IoT Spotlight
Report 2020

Ready?

vodafone
business

2020 has been a challenging year and has made business take a step back and re-evaluate.

When we conducted the research for our IoT Spotlight in May 2020, in the midst of the COVID-19 pandemic, we wanted to understand how businesses were adapting during such an uncertain time.

What we found out was that 84% of the companies felt the Internet of Things (IoT) had ensured business continuity for them during the pandemic. It helped them to remain connected to their customers, suppliers and employees.

In fact, we see more and more businesses turning to IoT to help them grow stronger and adapt in the face of unforeseen events.

The ability to harness technology is a fundamental attribute of being a 'future ready' business. 'Future ready' is a term we coined in our recent report to denote those businesses who are well prepared to embrace what's ahead of them.

'Future ready' businesses have a positive attitude to change and are open to new technology. They actively plan for their technological futures and set detailed strategies. They keep up to date with emerging trends and, crucially, are able to adapt to new trends or challenges, making them quicker to market than their competitors.

The similarities with the findings in our IoT Spotlight are clear – 'future ready' equals IoT ready in many respects.

This year Vodafone Business achieved the key milestone of 100 million IoT connections worldwide. In our IoT Spotlight research we found that among those who have adopted IoT, their use of the technology is becoming much more sophisticated.

Businesses have moved on from simply trying to understand IoT to harnessing it to achieve their business goals. Leaders have realised that access to data and automated processes provide a pathway to digitalisation. With this shift comes higher efficiency, flexibility and differentiation.

But while IoT is more trusted and used than ever before, our research shows that there are still many organisations yet to really make the most of it. This may be due to a growing belief that IoT has to be part of a wider programme of change to be truly transformational.

To reap the benefits, leaders need to review and revitalise their business processes and ways of working.

For those ready to embrace the opportunity and become a 'future ready' business, the reward will be worth the effort.

For our 2020 IoT Spotlight, we surveyed 1,639 businesses globally. In this report, we delve into how business leaders are using IoT, how it's helping them be 'future ready' and what's next for IoT.

Erik Brenneis,
Internet of Things Director,
Vodafone Business

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Executive Summary

To celebrate 100 million IoT connections we decided to take a fresh look at the industry. This year, our study looks at the way IoT is transforming businesses and the products they sell, particularly those who have had their digital capabilities put to the test because of COVID-19.

The IoT Spotlight is an independent study conducted by Savanta*, which surveyed 1,639 businesses globally. We asked business leaders about how they're using IoT and how it's helping them be 'future ready'.

We found that:

IoT is key to improving business performance

IoT continues to generate real business value with 95% of respondents seeing a positive return on investment. The benefits of IoT fall into two main areas; improving operational efficiency and creating new connected products and services.

During the COVID-19 crisis, IoT has made the difference

We conducted our survey at the height of the pandemic and 84% of IoT adopters felt that IoT was a key factor in maintaining business continuity throughout the period. While this meant some projects had to be paused and resources reprioritised, the crisis prompted 73% of IoT users to accelerate the pace of adoption.

Data is the key to future readiness

86% of respondents said IoT has changed the way they approach analytics and the value of data and 87% agree their core business strategy has changed for the better as a result of adopting IoT.

IoT enables new ways of working and those embracing IoT believe that the benefits clearly outweigh the risks

Our survey found that 73% of adopters are confident that companies that have failed to embrace IoT within five years will have fallen behind, meaning IoT can create sustainable, long-term, competitive advantage.

In summary

1
IoT adoption remains strong

2
IoT is at the core of digitalisation

3
IoT enables the future ready business

This year, IoT has been critical to businesses and has made the difference for adopters, widening the gap even further between those who have implemented this technology and those who haven't. Despite the challenges of 2020, businesses are confident that IoT will play a key role in the future success of their business.

1 Why IoT adoption is growing

Chapter 1: Why IoT adoption is growing

This year's research has shown that the strong adoption of IoT is continuing, despite the challenges of the COVID-19 pandemic.
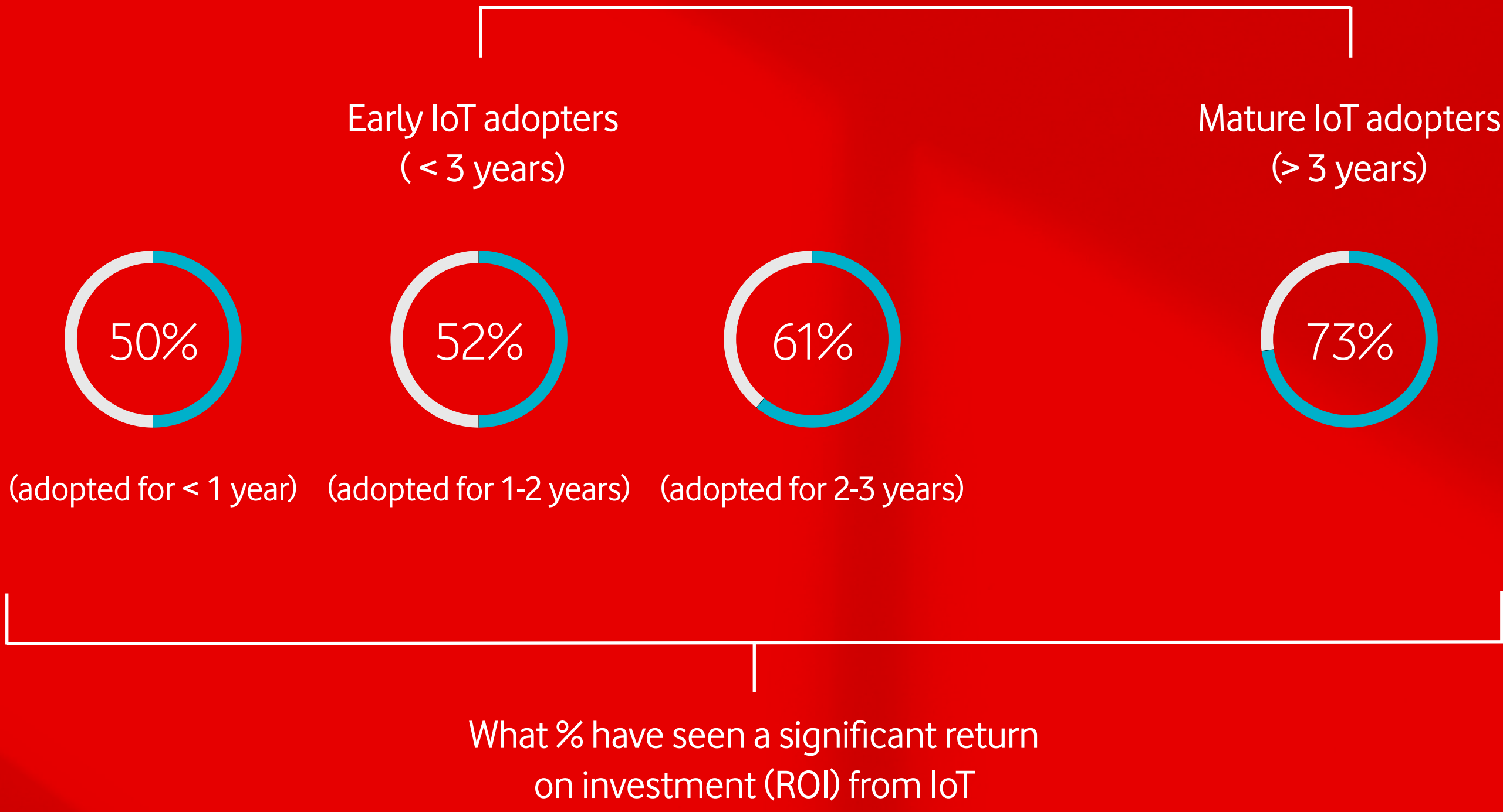
IoT continues to generate value and return on investment with 61% saying that these returns are significant. The benefits of IoT fall into two main areas: improving operational efficiency and creating new connected products and services.

Half of respondents (50%) describe improved employee productivity as a key benefit of IoT deployments, while 42% define asset uptime (consistency and reliability) as a core advantage.

More than a third of adopters have been able to innovate their offerings through IoT. Some 34% have seen IoT directly generate new revenue streams, and 34% have seen existing revenue streams increase by an average of 24%. Collectively, 82% have seen a rise in revenue as well as in market share (81%) since adopting IoT.

Strikingly, IoT has enabled over half (55%) of businesses to decrease their operating costs by an average of 21%. As a result, 39% of all adopters say IoT allows for greater flexibility when supporting their customers.

As a result, both early adopters (those who have deployed IoT for less than 3 years) and mature adopters (those who have deployed for more than three years) have seen significant returns on their investments.

Early IoT adopters
(< 3 years)

Mature IoT adopters
(> 3 years)

50%

52%

61%

73%

(adopted for < 1 year)   (adopted for 1-2 years)   (adopted for 2-3 years)

What % have seen a significant return
on investment (ROI) from IoT

Organisations that have implemented the technology are already reaping the benefits, with 84% saying they are able to do things they couldn't do before as they digitalise their business. They are not just using it to measure, monitor or track things. They are redesigning their business around IoT to release value across the entire organisation.

In fact, 87% said that the changes they've made to their core strategy due to IoT are for the better, and 87% say IoT is now critical for their future success.

Boosting operational efficiency

One fashion retailer uses IoT to monitor its entire supply chain from manufacturing to the store. This has improved production quality and ensures that distribution matches demand across their retail outlets.

"We needed to build a monitoring system that could help minimise the error rate in our production process," explains the IT director of the company. "We also realised some of our competitors had already applied IoT to their supply chain management and product transportation to enhance their efficiency."

The goal of the retailer's deployment was to refine the overall customer experience through improved product quality and availability.

To do this, products were fitted with RFID chips, enabling them to be scanned and tracked. Using IoT, the scanned data automatically updates the manufacturing and supply systems for tracking and analysis in real time. Any issues detected in the product quality are now flagged before the product leaves the building.

"We can now be sure that all of our products will be manufactured and distributed correctly," explains the retailer. "Our warehouses can easily check for any discrepancies between their records and ours, so they can help implement remedial action instantly."

One of the major improvements the company has seen is the reduction in the time it takes to transmit data, which has had a knock-on effect in other areas. "Before using IoT, our warehouse needed two whole days to produce and deliver its stock data to us. Now, the time has been reduced to under two hours."

With a clear return on investment, the retailer is continuing to deploy this technology within its operations. Not only does it help improve efficiency and reduce waste, but it also helps the business evolve their digital strategy.

> "
>
> **Before using IoT, our warehouse needed two whole days to produce and deliver its stock data to us. Now, the time has been reduced to under two hours."**
>
> IT director, fashion retailer

Creating new revenue streams

A lighting company based in the US decided to use IoT to create new value-added services around their core products.

Energy conservation is a key priority in the US and the company had been looking for ways to automate the measurement process and get greater insight into energy consumption.

By fitting IoT sensors in their light bulbs, they are now able to collect information such as light output, energy usage, and temperature.

This information helps the company to manage their own services better as well as allowing them to improve the customer experience and adapt to the changing market environments.

Previously decisions concerning the customer experience focused on intuition and guesswork, due to the lack of collected data.

"A lot of people in leadership are making guesses and not assertions," says the company's SVP of market development. "Thanks to IoT, we now have access to a pool of reliable data and can base our decisions on real quantitative information."

"It also means we're able to adjust quickly. Those that adapt rapidly will survive, so essentially IoT gives you a better chance of surviving," says the lighting company.

This means senior leadership can keep their finger on the pulse when it comes to unforeseen events, changes in customer demand or market regulations. Simultaneously, they can offer a wider range of services, increasing revenue and competitiveness.

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>
> SVP market development, lighting company

Informing strategies through data

IoT not only provides operational automation and resilience but also generates the data to inform strategy. This allows companies to reimagine how they can compete and succeed in the future. 81% of respondents said they are now using IoT data to drive innovation and 84% are using it to achieve their sustainability goals. Businesses are using IoT data to help them innovate and transform into future ready businesses.

We found 86% of respondents said IoT has changed the way they approach analytics and the handling of data. By using IoT data in their strategic decision-making, businesses are able to plan for the future. They can also respond to unexpected changes more efficiently, with 39% saying they're able to serve customers more effectively and flexibly thanks to IoT.

Data is key in a fast moving world. It helps businesses understand what customers want and how best to minimise costs, eliminate wastage and make their supply chains run as smoothly as possible.

78% of businesses agree that data is critical and according to our recent Future Ready report, 88% of respondents say data is key to making the best commercial decisions.

Our survey shows that 82% want to do more with the IoT data they create. It's clear that businesses are keen to make the most of IoT and are exploring other areas where the technology can be used.

2

What is the impact of COVID-19 on IoT adoption?

Chapter 2: What is the impact of COVID-19 on IoT adoption?

Unsurprisingly, due to COVID-19, some businesses have decided to take a step back from their IoT projects due to local lockdowns and downturns in their sectors. Around 73% of adopters say they have had to delay projects, but that's only half the story.

In contrast, 81% of adopters say they are prioritising IoT higher than they did before, and 77% have accelerated the pace of some of their IoT projects as a result of the pandemic. A majority (84%) of IoT adopters — surveyed at the peak of the COVID-19 crisis — felt IoT has ensured business continuity and maintained operations throughout major disruption.

Financial (85%) and insurance (84%) businesses were most likely to accelerate their IoT projects. At the same time, the insurance sector (80%) was also the most likely to pause some projects, along with automotive (76%), financial services (75%) and retail, leisure and hospitality (75%).

The fact that the majority of the adopters have re-prioritised and even accelerated IoT plans indicates that most businesses are running multiple projects to make the most of the technology benefits. In this case, it's most likely that adopters have prioritised the projects that are most likely to overcome challenges brought by COVID-19.

Discovering new ways of working with IoT

The research shows clearly that organisations that have adopted IoT seem to have fared better during the COVID-19 situation than those that have not.

During this time, IoT has become vital for business resilience. Not only has it enabled some tasks to be automated and work to be carried out remotely, but it has also helped prioritise manual work to cope with reduced labour and protect those employees doing vital work. For example, energy providers can remotely check utility installations from a distance rather than going into the field themselves. It's unsurprising then that 77% have reconsidered their approach to IoT following their experiences this year.

In addition, as businesses enter the new normal, they are recognising that IoT provides them with the data they need to understand what the new normal looks like and to plan and act accordingly. IoT provides the gateway to build large, new data sets quickly and to gain vital insights to help organisations compete effectively whatever the new normal looks like.

IoT's role in remote working has risen in importance in this year's survey. 84% of adopters now view the integration of IoT devices and data with remote workers as a high priority. With remote working expected to be a key part of the new normal, we expect that adopters will increasingly use IoT to support this.

Monitoring operations remotely

An energy provider in Ireland that has been using IoT for three and a half years.

Many businesses have seen their use of IoT increase significantly this year. One of these businesses is an energy provider in Ireland, which has been using IoT solutions for the past three and a half years. "I feel that we've become more reliant on IoT solutions during COVID-19 because we couldn't have as many people in the field," states the company's IT manager.

Traditionally, a field engineer checks above ground utility installations regularly. However, since lockdown and social distancing measures have come into place, important check-ups haven't been possible.

This could have been catastrophic for the company and its customers. "It would have had a massive impact on the gas we're distributing

around the country," explains the energy provider. "So many of our big factories could have ground to a halt and there could have been a reduction in the amount of gas supplied to homes."

However, with IoT in place, above ground installations were monitored remotely and fed back to the team, which meant operations could continue as normal. This has strengthened the case for new IoT projects, which have increased by 40%-60% and attitudes towards IoT are now more positive. "It has given me more confidence in the IoT we're using," says the IT manager.

After seeing these positive results, the energy provider now rates their IoT solutions much higher than they did before COVID-19. This mirrors

a general change that has come through in our research, in terms of attitudes towards IoT during and after the immediate impact of the pandemic.

" It has given me more confidence in the IoT we're using"

IT manager, energy provider

Enabling remote working

A semiconductor manufacturer in Singapore has been using IoT to enable efficient remote working for their production engineers overseeing the manufacturing process.

When COVID-19 began to spread, the manufacturer wanted to protect employees while continuing essential services. Anyone that was able to work from home did so. This included production managers whose job is to analyse manufacturing data, meaning they needed to access the data securely and efficiently from home.

IoT made this possible, by connecting the assets and feeding the data into the systems for the production managers to monitor from home. "I can get data on the fly," says one production manager. "Nobody needs to go back and change or crunch data, it's not dependant on anyone. It means I can work effectively from home and keep the production lines running."

> "Nobody needs to go back and change or crunch data, it's not dependant on anyone. It means I can work effectively from home and keep the production lines running"

Production manager, semiconductor manufacturer

Understanding the new normal

87% of respondents currently say IoT is critical for the future success of their business. Interestingly, 77% say the pandemic has caused them to rethink their approach and use IoT to provide greater stability and adaptability in their operations.

One key driver for this is the demand for current data. COVID-19 has added a new dimension, as no one is sure whether the data gathered over the years will be relevant in the new, post –COVID world. IoT allows organisations to rapidly build and update their datasets to provide new and current insights into how the business is performing.

Returning to work

For many organisations, planning for how employees will return to the workplace and use the office safely is top of mind. To help manage this at Vodafone, we've developed an advanced IoT building management solution for use in our London headquarters.

"The V-Space solution allows us to manage occupancy in real-time and understand where people are and whether we are maintaining social distancing," says Richard Muraszko of Vodafone Group property. "V-Space also gathers data about energy use, air quality and desk occupancy, allowing us to manage the use of space and plan our real estate for the future."

The system uses IoT to connect anonymous motion sensors located at each desk. It also connects sensors in the energy and environment management devices. With 3D modelling, we can rapidly identify busy areas and ensure social distancing takes place.

Richard concludes by saying "V-Space will enable us to manage the return to work in a safe and controlled way. It provides us with the reporting and data that we require today and into the future. With IoT solutions, we can rapidly refresh the data sources we have used for the past 15 years to give us new insight. This allows us to plan for and adapt to the new ways of working."

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3 Creating the future ready business

Chapter 3: Creating the future ready business

The increased adoption of IoT is changing the way businesses operate, the way they invest, and how competitive they are. Importantly, almost two-thirds (63%) of businesses say IoT is completely changing their industry.

As companies continue their journey towards future readiness, they are seeing IoT as an essential component of the future workplace. Businesses are also recognising how powerful IoT can be when combined with other technologies. 78% said IoT should be thought of alongside other technologies such as analytics, artificial intelligence (AI), and cloud solutions.

A change of mind-set

Bringing together multiple technologies across different areas is likely to be an influential factor in shaping the future role of the Chief Information Officer (CIO) and the Chief Digital Officer (CDO). Some 59% of respondents believe the CDO will replace the CIO's role within five years, as the use of IoT data is key in digital transformation.

IoT is key to accessing the data that is vital to the decision-making processes in any business. And it's critical for it to be integrated across all operations.

This integration can take time as new structures are created, traditional processes are improved and employees and business leaders adopt new ways of working. While it may feel like an upheaval, our research suggests that business models are evolving in this direction. This change will really help businesses become future ready.

Currently, 84% of adopters say they are confident IoT data will be key to decision-making. The majority (77%) of adopters also believe that IoT will become such a focus that companies will begin listing their data resources on their balance sheet within five years, proving that data is a valuable business asset. And to harvest the most valuable information, adopters are developing their own dedicated IoT applications (85%).

Having an open mindset to IoT is key to realising its full potential and creating a future ready business. This is where IoT acts as a tool for problem solving and innovating, rather than just a technology running independently in the background.

With this mindset, adopters of IoT see it as a catalyst for change — a technology that gives them both immediate operational insight and shapes the strategy to create a leaner, more efficient and differentiated business.

The key to unlocking data's potential

Being future ready means being informed and able to react fast and fluidly in any situation. To achieve this, data and insight are key. There is no better way to access the data and generate the insight than through IoT.

Big data improves the customer experience

Adopters are already becoming experts in how IoT data enhances the customer experience. "We want to improve the value we deliver to customers and look at where we can find the value-add," says a business development expert for a German manufacturer.

IoT enables the manufacturer to provide a higher level of service by being able to monitor the machine for faults and alert the customer when it needs servicing.

Manufacturers that understand the value of data are able to use IoT to improve digital processes and customer service. "It brings a mixture of internal and external value," says the manufacturer. "I would say there's a lot to be gained."

The manufacturer believes the industry is starting to realise how far it can go when it adopts technologies such as IoT. This means embedding it into the ways of working is only a matter of time for many businesses.

> " **IoT brings a mixture of internal and external value."**
>
> Business development expert, manufacturer
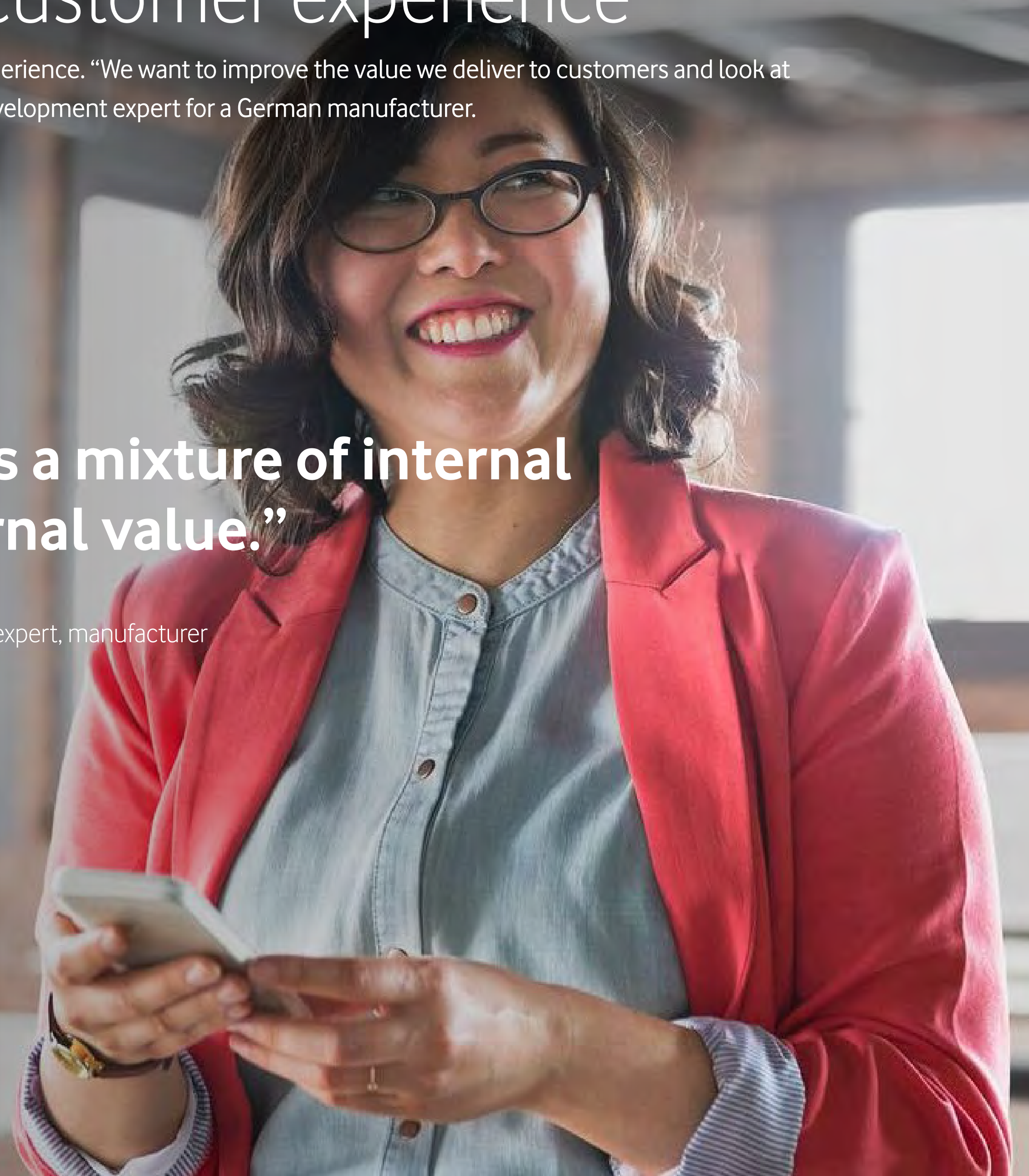
What about those waiting to adopt?

73% of adopters are confident that IoT has created sustainable, long-term competitive advantage.

While some may resist looking at their legacy operating models, it's crucial those reluctant to adopt have the resources and information to make more informed decisions and get ready for the future.

The pandemic has shown that IoT adopters were more flexible and better equipped to meet rapidly changing customer and market demands. In fact, 75% of respondents now prioritise IoT higher than they did before the pandemic.

However, some companies are hesitant as they perceive IoT as a relatively new technology and are waiting to see if it becomes an essential part of new ways of working for their specific business area.

Currently, the 'wait-and-see' approach is the biggest barrier to adoption, affecting 42% of businesses. This could be due to a lack of clarity around the advantages of implementing IoT. A third (33%) say they're still unsure how the technology will benefit their business.

Inevitably, it's always the early adopters who see the most success. In fact, 77% of adopters and considerers are confident they will pull ahead of those who don't embrace IoT within the next five years. So there's no excuse to wait — those with the confidence to make the leap will find they are more flexible, more agile, and better equipped to meet fast-changing customer and market needs.

How to manage security?

One of the other areas of concern for companies thinking of embarking on their IoT journey is cyber-security.

There is a perception that with a million connected products there are a million entry points for cyber-attacks. The reality is that hacking through the device in industrial IoT is rare, and IoT security is constantly evolving to deal with new threats.

As with any connected solution, security needs to be baked into the technology and the processes with regular upgrades and reviews being critical. This is shown in this year's research.

We found that 84% of respondents view security as a challenge to overcome rather than an obstacle to innovation. Businesses think the benefits of adopting IoT trump the challenges posed by cyber-security, with only 18% listing security concerns a barrier to IoT deployment.

In short, while security is vital, it's certainly not a hindrance.

In addition, almost two thirds (61%) claim the data they collect has no value to a hacker, while an even greater percentage (74%) say their concerns about IoT security are no greater than for any other new technology.

Adopters are also bolstering their defences against cyber criminals through specialist teams — 44% are recruiting IoT security specialists and 46% are actively training existing staff on IoT security.

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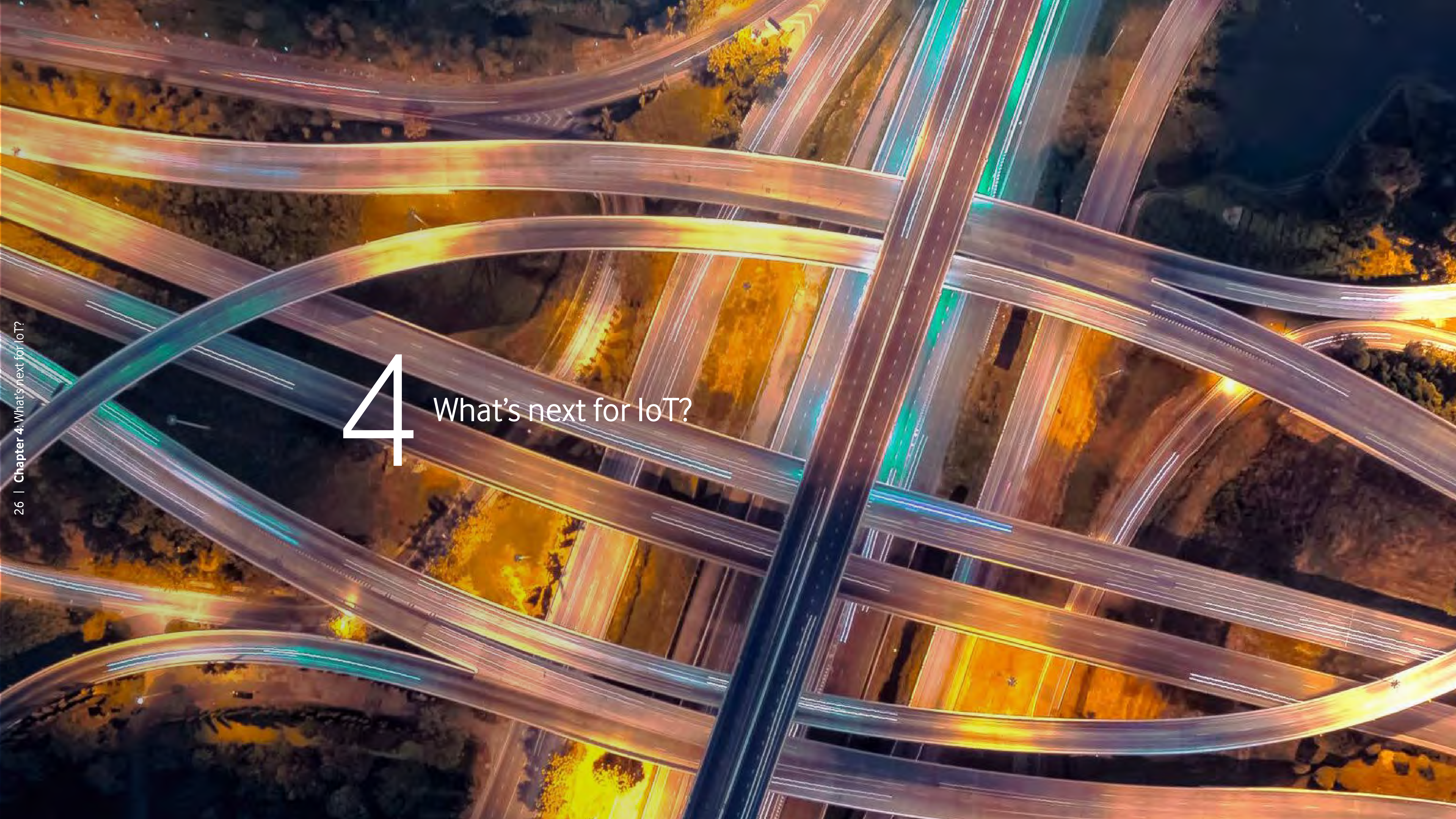
What's next for IoT?

Chapter 4: What's next for IoT?

IoT has the potential to change lives and business for the better — from enabling new, more sustainable services like electric car sharing to improving energy efficiency; from supporting remote healthcare to ensuring mission-critical services; and from video security to virtual reality.

As 5G brings a new dimension to IoT, the technology changes from simply monitoring and sensing to being able to take control in real-time. Technology like haptic and tactile sensing will help people 'feel' things remotely, which can benefit anything from remote surgery to handling delicate or dangerous materials.

Our research shows that the majority of respondents now see the immediate business and societal benefits of improved performance and efficiency because of IoT and have had their minds opened to the possibilities of new, connected services.

Efficiency everywhere

IoT touches many aspects of our society but because it usually operates in the background, its benefits aren't always noticeable. However, in the words of an engineer at a South African healthcare company, "It's already revolutionising how we do things."

For healthcare, access to IoT has meant doctors can accurately diagnose more patients faster. This is likely to benefit people in numerous ways as it develops. "Maybe our children won't even need to go to a doctor or hospital," says the healthcare provider. "It's really going to change our society as a whole." Making healthcare more accessible to many more people through remote telemedicine and even using robotics to help perform complex clinical procedures.

One area that the healthcare engineer believes will grow greatly is robotics, which is already beginning to be used not only for clinical health, but also to reduce the risk of infection. "I think we'll see a lot more use of automated robotics for cleaning and sanitising," says the healthcare provider. "For example, there could be robots that test people for COVID-19. I'm seeing a lot of investment going into this at the moment."

> " **Maybe our children won't even need to go to a doctor or hospital. It's really going to change our society as a whole**"
>
> Engineer, healthcare company

From monitoring to control

IoT will allow businesses to prevent or quickly react to issues. According to the director of an insurance company in the US, using IoT to react at speed means it will be a key enabler for safety. "There's just more and more data that's going to become available and be useful," says the director.

For the insurance sector, IoT monitoring and response capabilities are a game-changer. For example, if a pipe bursts in an empty building, the IoT sensor can automatically shut the pipe off and alert the owner and insurance company before irreparable damage has been done.

The insurer believes IoT safety monitoring will become even more effective once 5G shifts the technology capabilities from monitoring to control. "If you're in a warehouse, the IoT sensor can alert the forklift driver or even initiate evasive action automatically if there is a risk of harm to someone in the factory. This helps improve workplace safety and reduces the chance of claims," explains the insurer.

"The value of IoT comes when companies get the data and they can develop it into usable applications that enable them to detect and react. There's probably going to be an explosion of it," says the insurer.

> ❝ **The value of IoT comes when companies get the data and they can develop it into usable applications that enable them to detect and react.**"
>
> Director, insurance company

A simple approach to supply-chain tracking

The supply chain is the lifeblood of business: a golden thread that runs from suppliers all the way though to customers.
Yet despite their importance, they often lack visibility.

Modern supply chains are hugely complex, spanning multiple regions across the world. Shifting goods — especially perishables — is a huge challenge when the slightest change in condition can cause them to spoil.

Where are the goods? What's their condition? What temperature are they stored at? Business continuity depends on the answers to these questions. Yet until now, it has been difficult to monitor lower value shipments.

iSIM is the next generation of Subscriber Identify Module (SIM) technology. Importantly, it's enabled Bayer, with the help of partners including Vodafone Business, to develop a secure, one-of-a-kind 'smart label', bolstered by low-power mobile connectivity.

No thicker than a standard paper label, it contains a battery, microprocessor, modem, antenna, and the game-changing iSIM — all under its unassuming surface.

These smart labels can be mass produced and attached to goods in transit. Data from the labels can be monitored in real-time, immediately alerting businesses if the goods experience a sudden change in humidity, temperature drop, or if they are damaged.

iSIM-empowered smart labels enable automated, low-cost, global tracking for the first time. They help businesses save money, simplify tracking, and most importantly take full control of their supply chains — and it's all thanks to the power IoT.

5 A comparison of IoT adopters

Chapter 5: A comparison of IoT adopters

How are attitudes towards IoT changing as the benefits of adoption become more apparent:

🔴 **Early IoT adopters (less than three years)**

🔵 **Mature IoT adopters (more than three years)**
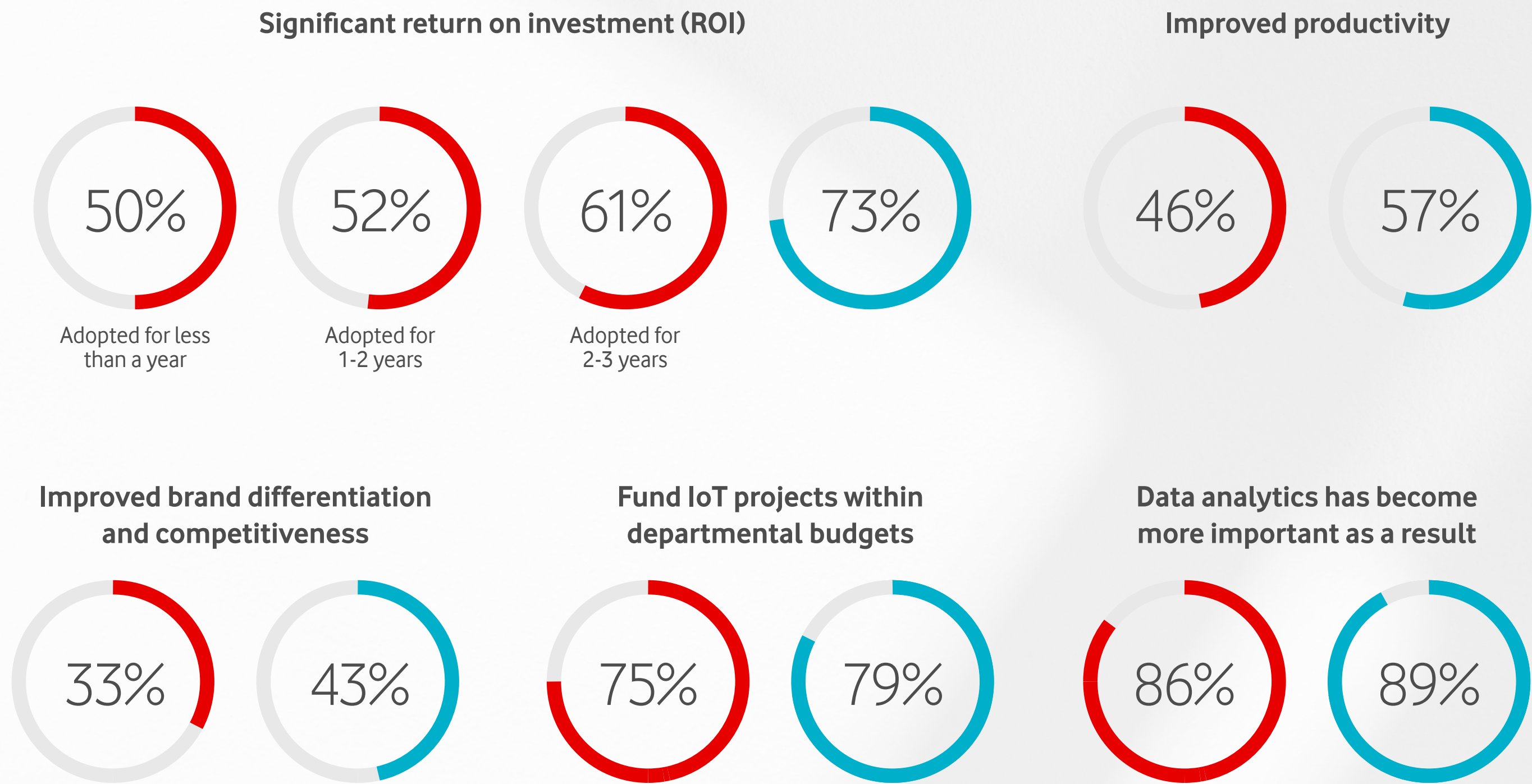
We can see how productivity gains and cost savings are ramping up over time by comparing businesses that have adopted IoT for three or more years with those who have adopted for less time.

We can also see the changes to how businesses approach IoT data, analytics and decision-making.

Significant return on investment (ROI)

50% — Adopted for less than a year

52% — Adopted for 1-2 years

61% — Adopted for 2-3 years

73%

Improved productivity

46%

57%

Improved brand differentiation and competitiveness

33%

43%

Fund IoT projects within departmental budgets

75%

79%

Data analytics has become more important as a result

86%

89%

About the IoT Spotlight

Vodafone's IoT Spotlight is a piece of global research that aims to understand the ongoing impact of IoT as it is adopted and deployed by businesses of all sizes around the world. The report investigates the relationship between the Internet of Things (IoT), business strategy, resiliency and success.

The research found that IoT is a key technology for improving business performance. Throughout the pandemic, IoT adopters say it was instrumental for maintaining business continuity through extremely difficult times. One of the benefits of IoT is that it enables ways of working that clearly outweigh the risks. And in an age where businesses need to become future ready, it'll be those early adopters who reap the biggest benefits.

Research was conducted across 13 markets, totalling 1,639 respondents in our 'adopter' (A) and 'considerer' (C) categories. The breakdown is as follows:

US (A:156 C:103), Brazil (A:71 C:48), Ireland (A:33 C:37), UK (A:56 C:49), Germany (A:67 C:62), Italy (A:62 C:50), Spain (A:66 C:59), South Africa (A:69 C:42), China (A:74 C:103),

South Korea (A: 53 C:53), Singapore (A: 66 C:46), India (A:77 C:39), Japan (A:65 C:31)

How to contact one of Vodafone's IoT experts

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