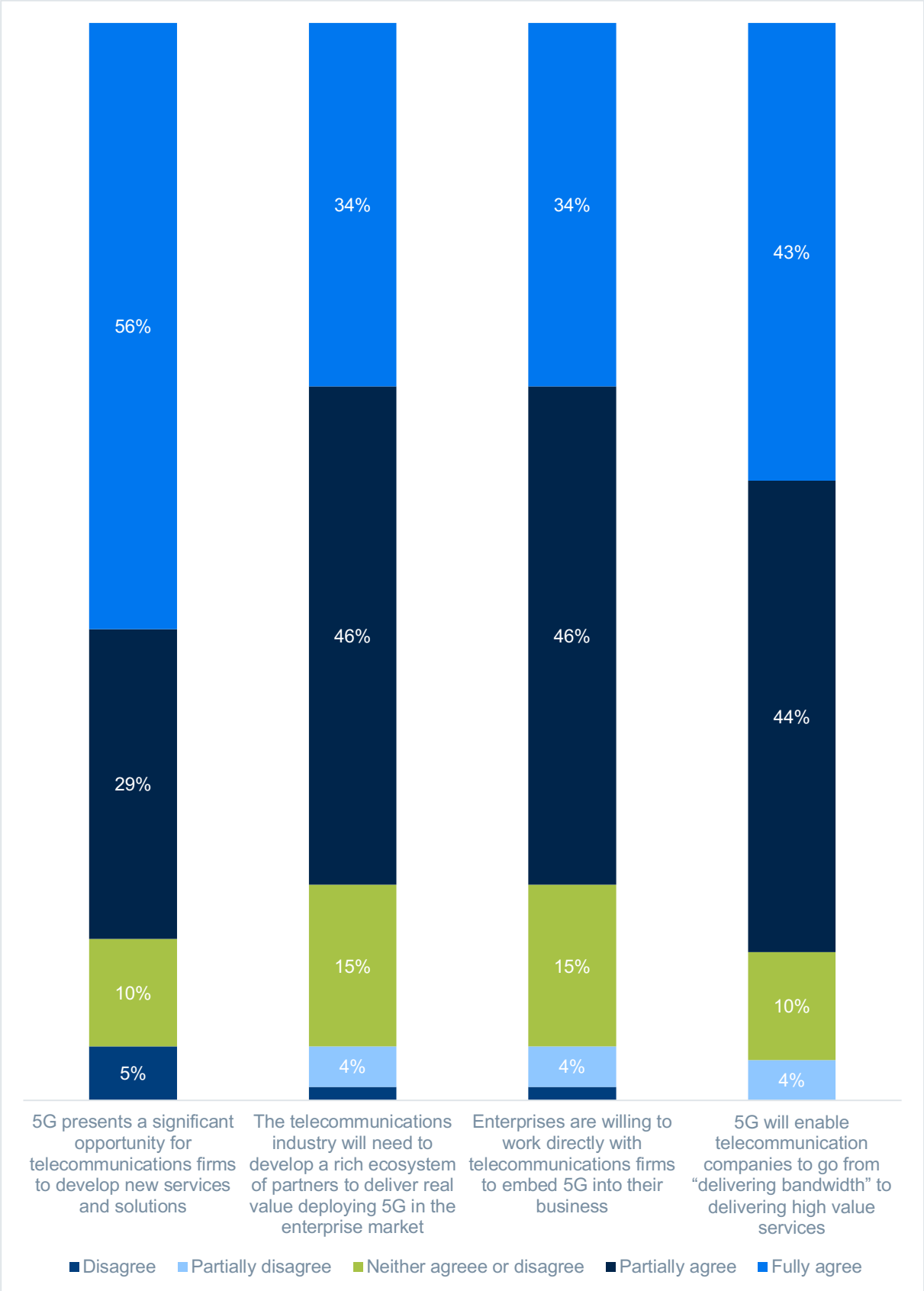
This market evolution could herald a new era for the enterprise-focused telecommunications market, in which many of the leading firms have already developed business-oriented solutions that touch on other areas of the value chain, such as cloud and IT managed services. By leveraging their reputation as a trusted party in the 5G space, and the confirmed willingness of enterprises to engage with them directly, telcos could push much further along the enterprise value chain and build-out much broader service offerings.

For enterprises, this means the market will become more competitive and potentially more complex, as Telecommunication firms and their partners overlap to varying degrees across the growing range of services that build up the 5G market.

85%

believe 5G presents a significant opportunity to develop new services and solutions

Exhibit 27: To what extent do you agree with the following statements?



Source: N=80 Telecommunications Executives

UNDERSTANDING SECTOR MATURITY IS KEY TO GO-TO-MARKET SUCCESS

In this rapidly evolving market, developing a solid sector strategy is critical to the success of 5G service delivery. Based on data gathered in the previous sections of this report, we can build a relatively clear picture of the 5G readiness and strategic maturity of many of the largest sectors that make up the enterprise market.

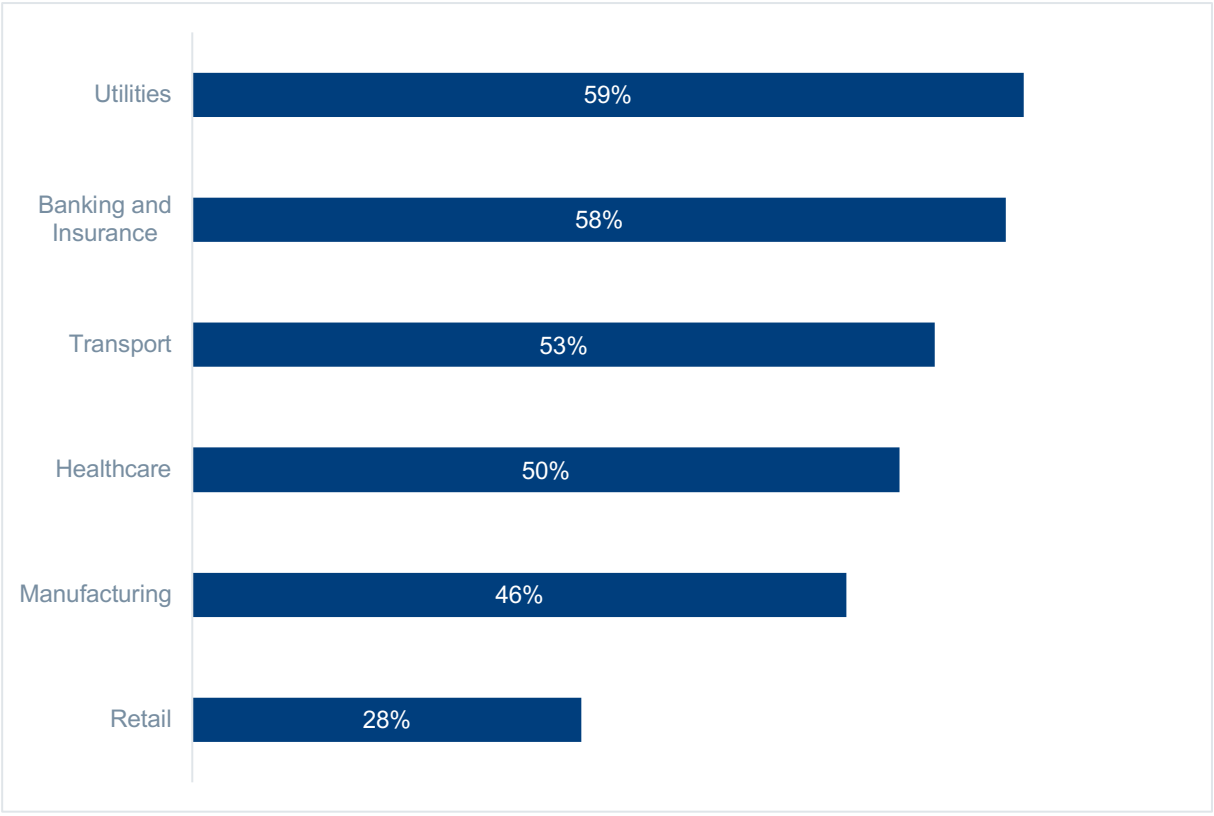
As a rule of thumb, the sectors with the most mature strategies and the clearest picture of demand are Banking and Insurance, Retail, and Manufacturing. With the least mature sectors comprising Healthcare, Transport, and Utilities. At least in the short term, as the other sectors catch up, the prime targets must be the most mature. However, except for the Banking sector – which is rated highly as a high-consumer of 5G services – many of the most mature sectors are perceived as low potential consumers of 5G services.

In comparison, the sectors that are the least mature in terms of strategy and approach are perceived as the greatest opportunity by telecommunication firms. Half of the respondents, for example, believe the Healthcare sector presents a considerable opportunity for Telecommunications firms. Yet, none of the respondents to this study have a clear strategy for 5G in the Healthcare sector.

59%

of telcos believe the utilities industry is the most likely to be the strongest consumers of enterprise 5G.

Exhibit 28: Which industries do you believe are likely to be the strongest consumers of enterprise 5G?



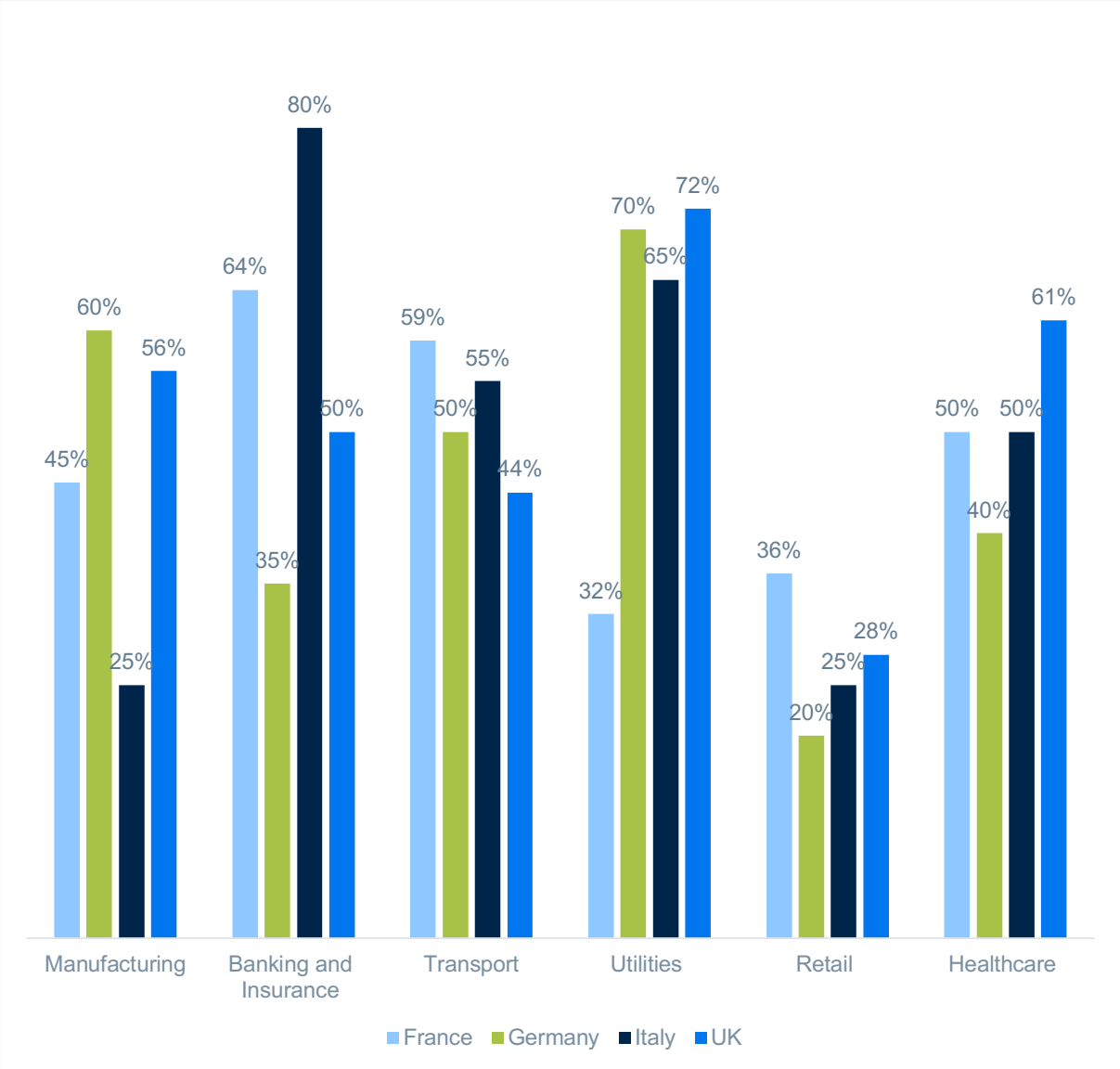
Source: N=80 Telecommunications Executives

SECTOR TARGETS VARY CONSIDERABLY BY REGION

This disconnect is not universal across Europe. Telcos from Italy are the most focused on the BFSI space, which is a sensible target based on maturity. The UK sector is particularly keen on the prospects presented by the Utilities space – a sector at the center of considerable political scrutiny and potential investment.

In Germany, the focus is pulled mainly in the direction of Manufacturing – which makes up a significant chunk of the nation's GDP relative to other studied regions. Meanwhile, in France, the BFSI and Transport sectors are perceived as the largest potential consumers of 5G Services.

Exhibit 29: Which industries do you believe are likely to be the strongest consumers of enterprise 5G? (by vertical)



Source: N=80 Telecommunications Executives

OVERALL, TELECOMMUNICATIONS FIRMS ARE OPTIMISTIC ABOUT THEIR ABILITIES

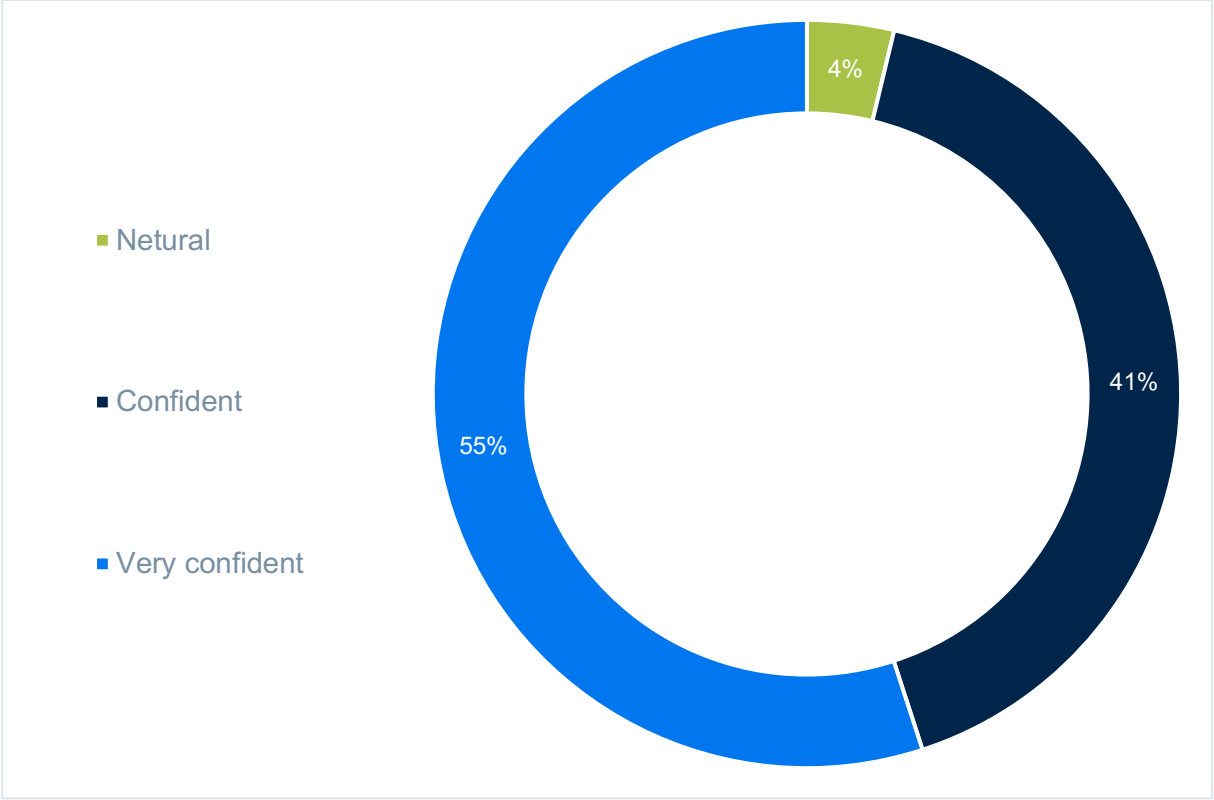
Crucially, despite a complex and rapidly evolving market, Telecommunications firms believe they can deliver 5G services and solutions at scale to enterprise clients. Only a slim minority of respondents strayed from the broader confidence in the market, with over half of respondents voicing the highest confidence level with their ability to meet market demand.

Market demand for 5G services will be considerable, with many enterprises already building out roadmaps that will see them implement solutions in as little as six months from the time of writing this report. Telcos and their partner ecosystems will need to ramp up delivery capabilities rapidly over the coming months or risk holding back ambitious enterprise plans to meet this demand.

55%

of telcos are very confident in their ability to deliver 5G services and solutions to enterprises within the next 24 months

Exhibit 30: How confident are you that your company will be able to deliver 5G services and solutions at enterprise scale within the next two years?



Source: N=80 Telecommunications Executives

OVER THE NEXT 24 MONTHS, WE CAN EXPECT THE ENTERPRISE 5G MARKET TO EVOLVE TO MEET CRITICAL BUSINESS NEEDS

It's something of an understatement to say the following 24 months will be critical for the enterprise 5G market. We've highlighted several areas of concern – such as the too-close-for-comfort alignment of Telco and enterprise implementation strategies and the limited focus on mature industries. But there is also much to be optimistic about.

Enterprise leaders are united in their optimism for the impact of 5G on their business. And while there are certain obstacles to overcome, the anticipated opportunities to improve services, reduce costs, and boost revenues will more than make up for them. Many have robust strategies in place and a coherent view of the technology's capabilities. And even the least mature industries are actively experimenting with capability as they evolve their long-term plan for 5G.

On the other hand, Telecommunications firms enjoy the best reputation amongst buy-side executives, and in most cases, have aligned internal investment priorities with the most keenly anticipated capabilities. Indeed, for many, the emergence of enterprise 5G as a critical business capability could see them develop higher-value services beyond traditional propositions.

However, before either side can reap the real rewards from 5G, there is a great deal to be done. All verticals acknowledge the need to transform their technology estate in lockstep with the implementation of new digital technologies. Historically, transformation programs of this depth and scale absorb considerable time and resources – far beyond the two-year timelines many respondents to this study describe.

The process will be iterative for many industries as they build out new solutions to solve specific business challenges. But for others, particularly the Telecom space, more aggressive transformation roadmaps must be drawn up.

Enterprise demand for 5G is set to ramp up exponentially over the next two years. And while Telecom executives are optimistic about their ability to deliver, there is no doubt that they will need to ramp up capability aggressively to meet this evolving demand.

APPENDIX: TELECOM

- **The Telecom sector has high optimism** for the future of 5G, with 94% of Telecom respondents expecting 5G to transform the industry they operate in for the better.

- **Perhaps unsurprisingly,** the sector expects networking and communications technologies to see the most significant impact and think Research and Development business units will see the most change.

- **The level of preparedness varies** considerably, but the sector is one of the most mature; 35% have a clear plan, and 46% are experimenting.

- **The sector is aggressively pursuing revenue generation targets,** with 63% of respondents advising this is how they will measure success. A smaller proportion, 54%, are building KPIs around service improvement.

- **…But, the sector is one of the most conservative** around potential revenue generation opportunities; 59% expect to make less than 10% in additional revenue over five years.

- **To deliver this additional revenue,** 39% plan to generate it by directly providing 5G services, while 64% expect to generate revenue by expanding their customer base.

- **The CIO is still king** in the Telecom sector; for 94%, the CIO is the key decision-maker.

- **As far as obstacles are concerned**, 43% believe data management will be their biggest obstacle, while 35% are concerned about regulatory and compliance issues.

APPENDIX: BANKING AND INSURANCE

- **The BFSI sector eagerly anticipates 5G technologies,** with 87% of respondents expecting 5G to transform the industry they operate in for the better and 91% expecting it to open up new opportunities

- **More than half of BFSI** enterprises think Automation, AI, Business applications, and networking and communications will be significantly impacted

- **Leaders in the sector** expect back-office functions to see the most change, with more than half expecting a significant impact on business units

- **The sector is one of the most mature,** with 52% advising they have a clear strategy for integrating the technology and 35% exploring the value it brings alongside other investments

- **As far as measuring success is concerned,** 61% have revenue generation targets, and 45% expect to implement KPIs to track service improvements

- **The sector is split on how much revenue can be generated from the technology -** 60% anticipate revenue generation below 10%, but 9% plan for over 20%.

- **The sector has diverse plans for revenue generation,** with a particular focus on extending its customer base by expanding operations and digitizing products

- **The CIO is king, but 70% will have executives in the room,** and the BFSI sector is the most likely sector to include sales and marketing leaders

APPENDIX: HEALTHCARE

- **The perception of 5G in the healthcare sector is somewhat mixed.** 90% think it will transform their industry for the better, but 60% believe it will also bring significant challenges

- **The sector expects networking and communications technologies** to see the most impact, but automation and data analytics technologies will also see considerable change.

- **By business unit,** R&D (85%) business units will be impacted the most, followed by front office functions (75%)

- **Plans for measuring success across the sector are mixed.** 55% have a revenue generation target, but a quarter have no defined criteria at all

- **Nevertheless, those who plan to generate revenue have grand ambitions** - 30% expect to generate over 10%, and 45% expect to generate between 5 and 10%

- **To generate revenue,** 75% plan to reach new customers by extending operations, and 60% will use data to deliver new customers experiences

- **Like all sectors, decision-making is IT-led,** but the healthcare sector is the most likely to bring in HR leaders and facilities leaders with 30% and 20% respectively advising they will join IT and business executives in decision making.

- **40% think data management will be the biggest obstacle,** followed by 35% of respondents who are concerned about regulatory and compliance issues

APPENDIX: MANUFACTURING

- **The Manufacturing sector is the most focused on the bottom line** when it comes to the value 5G brings to their business, with 75% expecting it to present an opportunity to reduce costs and boost revenues

- **The sector expects core IT infrastructure and Industry 4.0 technologies to see the most impact –** with 50% and 65% respectively expecting to see significant change to these technologies. In terms of business unit, 80% expect supply chain and logistics to see the most impact, followed by 70% anticipating disruption to production facilities.

- **45% of manufacturers have a clear strategy,** but a quarter are unclear on the direction of their 5G strategy

- **In terms of measuring success,** 45% have a revenue generation target, and an equal number have plans to measure success through cost reduction

- **The sector is the most conservative** as far as revenue generation figures are concerned – 70% expect less than 10% revenue

- **To generate revenue,** 45% will expand operations to reach new customers and leverage data to deliver new customer experiences

- **The sector is the least likely of any industry to involve stakeholders outside of IT and the C-Suite,** with very little decentralized decision-making

- **The sector has a broad spread of anticipated challenges,** particularly talent shortages, maturity of solutions on the market, and uncertainty around the true benefits of the technology

APPENDIX: RETAIL

- **The retail sector is one of the most optimistic,** with 90% expecting 5G to open new opportunities for them and 95% viewing it as an opportunity to boost revenues

- **85% think 5G will impact data management and analytics the most,** alongside core business applications – marketing and sales will be the hardest hit business unit

- **The sector is pursuing the topic aggressively,** with 55% of retailers working from a clear strategy and 30% exploring the value

- **Revenue generation is critical to the sector' success criteria;** 85% have a revenue generation target – the highest out of all the sectors

- **The sector also has one of the more ambitious revenue growth targets** – with 90% of firms anticipating revenue generation between 5 and 20% over five years

- **To generate revenue,** 75% plan to expand their customer base by extending operations, and 60% will generate revenue by digitizing products

- **Enterprises in the sector are keen to bring sales and marketing leaders into the room (20%).** All respondents advise business executives and the CIO's office will be critical to decision making.

- **The biggest challenge for the retail sector by far is the maturity of solutions on the market** – with 55% of respondents advising this is an obstacle for them, with half of respondents concerned about compliance issues

APPENDIX: TRANSPORT

- **Like many sectors, the Transport sector is optimistic** about the technology, with 90% believing it heralds new opportunities, and a similar proportion expecting the technology to bring new revenue streams. However, 75% expect significant challenges.

- **The Transport sector expects 5G to significantly impact data management technologies** and core infrastructure, alongside new technologies such as IoT and Edge computing. Respondents believe supply chain and logistics functions will see the most change.

- **The Transport sector is the most uncertain as far as strategic direction is concerned –** 30% of enterprises in the industry are unsure on future direction, and 5% are looking for external help

- **The sector is also the least likely to have any criteria for measuring success,** with 35% of respondents advising they have no fixed criteria

- **The sector is one of the most conservative** – 65% anticipate less than 10% revenue growth, of which around half expect less than 5%

- **Of those that plan to generate revenue,** 50% Plan to do so by reaching new customers and extending operations, followed by 35% planning to leveraging data to build new services

- **The sector is the most likely to bring in more stakeholders –** around 20% expect to bring in HR, Sales, Facilities, and operations managers. The industry is also the least likely to involve business executives

- **Legacy technology is the biggest issue for the sector,** with 45% of respondents concerned about legacy

APPENDIX: UTILITIES

- **The utilities sector is one of the most optimistic –** 95% anticipate new opportunities and believe it will transform the industry for the better.

- **Enterprises in the industry expect sweeping change across technologies –** all expect to see an impact on automation and AI investments, and over 90% think core business applications will see an effect. R&D will be the hardest hit for now, but 75% expecting to see the impact spread across the front and back office

- **Strategic planning is mixed in the sector -** 35% have a plan, but 15% are unclear on their future direction

- **Just under half of respondents will measure success through revenue generation targets,** with a similar proportion planning to build KPIs based on service improvement

- **The sector has moderate expectations on revenue growth,** with 55% expecting to see revenue gains between 5 and 10% over five years

- **The majority, 70%, plan to generate revenue** by leveraging data to deliver new customer experiences and insight-driven services

- **Businesses in the sector are the most likely to involve operations managers (15%),** but the discussion is still heavily led by IT.

- **National infrastructure is the biggest issue for the sector –** followed by the maturity of solutions on the market

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