Vodafone M2M Barometer 2015

Detailed insight into how Machine-to-Machine
communications and the Internet of Things
are driving business transformation
around the world

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Foreword:
Taking the pulse of the connected world

Erik Brenneis

Director, Machine-to-Machine, Vodafone

This is the third edition of Vodafone's annual M2M Barometer. Since we first set out to survey the market, it has changed dramatically. Machine-to-Machine (M2M) communications is no longer a niche technical term; it's a driving force for innovation in our cities, homes, cars and workplaces, and its potential is being recognised by business leaders in every industry.

We created the Barometer to track how businesses were adopting this emerging technology: which regions and industries were pulling ahead, and how fast the market was growing.

But more and more businesses have turned to M2M and the Internet of Things (IoT) to help them achieve their goals, both as part of strategic M2M projects and as an integral part of the products and services they buy. As a result we are seeing more evidence of how M2M is transforming lives and business.

To reflect this growing maturity, the Barometer has evolved. We still report the level of adoption, but instead of just looking at what kinds of business are using M2M, we're investigating which businesses are using it effectively — and which approaches to M2M produce the strongest impact for them.

To answer these questions we have again conducted in-depth interviews around the world with more than 650 business and IT executives. This year we have supported our research with insights from leading M2M analyst company Analysys Mason.

Whether your business has been working with M2M for years or is engaged in pilots for the first time, we hope you find the Barometer valuable. We'd be interested to hear your comments. You can contact me and my team at **m2m@vodafone.com**.

Yours,

Erik Brenneis

Director, Machine-to-Machine, Vodafone

Contents

Executive summary

Our research proves that not only are organisations continuing to adopt M2M and extend it throughout their business — they're seeing powerful and measurable results. Here are our key findings, by the numbers.

M2M is a top priority for businesses

Compared to last year, more businesses have heard of M2M, more say that it's relevant to them, and more have an M2M project in place.

- 76% have heard of M2M, up from 61% in 2014.
- 90% say M2M is relevant to their organisation today, up from 86% in 2014.
- 27% have an M2M project in place, up from 22% in 2014. A further 37% say they have projects ready to go live within the next two years.
- Energy and utilities, automotive and retail lead adoption — as the chart below shows.

The use of M2M is evolving in many ways

Once organisations start using M2M, they evolve and expand how they use it, to support ongoing strategic business transformation.

- 81% of those that were using M2M in 2014 say they have increased their use of it since, and in many different ways — see the chart below.
- Businesses are using it in more advanced ways: 81% of adopters are using analytics on the M2M data they gather, up from 75% in 2014.
- 50% of M2M adopters say they're using it to enable new business and operating models.
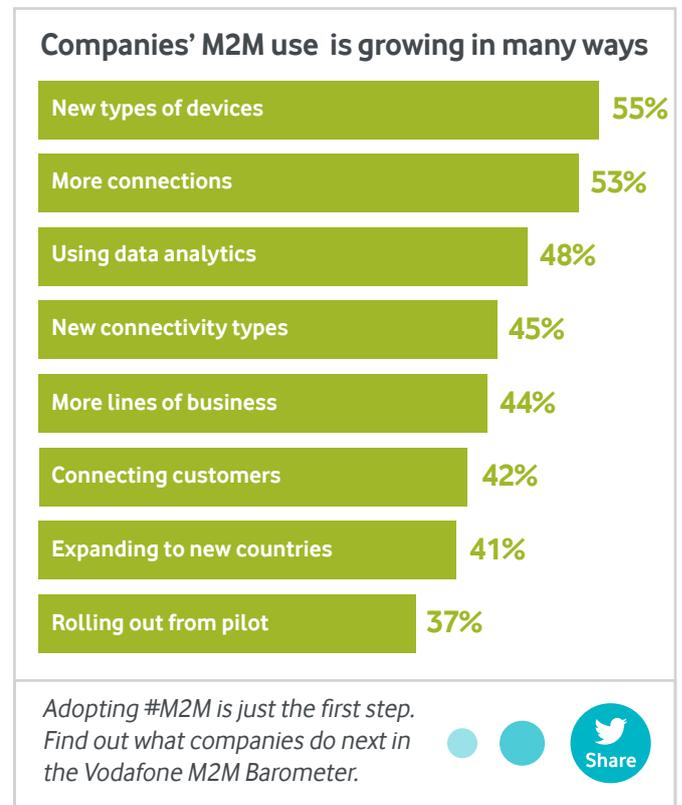
M2M adoption by industry, 2015

Industry	Adoption
Energy and utilities	37%
Automotive	32%
Retail	32%
Consumer electronics	29%
Healthcare and pharma	28%
Transport and logistics	19%
Manufacturing	17%

Which industries are leading #M2M adoption? Find out in the Vodafone M2M Barometer.

Share

Companies' M2M use is growing in many ways

Use	Percentage
New types of devices	55%
More connections	53%
Using data analytics	48%
New connectivity types	45%
More lines of business	44%
Connecting customers	42%
Expanding to new countries	41%
Rolling out from pilot	37%

Adopting #M2M is just the first step. Find out what companies do next in the Vodafone M2M Barometer.

Share

M2M delivers significant ROI, usually within 12 months

A large majority of organisations are reporting strong and transformative returns on their investment (ROI) in M2M initiatives.
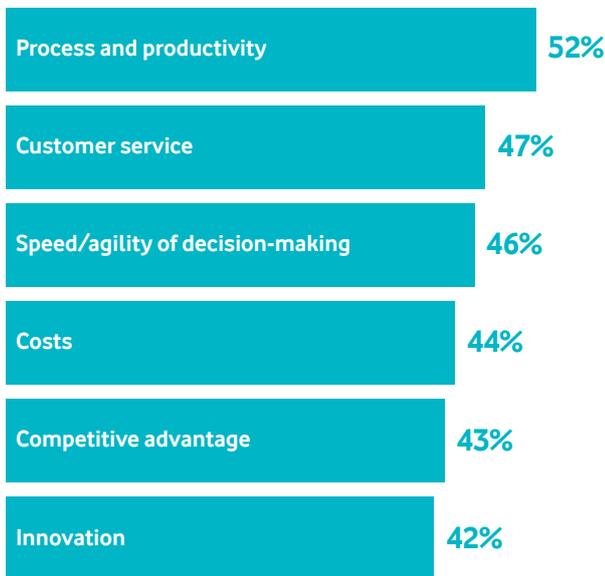
- 83% of adopters agree that they have gained competitive advantage from M2M; 38% agree "strongly".

- 59% of those using M2M say they've seen "significant" ROI, up from 46% last year.

- 54% of M2M adopters reported ROI within 12 months.

- Nearly 10% of M2M adopters have reduced their costs by over 25%. The average cost saving is 18%.

- Companies report a range of benefits from M2M — including those shown in the chart below.

Where have you seen benefits from M2M?

Process and productivity	**52%**
Customer service	**47%**
Speed/agility of decision-making	**46%**
Costs	**44%**
Competitive advantage	**43%**
Innovation	**42%**

Organisations are seeing a range of benefits from #M2M. Find out more in the Vodafone M2M Barometer.

Share

To find out more about the results businesses are seeing from M2M, see **Section 4** (page 19).

M2M projects involve the whole business

As M2M gains a higher profile and expands across business processes, its ownership and position within the organisation is likely to change.

- 79% agree that M2M is not about buying technology, but about improving business processes.

- The CIO leads projects in 36% of cases; the CEO leads in 16%. 63% report having multiple leaders involved.

- Only 46% of projects get charged to the IT budget. 28% of businesses already use risk/reward sharing models, and 29% charge the cost direct to the consumer — as shown in the chart below.

How are M2M projects funded?

From the IT budget	**46%**
By the departments benefiting from them	**42%**
They're a cost of doing business	**30%**
By the consumer	**29%**
Via risk/reward sharing with provider	**28%**
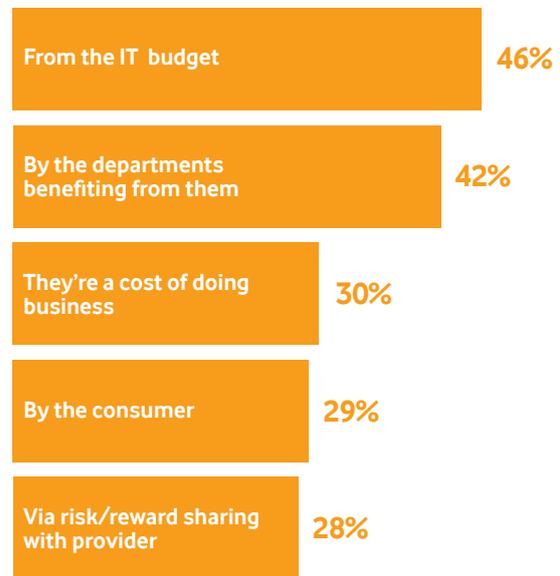
Companies are experimenting with #M2M business models. Find out more in the Vodafone M2M Barometer.

Share

To find out more about the role of M2M projects within the organisation, see **Section 7** (page 27).

The M2M Barometer is based on robust global research

We commissioned Circle Research, an independent market research firm, to interview businesses representing multiple sizes, industries and regions.
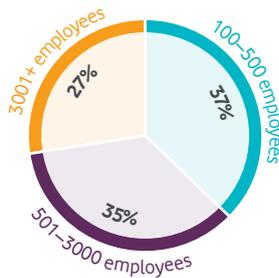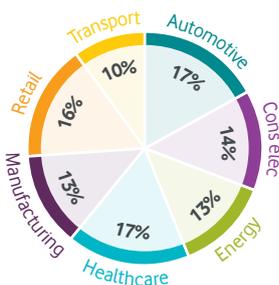
The Barometer has always been a global study of the views of business and IT leaders. As per last year, interviews were spread across seven of the major M2M-using industries. This year we expanded our reach by:

- Increasing the number of countries covered from 14 to 16. The countries represented are the US, Brazil, Germany, Italy, the Netherlands, Spain, the UK, Turkey, Australia, India, Japan, South Korea, China, South Africa, and, new for this year, Canada and New Zealand.

- Adding small to medium enterprises (SMEs). This year respondents come from companies with as few as 100 employees to more than 100,000; and include national, regional and global businesses.

- Increasing the number of interviews by 80%, to a total of 659.

The respondents represented IT, R&D, finance, strategy and planning functions. They ranged from senior management to board-level and were qualified as M2M decision-makers for their organisation.

The online interviews were conducted in March and April 2015, and were supported by in-depth qualitative discussions. We have drawn the quotations included in this report from these in-depth interviews. We have also included commentary from the M2M practice of respected consulting and research company, Analysys Mason.

Figure 1a: Respondents by company size

Figure 1b: Respondents by industry

	Americas	Europe	Africa, Middle East and Asia-Pacific
All interviews	277	234	259
Qualifying interviews	207 (75%)	224 (96%)	228 (88%)

Figure 1c: We surveyed businesses from all around the world

Awareness of M2M is high, and growing

Most businesses say they are familiar with the term "M2M", reflecting the fact that the technology is moving into the mainstream.

M2M goes by many names

M2M has always been known by many labels. Some of these relate to specific applications, with names and prefixes such as "smart" and "connected", as in smart metering or connected car. Others, such as "Internet of Things" (IoT) apply to a much broader (and often contested) space.

This variety of terminology is not holding back awareness. We asked about the most common terms, and found that most people have heard of both M2M and its alternatives, particularly IoT (see Figure 2). These numbers are significantly higher than we found last year — which, given the publicity around M2M and IoT in the business and consumer press, is understandable.

Businesses that have heard of M2M, 2014/2015

76%
heard of M2M

Up from 61% in 2014

78%
heard of IoT

Up from 53% in 2014
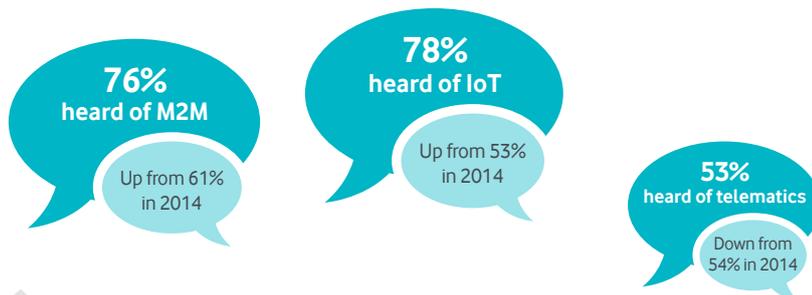
53%
heard of telematics

Down from 54% in 2014

Figure 2: Recognition of IoT has quickly surpassed that of M2M and telematics

"IoT" seems to be becoming the term of choice, and as well as it seeing the greatest growth in awareness across our sample, we found it to be even more dominant in the answers given by smaller organisations and by those who haven't yet adopted M2M. This perhaps reflects how IoT is being associated in the media with consumer applications, while M2M has a legacy of being linked with industrial and corporate applications.

Industry 4.0: M2M's industrial resurgence?

While the term "IoT" increasingly shows a pronounced consumer angle, M2M's heritage is in industrial sectors. Through sensors and communications, manufacturers have automated and streamlined their factory floors and their supply chains for decades.

Now, the industrial aspect of M2M is seeing resurgence. The German government coined the term "Industry 4.0" in 2011. The term refers to a fourth industrial revolution, built on smart factories, which now forms part of the country's high-tech strategy. Industry 4.0 includes many different technologies, from cloud and big data to collaboration solutions — in fact, the Boston Consulting Group describes "nine pillars" for Industry 4.0.[1] However, M2M forms a key part of it. Since then, others too have reasserted the industrial role of M2M. GE coined the term "the Industrial Internet", and Accenture talks of the "Industrial Internet of Things" (IIoT).

Our definition of M2M

In our survey, after asking about awareness of the various terms, we defined M2M to ensure that we can fairly compare the answers given during the survey.
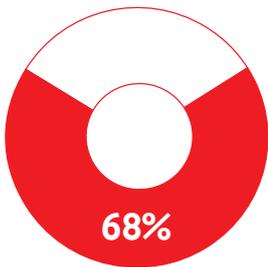
> Definition:
>
> **M2M connects machines, devices and objects to the internet, turning them into 'intelligent' assets that can communicate. M2M enables the Internet of Things.**

It's clear that there is significant overlap between M2M and IoT, and for many purposes it's possible to use the terms interchangeably without real confusion — nobody disputes that both terms are about connecting objects in the world to share data and communicate. But we see a qualitative difference between M2M and IoT.

M2M is primarily about remotely connecting an organisation's assets and machines; IoT is about all types of assets, machines and 'things' becoming connected together, to benefit a broader range of parties.

As M2M evolves into IoT, we see increasing:

- **Connectivity:** Organisations will use a wider range of network types to connect a wider range of "smart" assets and products. Highly customised solutions will be complemented by more standardised and off-the-shelf solutions that function at scale.

- **Data gathering:** More data will be gathered for analysis, and it will be shared beyond functional silos, and beyond the organisation's four walls.

- **Sharing:** Projects will not just deliver value within departments, but span whole ecosystems of companies across multiple industries and multiple regions. Solutions will be delivered direct to consumers, not just corporates — for instance, wearables.

M2M matters

We found that most businesses think they know what M2M is... but do they care about it? The answer is a resounding "yes".

We asked whether M2M products and services are relevant to their organisation today: 90% agreed, up from 86% in last year's survey.

68%

68% of businesses say that M2M adoption has reached a tipping point.

The analyst view: M2M vs IoT

"M2M and IoT continue to be used interchangeably on both the demand and supply side of the industry. M2M typically refers to the connectivity that enables two or more machines or things to communicate with each other.

The IoT industry is nascent and its boundaries and structures are still evolving — and, as a result, so is its definition. IoT is often closely associated with the consumer market and consumer devices, and IoT certainly takes into account the human interaction with the data generated by devices in a connected environment. However, IoT is just as relevant, if not more so, in the enterprise domain as it is in the consumer environment."

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M2M adoption continues to grow

The Barometer's mission has always been to report the impact that M2M is having on business — and the foundation for that is to measure how many businesses are actually using it.

More than a quarter of businesses have adopted M2M

Here's the headline: 27% of businesses say they have M2M projects in place today, up from 22% last year (see Figure 3). This is a significant year-on-year growth of 23%, which far outpaces both the growth rate of the IT market as a whole (which some reports suggest has declined year-on-year[2]), and of the global economy.[3]

A further 37% of organisations say they have their first M2M projects targeted to go live by 2017. While the nature of complex technology projects means this is unlikely to translate directly into adoption figures over the next two years, we still see a very healthy pipeline for growth.

> "M2M is now being considered as a key component in our wider strategy."
>
> Retailer, AMEAP

Adoption of M2M, 2013–2015

Plan to have an M2M solution in place within two years

39%   33%   37%

Have at least one M2M solution in place

12%   22%   27%

2013   2014   2015
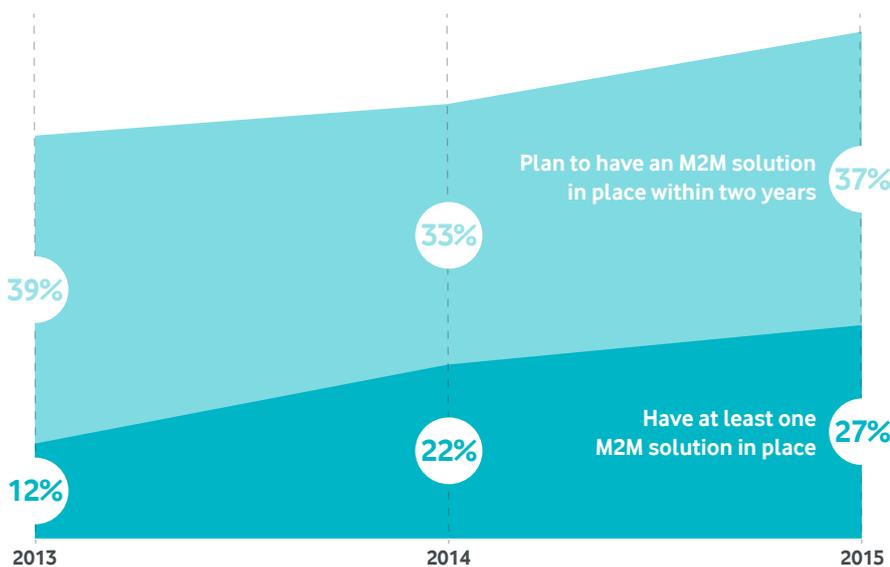
Figure 3: Current M2M adoption is 27%, with 37% more saying they'll adopt within two years

The analyst view: adoption is growing broader

"M2M adoption continues to grow at a significant pace. Awareness of the benefits of M2M has grown across various sectors since its inception over a decade ago, and segments such as smart metering and fleet management have been at the forefront of that growth. We are now entering a new era or phase of adoption in which M2M will be adopted in a broader range of industry verticals. This is partly driven by supply-side factors that have aligned to lower the barriers to entry."

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There are different kinds of adoption

Our headline adoption figure is based on business and IT leaders stating they "have already implemented M2M projects". Those "M2M projects" — with defined goals, owners and budgets — are the ones we're really interested in, because they reshape businesses and produce measured outcomes.

But in M2M, there is another kind of adoption that we need to recognise. Businesses may start using M2M outside of formal, strategic business projects: we call this "shadow" adoption.

Just like other "consumerised" technologies, such as mobile devices and cloud, many kinds of M2M are being brought into organisations by individual employees and as part of other activities, without a formal corporate mandate.

Shadow adoption in action

A healthcare organisation is adding new models to its fleet of company cars, as it does every year. The fleet manager doesn't necessarily engage the IT department or treat the purchase as part of a formal, planned "M2M project" — which is how a new mHealth initiative at a corporate level would be approached. But the vehicles could be M2M-connected, with stolen vehicle recovery and usage-based insurance built in. And these features might actually have factored highly in the fleet manager's purchase decision.

In both cases, the company is "using" M2M and probably seeing benefits from it, but there is a distinct difference in intent, approach, visibility, and the contribution that M2M makes to achieving defined business goals.

As M2M finds its way into more and more products and services that businesses and their employees buy every day, we'll find this shadow adoption will continue to grow. Whether it complements or threatens planned initiatives from the CEO or CIO will depend more than anything on the organisation and its cultural attitude to innovation and integrating new technology.

The analyst view: **how SMEs are using M2M**

"SMEs adopt M2M for the same reasons as their larger competitors — to decrease costs, increase productivity and gain competitive advantage. Startups in some industries may structure their business processes to take advantage of connectivity from inception to gain a competitive advantage over larger, less agile firms. But other SMEs are not as technologically savvy, and may have neither an IT department nor the capability to take on significant ICT projects. Pre-configured off-the-shelf, plug-and-play solutions are opening up the capabilities of M2M to this kind of organisation."

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Smaller organisations use M2M too

It's easy to generalise about organisation size when it comes to technology adoption. Some argue that small organisations are agile, unencumbered by bureaucracy and legacy technology. Others say that because large organisations have more in-house IT expertise and capital, they are better able to innovate. This year we broadened our survey to include organisations as small as 100 employees so that we could investigate this issue.

While we found that larger organisations are more likely to be using M2M, the difference is not dramatic: around 24% of the smaller SMEs in our research (100–249 employees) use M2M, compared to 35% of organisations with over 50,000 employees.

M2M is enabling SMEs to compete with corporates

Technology has always helped break the link between employee headcount and the amount of work that a business can perform.

Now, thanks to cloud, some highly leveraged tech companies might serve millions of customers with a handful of employees. And M2M is having a similar effect: by automating processes using connected devices, businesses can make their employee headcount go much further. For example, car-sharing service DriveNow is an SME, yet it has more than 460,000 customers, making it the largest service of its kind in Germany. Find out more about DriveNow's use of M2M on page 10.

Industry rankings have changed since last year

This year most sectors have reached around 30% adoption — meaning a few of the laggards in last year's survey have caught up with the leaders (see Figure 4).
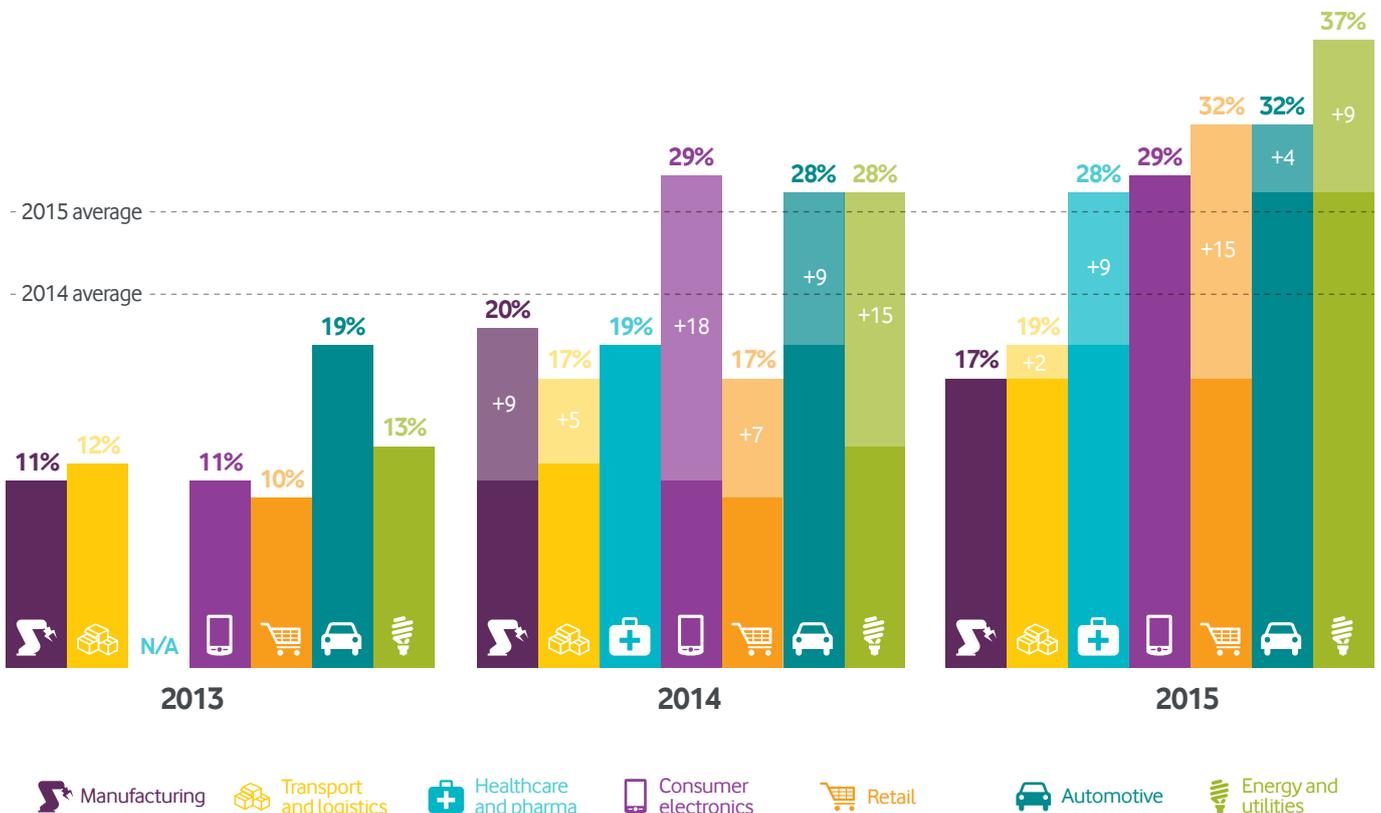
Adoption of M2M by industry, 2013–2015

Figure 4: Adoption by industry 2013–2015 shows energy and utilities leading, closely followed by automotive and retail

Energy and utilities

37%

Energy and utilities was already a strong performer last year, and it has pushed ahead to lead the field at 37% adoption. These are highly regulated sectors that operate largely independently of the broader economic climate, and much of their investment — for instance, in applications such as smart metering — is driven by long-running infrastructure modernisation initiatives and ambitious government targets. Analysys Mason forecasts 23% compound annual growth rate (CAGR) in number of global M2M connections through 2020, suggesting that this sector will maintain its momentum.

The analyst view

"Government regulation on smart energy metering in many countries has fuelled strong M2M adoption in this sector. This should continue for the foreseeable future although take-up may slow in countries where penetration of electric smart meters is already high (for example, Italy), and in others where stimulus plans have expired (for example, in the US)."

Automotive

32%

Automotive was an early leader in M2M, and today remains one of the top sectors for adoption, at 32%. All the large consumer OEMs have a "connected car" strategy, and are pushing M2M technology as a way to improve driver services. Other organisations in the automotive sector, such as parts suppliers and the aftermarket, are increasingly looking at how M2M affects them.

The analyst view

"Automotive OEMs are fully aware of the benefits that M2M connectivity affords with regard to reducing their operating costs, such as those for maintenance and warranties; the advantages of operating a service model that sustains more intimate engagement with customers; and the benefits that connectivity provides to their customers to enhance their digital lifestyles. 89% of new cars sold worldwide will have some form of connectivity by 2024."

Case study: **DriveNow runs its business with M2M**

DriveNow is Germany's biggest car-sharing organisation. It has over 460,000 customers in eight cities in Germany, Europe and the US. While it's a joint venture between two large businesses — BMW and car rental company Sixt — DriveNow is an SME, and a great example of how smaller companies are using M2M in sophisticated ways.

DriveNow has used M2M in its cars for three years. This enables it to track their locations and provide information services to drivers. Innovation is key, and DriveNow is always looking at how to enhance the customer experience. For example, it's looking at using analytics, and integrating its services with third parties, such as public transport providers, to give customers a joined-up transportation experience.

M2M is core to DriveNow's 24/7 operations, and reliable connectivity is critical. But as it plans more complex services — like streaming audio and video to its cars — high-speed connectivity is becoming more of a factor. It's looking at using 4G in the future.

"When customers rely on you 24/7 you must provide a stable service, and M2M enables us to do that."

Retail

Retail showed the biggest increase in adoption from 2014 from 17% to 32%. Retailers are enthusiastically adopting solutions like asset tracking to streamline the supply chain, digital signage for interacting with customers, and energy data management for reducing their facilities costs. In research we conducted with European SME retailers in March 2015, 97% said that smart energy solutions would be valuable to their business. A clear majority also said that asset tracking, smart vending machines, smart payment and digital advertising would be valuable.

32%

The analyst view

"Retailers are gaining awareness of the potential benefits that connected services can bring to their businesses. Benefits include strengthening the relationship with their customers through personalisation of the shopping experience as well as streamlining retailers' own internal operations. The data illustrates that adoption in the retail sector has increased significantly from a smaller base than some of the other sectors."

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Consumer electronics

Consumer electronics saw little change in terms of the number of companies adopting M2M this year, as a result of the slowing economy in some regions,[4] and adoption stands at 29%. But those consumer electronics companies that have started using M2M are committed to expanding it across their product ranges aggressively: Samsung has announced that every single one of the products it sells will be connected within five years.[5] IoT has also become a prominent theme at industry events such as CES.[6]

29%

The analyst view

"Adoption of M2M in the consumer electronics industry has been slower than anticipated. Replacement cycles are slow and coupled with the issues around fragmented standards, this has undoubtedly led to slowing adoption. Enterprises in the market are waiting to see which standards dominate. In addition, use cases are sometimes poorly defined and consumers are not clear on the benefits."

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Healthcare and pharmaceuticals

Healthcare showed a significant growth from a relatively low base, from 19% to 28%, perhaps revealing that M2M has finally passed through the more measured product development cycles and greater regulatory burden that this sector faces. M2M offers significant potential for cost savings and reduced risk everywhere from front-line patient care to the pharmaceuticals supply chain, so we expect growth to continue. Analysys Mason forecasts 19% CAGR in M2M connections through 2020.

28%

The analyst view

"Long lead time required for medical device safety and performance certification, coupled with data protection regulation, has subdued development of M2M solutions for the healthcare sector in recent years but solutions are now coming to market. Increasing pressure on healthcare systems and rising awareness of the benefits of M2M has renewed interest in the adoption of innovative connected solutions."

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Transportation and logistics
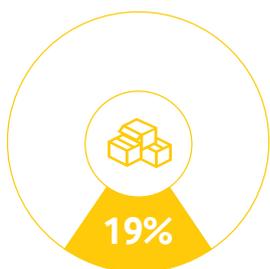
This sector saw only modest growth and reported adoption stands at 19%.

Transport companies often adopt M2M when they replace a vehicle or other asset, and many have chosen to delay their refresh cycles and sweat their assets for longer. This is partly due to declining fuel prices, which have taken the pressure off companies to switch to the latest energy-efficient vehicles. And it's also taken away the urgency to adopt other efficiency-boosting measures, such as M2M fleet-management solutions.

More broadly, transport CEOs report a cautious attitude to economic performance,[7] and consequent budget constraints, which will have an effect on IT investments.

The analyst view

"Fleet management is probably the most mature M2M market segment. Nevertheless, Analysys Mason forecasts good growth of 10% CAGR over the next decade in this sector. The need to drive down costs and remain competitive is critical in a crowded market. With regard to logistics and asset tracking, M2M facilitates new functionality such as location tracking and monitoring the conditions of transit. It reduces the risk of loss, theft and wastage. This will drive M2M deployments in the next few years."

Manufacturing

Manufacturing was an early adopter of connected technology, through factory and warehouse automation — and as we've seen, government initiatives often focus on promoting this sector. In addition to Germany's Industry 4.0, China has launched its "Made in China 2025" strategy.

However, in many countries this sector is suffering from economic conditions which may be constraining investment in technologies of all kinds. Research shows that manufacturing CEOs are more pessimistic about growth than other sectors.[8] This explains why adoption stands at just 17%.

However, M2M has an extremely clear business case, and manufacturers are aware of its potential. In research with European SME manufacturers we conducted in March 2015, 94% said that smart energy solutions would be valuable to their business; 89% said that being able to use M2M to remotely manage their manufacturing equipment would be valuable to their business. 82% of manufacturing SMEs rated being able to track their moving assets as being valuable to their business. We believe that larger manufacturers hold similar attitudes.

Note:
Our adoption figure for manufacturing is actually lower than last year's, which is due to variations in our survey sample from 2014 to 2015. None of the manufacturing adopters we surveyed this year said they had stopped using M2M or were doing less M2M than the year before.

The analyst view

"The 'smart factory' opportunity may take longer to materialise in manufacturing compared to other sectors because of proprietary legacy equipment. Other M2M opportunities lie in the manufacture of connected products, which may require a shift to new service-based, rather than product-based, business models. This type of transformation will develop over the next few years."
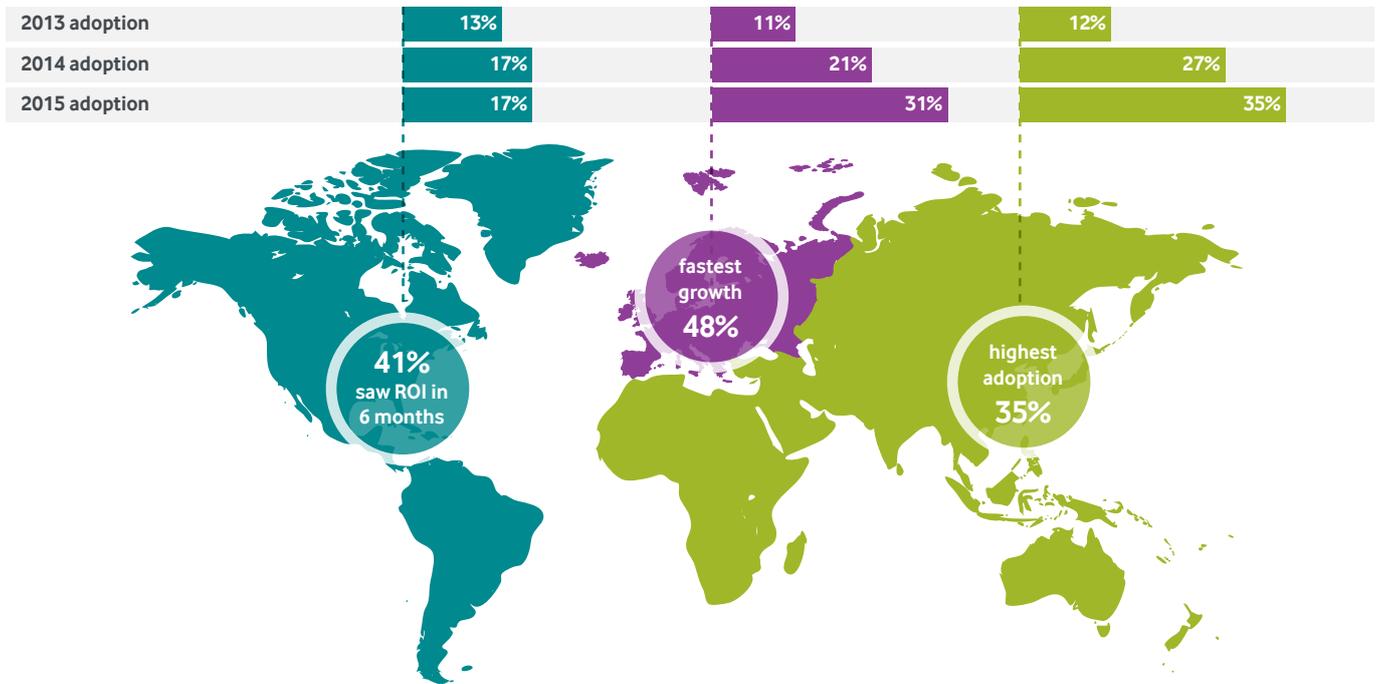
2013 adoption	13%	11%	12%
2014 adoption	17%	21%	27%
2015 adoption	17%	31%	35%

fastest growth
48%

41%
saw ROI in 6 months

highest adoption
35%

Figure 5: AMEAP has the highest adoption today, but adoption is growing fastest in Europe

AMEAP leads adoption, Europe shows fastest growth

At 35% adoption, Africa, Middle East and Asia/Pacific (AMEAP) is continuing to outperform other regions, led by confident growth in India and China and performance in sectors such as energy and utilities and retail (see Figure 5).

We knew that AMEAP would perform well, given the region's overall confidence, lack of regulatory hurdles, and lack of legacy infrastructure. Many AMEAP governments are also strongly pushing IoT as a matter of national policy, for instance in China and South Korea. Across developing markets in AMEAP, the rollout of foundational IT and communications infrastructure is proceeding extremely quickly.

Europe showed the strongest overall growth, from 21% to 31% adoption year-on-year. The strong German market is partly responsible, with its government push of Industry 4.0 and its advanced automotive sector. Across Europe generally we also saw strong performance from energy and utilities and retail.

The Americas — Brazil, the US and Canada — show little change in adoption, with growth being masked by the addition of Canada to our survey this year. Despite this, the Americas are ahead in adoption of connected consumer devices and smart homes and buildings, reflecting the groundswell of consumer interest in IoT. Also, more businesses in the Americas say they have seen ROI in the shortest time period – 41% within six months. As a result, the Americas represents one of the most sizeable growth opportunities: Analysys Mason forecasts that the number of M2M connections in the region will more than double between 2015 and 2020.

Other technologies show a similar adoption pattern

We asked respondents about their organisation's use of two other trending technologies, big data and cloud. A similar pattern emerged, with AMEAP ahead of Europe and the Americas. For example, 49% of AMEAP businesses that have a strategy for M2M have already adopted big data, compared to 35% in Europe and 29% in the Americas. We discuss this relationship further on page 18.

The analyst view:
Americas

"Our research shows that the number of M2M cellular connections in the Americas has grown by about 30% year-on-year since 2011. Companies that have adopted M2M are expanding their installed base of devices and exploring new use cases for the technology. In the US, M2M deployment has been concentrated in the utilities and automotive verticals. However, growth in smart metering has slowed. Government stimulus programmes to fund energy grid upgrades have been exhausted and new funding mechanisms have been slow to materialise. M2M growth is now more concentrated in other sectors, such as retail, healthcare and manufacturing, but it will take time for momentum to build in these areas. Raising awareness and providing the market with demonstrable ROI proof points will be critical."

analysys mason

Companies are evolving how they use M2M

Once organisations start using M2M, they evolve and expand how they use it, to support ongoing business transformation.

Adopters are increasing the scale of their M2M projects

Of those adopters who were using M2M a year ago, 81% say they've increased their use of M2M since. None say they are using it less than they were. But what does "increasing use" mean? Are they just doing more of the same, or are they changing how they use M2M?

For many businesses, the answer is both (see Figure 6). They're increasing the size of their M2M initiative, by adding more M2M connections, expanding into new countries, and connecting new devices.

More than half of those that say they're increasing their use of M2M have added more connections, and four in ten have expanded their solution into more countries.

How adopters are increasing their use of M2M

55%	53%	41%	37%	81%	42%	44%	45%	48%
New types of devices	New connections	New countries	Rolling out from pilot	81% of adopters said they're using M2M more than they were a year ago.	Adding customer facing	Adding lines of business	Adding connectivity types	Adding data analytics

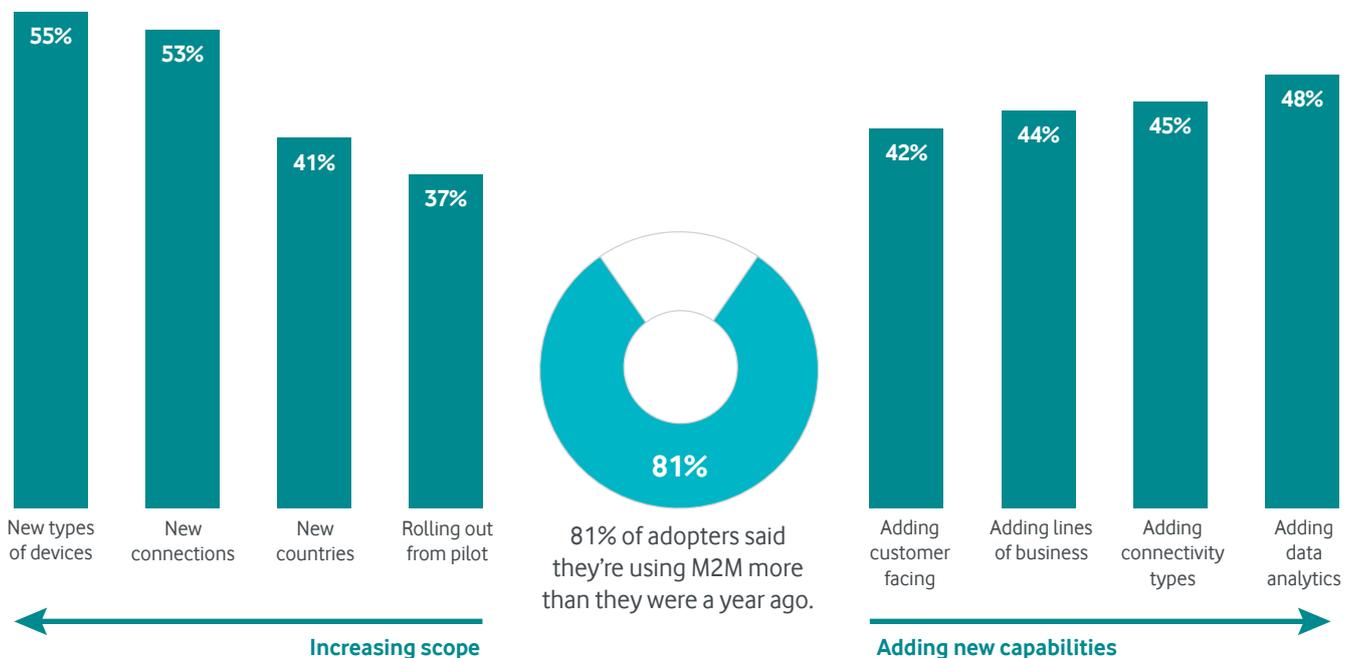← **Increasing scope**   **Adding new capabilities** →

Figure 6: Adopters are expanding their projects in many ways, both expanding reach and increasing sophistication

The sophistication of applications is also growing

Many are also making their solutions more sophisticated, in a number of ways:

By applying analytics to their data

— cited by 48% of M2M users

As we predicted last year, M2M is all about the information. The value comes from gathering insight that supports decisions. 81% of pioneers say they are using analytics on the M2M data they gather, up from 75% last year. Some sectors, such as automotive, are bigger users of data than others.

> "We are getting to the stage now where we are wanting more information in a quicker, more readily available fashion, so we are going to collect more data."
>
> Oil and gas, Europe

By bringing more lines of business into their programme

— cited by 44% of M2M users

M2M may start within a single business process — for instance, optimising a retailer's restocking schedule — but expand to span and integrate processes. For example, automatically tracking sales across sites can not only help plan restocking visits, but help guide strategy for where to open new stores, give input into which new products should be sourced or developed, and help production make more accurate estimates.

> "One of the best ways to unify [the disparate parts of the business] is using M2M."
>
> Aviation, Europe

By expanding from internal to external strategies

— cited by 42% of M2M users

Instead of just supporting the efficiency of internal operational processes, M2M can touch customers directly. As we reported in the 2014 Barometer, there's a logical progression for many businesses to start by streamlining operations: using M2M to automate existing internal business processes for greater efficiency. From that point, they can start to innovate, to drive customer experiences, and to push for more revenue through new customer-facing connected products and services. 66% of those already using M2M say their M2M strategy focuses on external stakeholders.

> "At this moment, our focus is still internal-oriented i.e. we want to use M2M to enable real-time data exchange to let us better monitor our operational processes — however, we will extend M2M to enhance our customer experience very soon."
>
> Retailer, AMEAP

Internal vs. external

We broadly see M2M projects as falling into two categories:

- **Internal:** target the operational effectiveness, reliability, and efficiency of business processes.

- **External:** target the experience of customers, partners and other stakeholders interacting with the business.

Some M2M solutions are purely internal — for instance, energy data management. Others are inherently external — for instance, mHealth solutions. Many are both: for example, using M2M to track the movement of shipments can help to improve internal supply chain efficiency; it can also be used to give more accurate and flexible delivery estimates to customers.

Transformation is as important as optimisation

Changing what they do is one thing — but what do businesses say is motivating their M2M strategies? We asked businesses what they are using their M2M solutions for, and found a spectrum of responses (see Figure 7). Many still emphasise "doing what we do more efficiently", choosing options like "automating processes" and "measuring service delivery".

50%
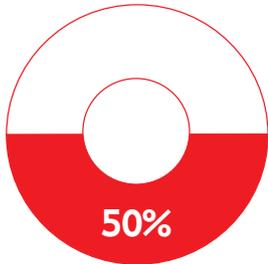
50% of M2M adopters say they're using it to enable new business/ operating models.

Purpose of M2M projects

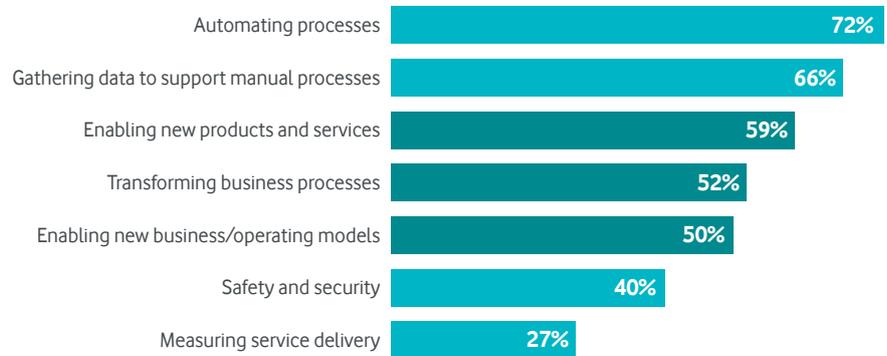|	
Automating processes	72%
Gathering data to support manual processes	66%
Enabling new products and services	59%
Transforming business processes	52%
Enabling new business/operating models	50%
Safety and security	40%
Measuring service delivery	27%

Figure 7: Businesses see their M2M projects as supporting strategic **efficiency** and **innovation** goals

But a significant number of businesses choose options that indicate more strategic, transformative goals for M2M: such as enabling new products, services and business models, and transforming business processes.

> "If M2M is not helping you improve business processes, it is probably a lost opportunity, so I would not see it as just a technology purchase."
>
> Oil and gas, Americas

Case study: Kärcher makes sophisticated use of M2M

One large German manufacturer, Kärcher, has made M2M a prime part of its integrated IT strategy, recognising the potential impact that the technology can have for its customers.

Kärcher provides cleaning technology for both consumers and businesses. For organisations that might run a fleet of equipment, such as building service contractors, the inclusion of M2M enables managers to check on the status of each device in real time, to see if there are any problems or if they need servicing.

"M2M is a major strategic focus for us at the moment because it's close to the customer, and we expect M2M relevance to increase," says Prof. Dr. Matthias Mehrtens, Vice President IT of Kärcher.

"Our partner must be innovative, to meet our own thirst for innovation, and that of our customers. We need worldwide coverage and high levels of availability to support our international deployments. We're already looking ahead to technologies like 5G to see how they will affect our business."

"M2M is a major strategic focus for us because it's close to the customer."

Mission-critical M2M needs the right connectivity

Organisations are using M2M more widely across their operations, and are looking to achieve some strategically important goals from it. In other words, they take M2M seriously. We can support this interpretation by looking at what organisations — both those that have already adopted M2M and those on the path towards it — see as important technical qualities in M2M solutions, and particularly the connectivity between edge devices and central systems (see Figure 8).
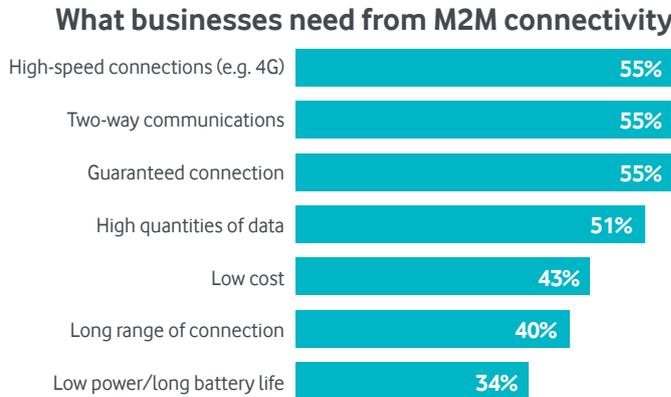
What businesses need from M2M connectivity

High-speed connections (e.g. 4G)	55%
Two-way communications	55%
Guaranteed connection	55%
High quantities of data	51%
Low cost	43%
Long range of connection	40%
Low power/long battery life	34%

Figure 8: Organisations have a multitude of requirements for M2M connectivity

Businesses from all sectors and regions said that speed, two-way communication and guaranteed connections are important. This suggests that today M2M has moved from simple one-way monitoring applications into more diverse, sophisticated and often high-bandwidth applications, like connected-car infotainment services, digital signage, mHealth monitoring and remote security. Not all businesses are demanding in the same way, and we saw definite clusters of needs. For example:

Energy and utilities companies are most interested in the cost of connectivity — when rolling out millions of smart meters to function for ten years or more, for example, every euro counts.

Transport and logistics firms are interested in low power consumption — when tracking shipping containers that may spend months at sea or on the road, for example, endurance matters.

Consumer electronics are more interested in having long-range connections — when devices might be carried around with consumers or installed in homes anywhere around the region, for example, coverage is important.

Choice is important

Businesses are demanding. They want speed, reliability and cost efficiency — not to mention long range and power efficiency. It's not always possible to deliver all of these qualities at once, so we believe businesses will look to providers to offer a range of solutions, giving them the choice of the right technology for the task at hand.

"4G must be the most promising solution — real-time transmission without any delay must be the end outcome we want to have — a sudden downtime of our facility may cause a big disaster so that real-time data transmission is a very important task we need to achieve."

Oil and gas, AMEAP

Organisations have the future in mind

While many organisations said that they want high-speed connections and other advanced features, that doesn't mean they're using all those capabilities today. Our research suggests that, particularly with features like 4G cellular, they're trying to future-proof their deployments in anticipation of high-bandwidth use cases emerging in the years to come.

For example, in the automotive space, OEMs are putting 4G SIMs in cars because they know 4G will become the default cellular connection during the life of the typical vehicle. Similarly, utilities companies are choosing 4G for smart meters in case 2G and 3G networks are decommissioned during the many years that meters remain in the field.

M2M pioneers tend to be technology pioneers

The technology landscape today is complex and interrelated. We believe that those organisations that are taking a more holistic view of process transformation will have a broad technology vision and be more likely to have adopted other technologies along with M2M, particularly big data and cloud. We found that is absolutely the case.

Figure 9 visualises how M2M adopters are using M2M in conjunction with big data and cloud. Of those businesses that have already adopted M2M, more than half (52%) are using it alongside cloud and big data today. Only 19% of M2M adopters are using M2M on its own.

> "In the next 3–5 years, we would pay a lot of money to explore the use of big data and construct the cloud platform to better acquire as well as store data."
>
> Oil and gas, AMEAP

Adoption of M2M, big data and cloud technologies

27% have adopted M2M, of which:

Just M2M 19%

M2M + cloud 18%

M2M + cloud + big data 52%

M2M + big data 11%

46% have implemented cloud

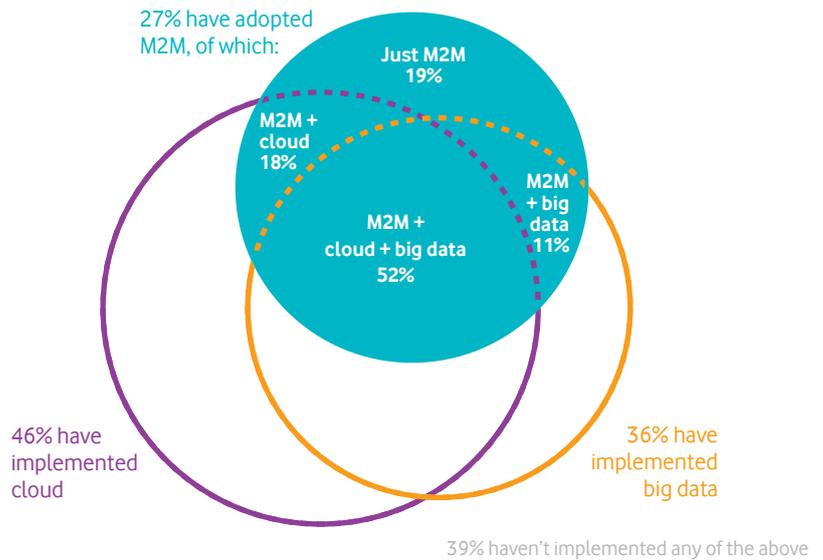36% have implemented big data

39% haven't implemented any of the above

Figure 9: Of those using M2M, over 80% use cloud or big data too

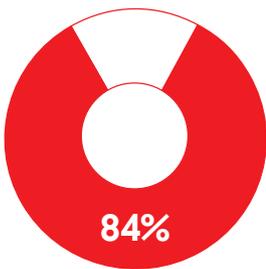> "[M2M is] part of the broader conversation of trends we are seeing evolving."
>
> Oil and gas, Americas

It's also worth noting that, even leaving M2M aside, there is a very significant overlap between those that are using big data and those that are using cloud.

Clearly, it's possible to use M2M without big data and cloud — but very few organisations choose to do so. Businesses are recognising that they may get better outcomes by adopting these technologies together. An organisation might gather data from M2M endpoints, store it in a cloud environment, and extract value from it using big data analytics tools.

As well as simply using big data tools, organisations are confident that they can get value from them. 84% of adopters say that they are comfortable they can analyse the data they gather from their M2M solutions. This seems to us a little overconfident, given widely reported market shortages of data scientists.[9]

84%

84% of adopters are comfortable that they can analyse the data they gather from their M2M solutions.

Businesses might also bring mobile into their overall solution, to share M2M-gathered insight with users. Indeed we found that M2M adopters are ahead in adoption of mobile. Compared to those that have yet to launch their M2M projects, they are more likely to agree with the statement that "mobile is at the heart of our business processes" (82% vs 71%).

The analyst view: **technologies are interdependent**

"There are clearly synergies between M2M, cloud and big data. M2M generates volumes of data that are expected to increase exponentially, and this data is stored in the cloud. Enterprises need access to the data generated from M2M applications in real time to perform the analytics that are instrumental in delivering efficiencies to their business. Interdependency between the technologies is increasing."

M2M delivers value, and does it quickly

Organisations overall are reporting strong and transformative returns on their investment in M2M.

Adopters see clear, significant ROI

It's no wonder that organisations are increasing their adoption and broadening their sophistication in M2M — they're reporting strong results.

▶ **It's transforming their businesses**
We asked what impact M2M has had on their business, from "limited impact" (1) to "fundamentally transformed our business" (10). The mean score is nearly 8 out of 10. And 9% of adopters rank the impact a full 10 out of 10.

▶ **It's delivering competitive advantage**
83% of adopters agree that they have gained competitive advantage from M2M; 38% agree "strongly".

▶ **It's producing significant ROI**
Year on year, ROI is getting better. This year 59% of those already using M2M said that they've seen "significant" ROI, up from 46% last year.

▶ **It's producing ROI fast**
We also asked about ROI, both how significant it is and how quickly they've seen it. Generally the ROI period is very short — between 6 months and 2 years. 54% of pioneers reported ROI within 12 months.

> "In the past, our loss due to inventory mis-allocation, transportation error and counterfeits was around 1% of our overall revenue — a lot of money — currently, the figure is lowered to be close to 0% — this can be translated into around 20% of our operational cost if we also take manpower and time cost into consideration... This cost saving could be seen clearly in the first month of the project launch."
>
> Retailer, AMEAP

Organisations report significant cost savings

Direct cost savings ranked high on the list of benefits. Along with process and productivity improvements, this fits in to the top goal of "automating processes" (see page 16) and largely aligns with the "internal" M2M projects that we discussed in Section 3 — for example, smart metering reducing a utility company's manual meter reading costs, or a manufacturer using remote monitoring to avoid unnecessary field maintenance visits.
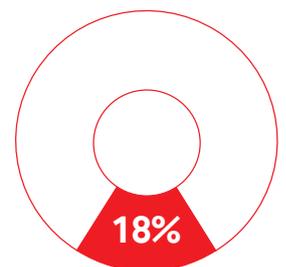
This year we asked about the scale of cost savings businesses are seeing. On average, adopters report an 18% cost reduction — significant enough to explain the fast ROI for M2M projects. Nearly 10% of M2M adopters have reduced their costs by over 25%.
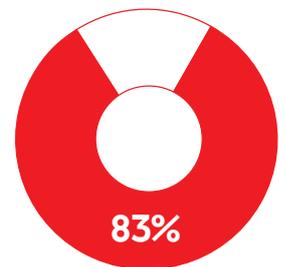
83%

83% of adopters agree that they have gained competitive advantage from M2M.

18%

On average, adopters report an 18% cost reduction.

Return on investment takes many forms

ROI for any IT project is conventionally measured in terms of payback on an amount spent, with the payback taking the form of additional revenue generated, costs saved (including in staff time) or spend avoided.

But, with sufficient effort in benchmarking and measurement, many different benefits can contribute to quantifiable ROI: from improved customer loyalty (which can boost customer lifetime value) to greater business agility and faster innovation (which reduces product development cost and can increase market share and, ultimately, revenue).

We asked adopters what benefits they've experienced from their M2M initiatives, and we saw a wide range of responses, as Figure 10 shows.

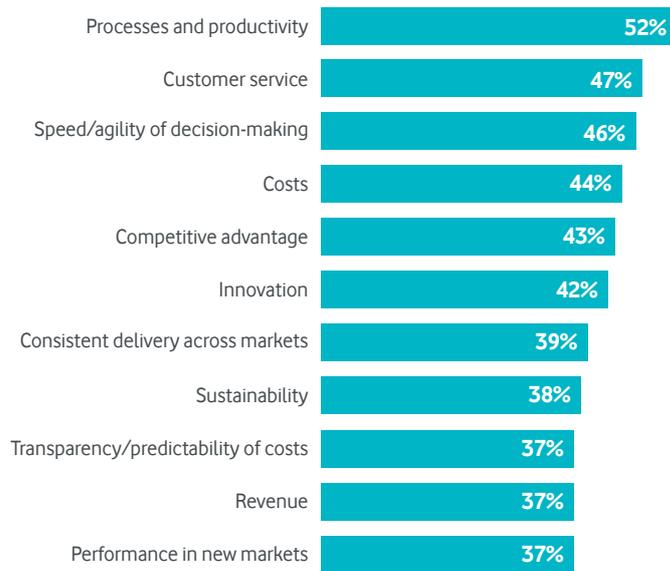**Areas where improvements seen after adopting M2M**

Area	%
Processes and productivity	52%
Customer service	47%
Speed/agility of decision-making	46%
Costs	44%
Competitive advantage	43%
Innovation	42%
Consistent delivery across markets	39%
Sustainability	38%
Transparency/predictability of costs	37%
Revenue	37%
Performance in new markets	37%

Figure 10: Businesses reported improvements in a wide range of areas

Prediction

As M2M projects grow larger and more deeply embedded in the business, we'll see businesses report more significant ROI (>60% saying "significant" ROI by 2017), but longer ROI periods (<50% reporting ROI within 12 months).

Businesses report a wide range of benefits. Some show an operational focus on streamlining and solidifying market position (for example through improved efficiency, consistency, and predictability). One small European manufacturer emphasised the impact on operational quality: "[We have seen benefits in] efficiency and substantial reduction in errors, which can be quite costly for us."

Other benefits are about stretching and growing the business (which may be through competitive advantage, innovation, revenue, or new markets). This reflects the diversity in M2M applications and the diversity of organisations' market positions. For example, one European manufacturer highlighted customer satisfaction: "The investment in M2M has been confirmed as being justified — the customer is happier, it is international and now covers a number of our products and there will be more."

The analyst view: cost is just the start

"Many M2M projects start life with an "internal" business focus, the primary objective of which is to reduce costs. Cost savings might be the primary measure of impact, but cost savings are achieved in different ways. Enterprises cite a number of measures that they use to justify investment, many of which feed into the business case: from compliance with safety regulations to improved customer retention and the creation of new revenue streams."

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More sophisticated use of M2M leads to greater benefits

Organisations see consistently stronger results when they make a greater commitment to M2M.

There's a clear link between sophistication and impact

We found a very clear correlation between the degree of sophistication of an organisation's use of M2M (which we discussed in Section 3) and the degree of benefits that they report (which we discussed in Section 4).

After ranking each company on M2M sophistication (using the methodology described across) we split them into four groups, from lowest sophistication to highest. Comparing these groups we found that the companies that are most sophisticated in their use of M2M are much more likely to report that:

- **They are seeing "significant" ROI.** 83% of the organisations in the top group have seen "significant" return, compared to 43% of the least sophisticated businesses.

- **M2M has transformed their business.** 69% of the most sophisticated group say that M2M has "fundamentally transformed" their business, compared to 13% of those in the group with the lowest rankings.

- **They are seeing large-scale cost savings.** 50% of the companies in the most sophisticated group have seen a cost reduction of more than 20% as a result of deploying M2M, compared to just 2% in the bottom group.
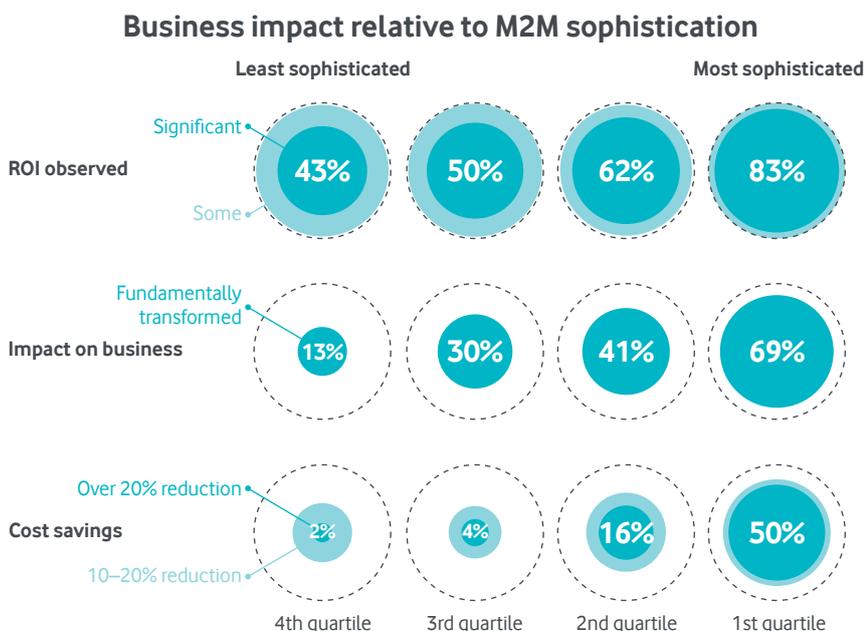
Business impact relative to M2M sophistication

Figure 11: More sophisticated businesses report more significant benefits from M2M

In fact, the only metric by which high scorers perform worse is the time taken to see ROI. This, we believe, is because more sophisticated solutions take longer to deploy, potentially cost more, and produce ROI in ways that are harder to measure — for instance, agility or customer satisfaction instead of direct cost savings.

Methodology for measuring sophistication

To measure sophistication we scored businesses on five factors that we think indicate ambition and pervasiveness of M2M use. Companies were awarded points if they:

- **Have increased the size of their M2M projects,** indicating commitment and business integration.

- **Are demanding in their connectivity requirements,** looking for multiple factors such as speed, reliability, and power efficiency, indicating that they have high ambitions for M2M.

- **Use M2M both internally and externally,** indicating that they are committed enough to trust their customer relationships to M2M.

- **Use a greater range of M2M applications,** indicating that they see M2M as being relevant across their operations.

- **Use analytics** to extract value from the data they collect, indicating that M2M is being used to support strategic decisions

We then grouped companies into four quartiles based on this score, from highest sophistication to lowest.

Larger organisations are ahead in M2M sophistication

There are leaders in M2M sophistication in every region, sector and size of business. But larger businesses tend to be more sophisticated. Organisations with more than 10,000 employees account for just 4% of the least sophisticated quartile, but 23% of the most sophisticated quartile (see Figure 12). The most sophisticated organisations are also most likely to have worldwide operations. 88% of top performers operate globally compared to just 26% of the least sophisticated group.
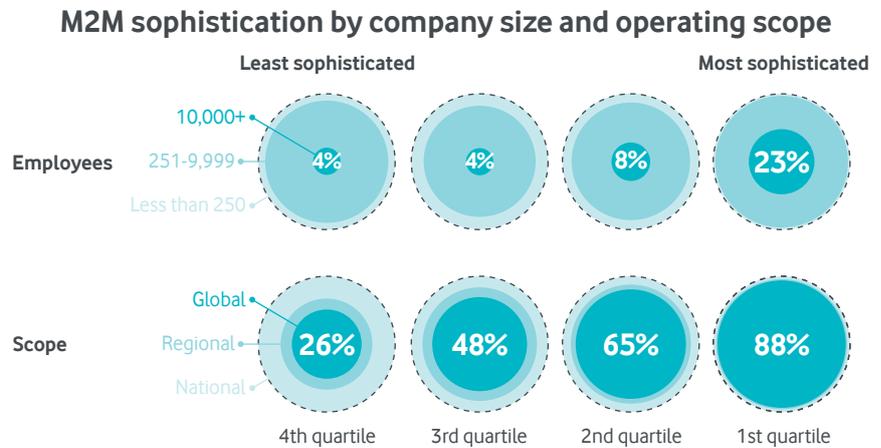
M2M sophistication by company size and operating scope

Figure 12: The most sophisticated organisations are likely to be large and global

M2M sophistication and Business Readiness are linked

In other research Vodafone has explored the concept of "business readiness". We found that companies that have four business readiness characteristics (Figure 13) outperform the market. In an independent 2014 survey, 29% of those in the highest quartile for business readiness strongly agreed with the statement "our business is doing well relative to the competition", compared to just 12% in the lowest quartile.

Looking at the companies in this year's Barometer, we found a strong correlation between organisations that score highly on the M2M Sophistication Index and those that score highly on business readiness. For example, 81% of those in the top quartile for M2M sophistication say they have fully integrated IT systems; only 25% of bottom-quartile organisations say the same.

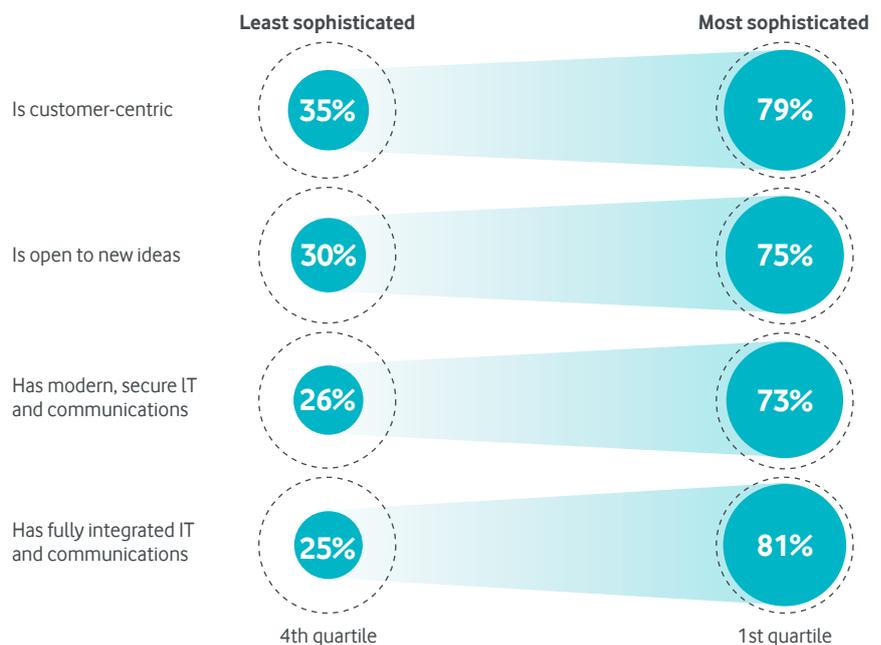### Ready Business characteristics compared to M2M sophistication

Figure 13: More sophisticated organisations are more likely to be Ready Businesses

To find out more about Ready Business and how it relates to M2M, visit **m2m.vodafone.com/readybusiness**

A clear strategy is essential

The five sophistication indicators are not a checklist — you can't expect to improve your ROI just by plugging an analytics tool in to your M2M solution. The important word is "indicator".

Our findings suggest that tactical "quick wins" are not the best way to maximise the ROI from an M2M project. You can certainly approach M2M as a technology to take manual labour out of a single operational process, and you'll probably see cost savings. But it's when you join the dots to other processes, mine the data, and imagine new ways of doing things that you will see the best results.

We recommend that you:

▶ **Make a strategic, long-term commitment to M2M**
While you're likely to see fast returns even from initial small projects, changes to processes and behaviours don't necessarily happen overnight. Commit to becoming a "digital business", and make M2M a part of your company's way of thinking.

▶ **Be ambitious, creative, even daring**
It may be simpler and easier to look at off-the-shelf solutions, isolated back-office processes or small-scale rollouts. But the big wins come from taking that broad look at your processes, your markets, your products and your systems, and thinking about how they can not just be automated or refined, but transformed. Think about processes end to end — for example, following a product through from raw materials through to the customer's hands and beyond — not as a series of isolated steps owned by different business units.

▶ **Collaborate and share**
Silos are the enemy of innovation. Data gathered about sales might help marketing and R&D. Data gathered about customer usage might help procurement — or legal, or HR, or finance. Take a broader view, particularly when it comes to analytics.

▶ **Plan for the future**
Think about what happens (both in terms of technology and processes) when your first pilot project gets rolled out. And plan for what happens in five years when the data that you're gathering has grown exponentially and become critical to how your company operates. Once M2M is embedded into business processes, you can't afford to treat it as a short-term experiment.

> "Once I have the technology available, this will not automatically mean that I can use it well. Because I feel that's the more difficult part, you know, in a sense of how do we generate profit with it or revenue."
>
> Manufacturing, Europe

The analyst view: making a success of M2M

"As we move into a new era of the digital economy, many enterprises are focusing on how they upgrade their physical assets and processes to embrace that change and remain competitive. M2M is a key enabler in the digital economy.

We believe that it's critical for enterprises to have a roadmap which identifies the main objectives for deploying M2M (reducing costs, increasing operational efficiency, improving process optimisation, digital transformation, and so on) and prioritises the key areas of the business that will benefit from M2M deployment near-term and long-term. The approach will most likely differ depending on the size of the business.

Large corporates may have the resources to deploy a large-scale M2M project which encompasses different areas of the business but may be faced with the complexity of breaking down the silos and streamlining operations across multiple business units.

Smaller companies may not have the budget to deploy a large-scale project but may have more visibility of how M2M will streamline their operations and create efficiencies across different business lines. For all enterprises, a longer-term vision and roadmap on how to achieve their objectives is required."

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Few barriers stand in the way of M2M adoption

Companies are enthusiastic about adopting M2M and its benefits. But concerns about how best to address security are holding some back.

Security and privacy are the most common obstacles

As M2M has evolved, just like any technology, there have been challenges to overcome: interoperability and standards; cost and complexity; network coverage; battery life; and so on. While adoption continues to grow, and most businesses report extremely strong ROI, we wanted to investigate which of these challenges remain, and what effect they're having on M2M users.

We asked organisations what, if anything, is preventing them from using or increasing their use of M2M. None of the potential barriers that we listed were selected by more than a third of respondents (see Figure 14). This is very encouraging. While there are concerns, notably security and the related subject of privacy, most companies don't see these as a barrier to adoption. These results compare favourably with many of the figures reported for other new technologies, like cloud computing.

"I can see that the price and the ease of implementing M2M technology is getting better... it is easier for us to consider doing some projects with it if we wanted to... the complexity and cost has dropped considerably over the last eighteen months."

Manufacturer, Europe

Barriers to increasing use of M2M

Barrier	%
Security	33%
Privacy	31%
High costs relative to potential benefits	29%
Lack of knowledge	26%
Unproven technical performance/reliability	25%
Lack of common industry standards	24%
General economic slowdown	21%
Difficulties implementing a global solution	20%
Regulation	20%
Management resistance	20%

33% of businesses said that security is a barrier to them increasing their use of M2M.

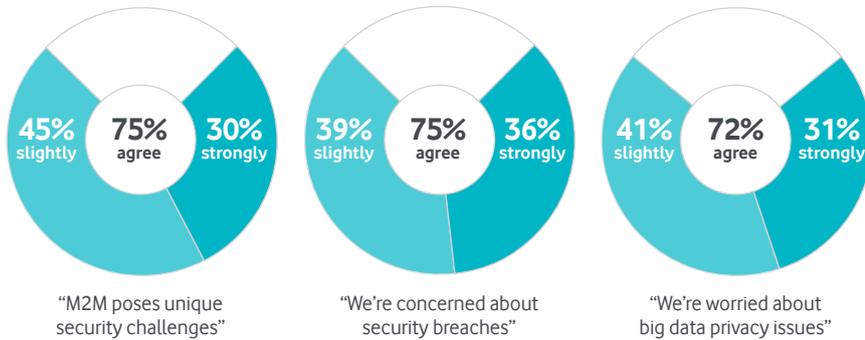**Figure 14:** Just a third of businesses say security is a potential barrier to increased use of M2M

Organisations are concerned about security breaches

M2M providers, analysts and customers talk a lot about security and privacy — we anticipated that they would be important factors. So we asked some additional questions to understand businesses' concerns in more detail.

Perception of M2M security impact

45% slightly	75% agree	30% strongly
39% slightly	75% agree	36% strongly
41% slightly	72% agree	31% strongly

"M2M poses unique security challenges"

"We're concerned about security breaches"

"We're worried about big data privacy issues"

Figure 15: Around three quarters of businesses are concerned about security issues

Understandably, there are some differences by sector. Retail and health ranked highest for security and privacy concerns: 41% of healthcare organisations agreed "strongly" that security breaches are a major concern, compared to 36% across all sectors. 35% of retailers agreed strongly that they are worried about privacy issues, compared to 31% across all sectors.

Businesses in sectors such as healthcare tend to hold a lot of private customer data, depend on maintaining their brand equity, and are subject to relevant regulation, such as PCI DSS for payment card data and HIPAA for healthcare records.

Conversely, sectors like transportation rank lower — just 23% of transportation and logistics companies agree strongly that security breaches are a major concern. This is probably because businesses such as this hold less personal data.

IT leaders are more concerned about security

Both IT and business leaders focus on security and privacy. However, IT leaders show greater concern than those in other roles (see Figure 16). 40% of IT leaders strongly agree that security breaches are a concern, compared to just 31% of those in product management.

Concern about security breaches, by function

"Security breaches are a major concern for us"

Strongly agree	Slightly agree
IT	CEO/CxO	Product	Finance	Strategy
40%	35%	31%	35%	35%
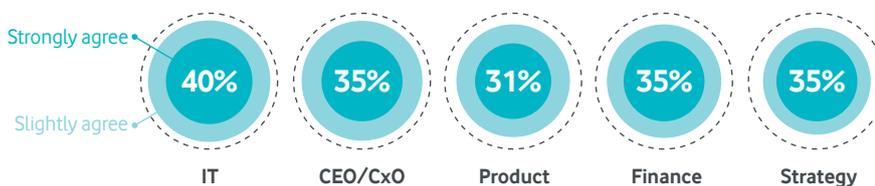
Figure 16: IT leaders most likely to express concern about security issues

> "We need to reassure customers that we are doing [security], we don't want to hit the headlines."
>
> Manufacturer, Europe

> "There is security of patient data: that goes through Wi-Fi so how secure is that, are devices secure, what happens if they get lost?"
>
> Healthcare, Europe

Despite the concerns, most say their IT is secure

Over three-quarters of businesses (77%) believe that their IT and communications are secure, while the same proportion are concerned about security breaches. This leads to four groups, which Figure 17 shows:

Four attitudes to security

The rightfully concerned (15%): believe that their businesses are not secure and are concerned about security breaches.

The cautious (62%): feel their IT and communications are secure, but are still concerned about security breaches.

The confident (15%): say that their businesses are secure and aren't concerned about security breaches.

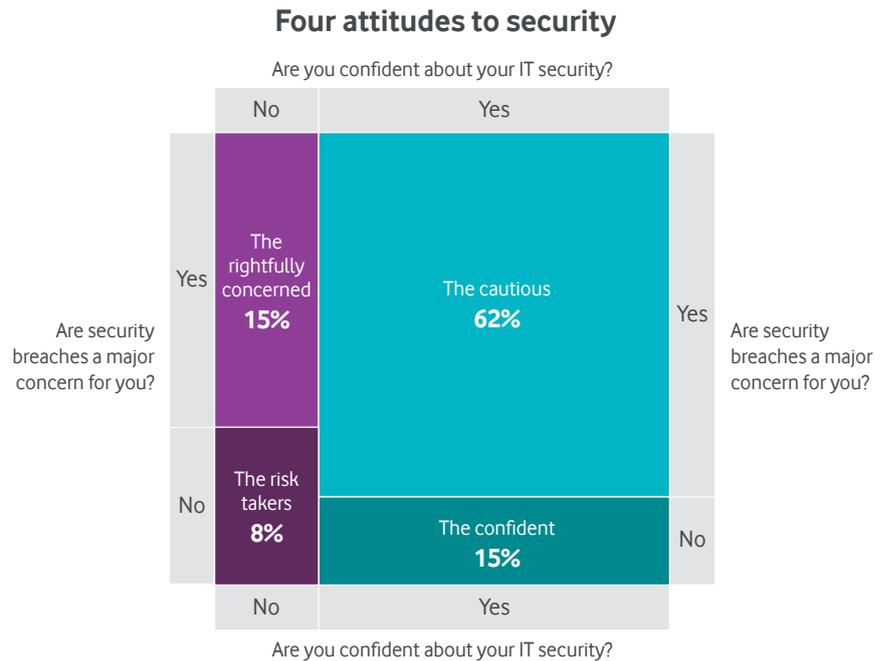**The risk-takers (8%):** admit they're insecure, but are unconcerned about security breaches.

Four attitudes to security

Figure 17: Organisations fit into one of four groups based on their security posture

Providers can help businesses to address security

M2M solutions are composed of several different elements including devices, networks, management platforms, applications and storage. End-to-end providers can provide standards-based and joined-up solutions to effectively protect all these elements together.

Organisations should plan the security of their M2M project from the start and ensure that a senior business leader assumes ownership of security for IT and M2M. M2M security is like any other technology: with adequate planning and the right set of controls, organisations can manage risk and protect their data and infrastructure.

The analyst view: approaches to M2M security

"Security is a very real concern for the Internet of Things. Any 'thing' with an IP address is potentially vulnerable to a malicious attack. However, the risk of security breaches should not normally outweigh the benefits of deploying M2M and increased awareness of the potential scale of the problem means that there is a heightened focus to address that risk.

Controlling millions of dispersed devices will require more automated security techniques than those required for a typical IT initiative. Security will need to become more pervasive in the network to meet the needs of a perimeterless security environment. Fortunately, there has been a rise of security orchestration solutions to counter network security threats in IT and core telecoms networks. There are a number of suppliers providing solutions to address this requirement.

Enterprises will need to ensure that the roadmap of their security provider meets the requirements of an M2M/IoT environment. They may also want to consider expanding their security skills base to include expertise in managed threat detection."

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M2M involves the whole business

As M2M gains a higher profile and expands across business processes, its ownership and position within the organisation is likely to change.

The business sees M2M as supporting innovation

As we saw in our discussion about security, different roles within the business have a different perspective. Similarly, different roles have their own views on M2M generally, and how it fits into the wider corporate agenda.

We asked businesses to classify their M2M projects (see Figure 18). IT leaders are most likely to see M2M deployment as an "IT project", suggesting they view it as their responsibility — they are therefore interested in how M2M can be practically deployed across their organisation. CEOs, senior leaders and strategy roles are most likely to see M2M in the context of innovation initiatives — ways to change what the business does and how it works in order to drive improved operational outcomes.

Classification of M2M projects, by function

Rank	CIO	CEO	Product	Finance	Strategy
1st	IT **56%**	Innovation **33%**	IT **36%**	IT **29%**	Innovation **42%**
2nd	Innovation **17%**	IT **32%**	Innovation **29%**	Business development **23%**	IT **23%**
3rd	Business development **12%**	Business development **26%**	Business development **18%**	Innovation **16%**	Business development **23%**

Figure 18: M2M projects are seen in different lights by different roles, but most see it as an IT project

Many respondents also described M2M projects in the light of business development — using M2M to drive revenue growth, without necessarily changing the way the business runs or its fundamental proposition to its customers. This might mean:

- Adding connectivity to existing products to stimulate sales or to enable secondary revenue opportunities, such as using M2M to deliver advertising direct to products.
- Gathering data (for instance, about customer behaviour or environmental measurements) that the business can sell on the open market.
- Using M2M-driven market insights to target sales and marketing efforts to improve conversion rates and customer lifetime value.

Respondents from the Americas were more likely to describe M2M projects in this way — and this region also reported the fastest average ROI.

43%
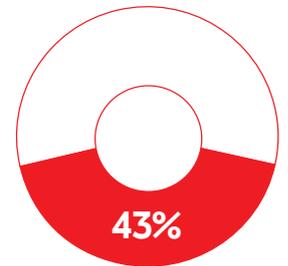
43% of businesses see M2M projects as being "IT projects". 21% say they are "innovation projects".

Prediction

By 2016, more than a third of businesses will describe their M2M projects as being "innovation projects", as M2M moves outside the IT department and plays a larger role in determining customer experience and competitive advantage.

All roles are committed to business transformation

Just because different roles see M2M projects in different lights doesn't mean that IT teams and the rest of the business are working to different objectives. When asked whether they agree that M2M is about improving businesses processes, not just about buying technology, IT leaders are actually more likely to agree strongly (see Figure 19). They are interested in the tangible ROI realised and see it as a strategic business decision.

"M2M is about improving processes, not buying technology"

Strongly agree
Slightly agree

| 33% | 30% | 29% | 19% | 15% |
| IT | CEO/CxO | Product manager | Finance | Strategy |

Figure 19: IT leaders embrace the business potential of M2M

The CIO leads, but many other roles are involved

Multiple stakeholders are often involved in decisions regarding M2M projects. The CIO leads most often, in 36% of cases, followed by the CEO, strategy director, operations and finance. The CEO leads the M2M strategy in 16% of businesses.

Regardless of who leads, senior decision-makers from multiple departments may be involved (see Figure 20) — this is natural and desirable when M2M touches so many parts of the business. Nearly two-thirds of businesses (63%) reported having multiple leaders involved; 10% had more than five in their decision-making group.
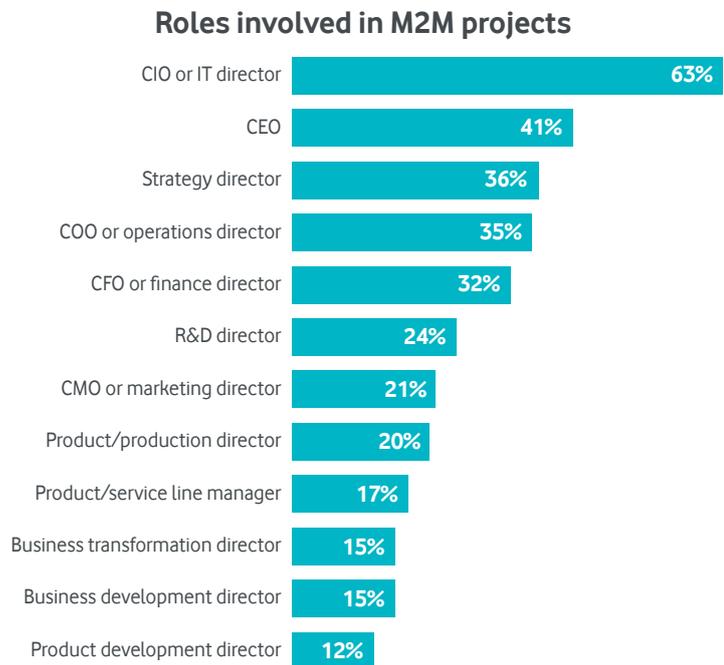
Roles involved in M2M projects

Role	%
CIO or IT director	63%
CEO	41%
Strategy director	36%
COO or operations director	35%
CFO or finance director	32%
R&D director	24%
CMO or marketing director	21%
Product/production director	20%
Product/service line manager	17%
Business transformation director	15%
Business development director	15%
Product development director	12%

Figure 20: Many senior staff can lead or be represented in M2M projects

Less than half of M2M projects come out of the IT budget

M2M is not seen as a conventional IT project, and that is reflected in the way it's funded. Less than half of businesses say that M2M projects are funded through the IT budget. We noticed a broad spread of financing models around M2M, including more experimental models such as cross-charging, risk and reward sharing, and building it into the price of services to the end customer (see Figure 21).

The prevalence of these kinds of funding innovations support the view that M2M is seen as transformational. Risk and reward sharing, in particular, is not yet common in most areas of IT, yet here 28% of businesses say they use it. We expect this type of model to become increasingly common as organisations put more emphasis on the measurable business value that M2M initiatives are targeted to deliver.
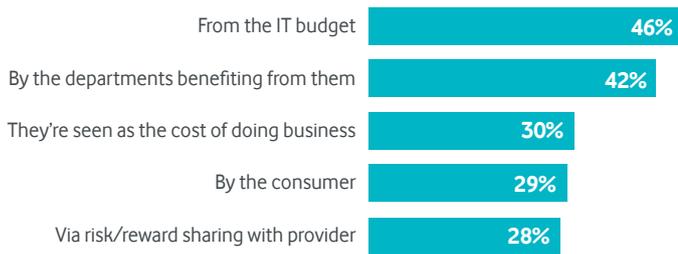
How M2M projects are funded

From the IT budget	46%
By the departments benefiting from them	42%
They're seen as the cost of doing business	30%
By the consumer	29%
Via risk/reward sharing with provider	28%

Figure 21: Adopters have tried a range of business models (multiple options allowed)

External providers play an important role

From network providers to device manufacturers, service providers and system integrators, many outside parties will play a role in M2M projects.

Businesses told us that they would be willing to outsource many parts of the solution, from hardware to software and connectivity. 78% say they would use an external provider to integrate the different components of an M2M solution. Those that have an M2M solution spanning both internal and external strategies are more likely to outsource the system integration of their solution.

When it comes to choosing a provider, organisations look for global reach and for end-to-end capabilities. 46% of businesses said it was "very important" to work with a provider that offered all the components involved in an M2M solution. Again, those that have an M2M solution spanning both internal and external strategies stand out, putting much more emphasis on working with an end-to-end supplier to make the project happen (see Figure 22).

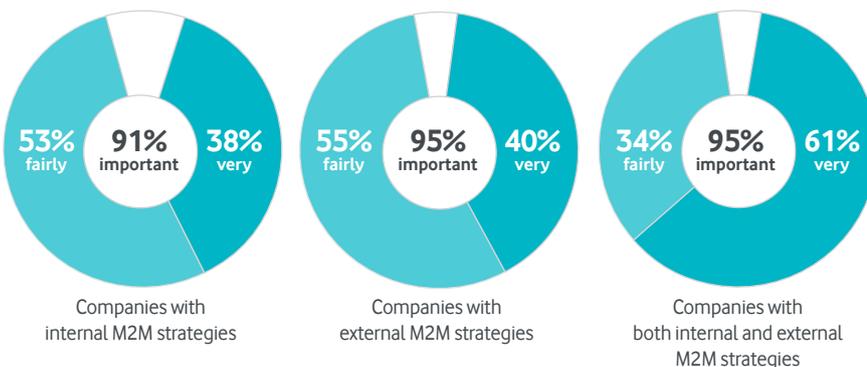## The importance of working with an end-to-end provider

53% fairly	91% important	38% very
Companies with internal M2M strategies		
55% fairly	95% important	40% very
Companies with external M2M strategies		
34% fairly	95% important	61% very
Companies with both internal and external M2M strategies		

Figure 22: Suppliers are seen to play a more critical role when solutions touch customers

Prediction

Fewer organisations will count the costs of M2M projects as part of the IT budget as they become more deeply embedded in the business. We predict cross-charging will become the most popular way to account for M2M costs.

Conclusion

This year, the question is not whether to adopt M2M, but how best you can use it to drive your business.

As adoption continues to increase year-on-year, we've turned our focus to those businesses that have already committed to M2M, finding out more about their experiences, and what their next steps were.

M2M is proving its worth

Adopters of M2M are consistently positive about the results they've seen. These include a range of benefits, clear ROI, measurable cost savings and — ultimately — a significant level of organisational transformation. Perhaps most tellingly, those that use M2M are satisfied enough to extend their use of it over time.

Sophistication determines outcomes

Organisations are not just using M2M more, they're building their business around it. The more advanced users are bridging organisational functions and extending beyond the company's four walls to affect customers. They're analysing the big data it can generate, too, and using cloud and mobile solutions alongside. These sophisticated organisations see better results across the board.

As M2M spreads, roles will matter more

M2M is still led by IT, but in many cases it's a company-wide initiative. The different motives, concerns and budgets of leaders of many business functions must all be taken into account. End-to-end providers of M2M solutions can help provide support for the IT function, not just with technical issues like system integration and security, but by participating in risk/reward sharing and other aspects of the M2M business model. There's plenty of room for innovation.

Recap of our predictions

As M2M projects grow larger and more deeply embedded in the business, we'll see businesses report more significant ROI (>60% saying "significant" ROI by 2017), but longer ROI periods (<50% reporting ROI within 12 months).

By 2016, more than a third of businesses will describe their M2M projects as being "innovation projects", as M2M moves outside the IT department and plays a larger role in determining customer experience and competitive advantage.

Fewer organisations will count the costs of M2M projects as part of the IT budget as they become more deeply embedded in the business. We predict cross-charging will become the most popular way to account for M2M costs.

Further reading

To find out more about the changing world of M2M, and the opportunities within your industry, visit the following areas of our resource centre.

Case studies

Read about the experiences of more than 50 organisations with M2M, representing businesses from the UK to India, from start-ups to the largest multinationals.

m2m.vodafone.com/casestudies

White papers

Learn about the most important issues and applications in M2M with our growing range of white papers. They cover specific M2M markets, such as security or electric vehicles, and in-depth country-level reports for more varied topics such as mHealth and smart metering.

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Discover the broad range of solutions and services we provide for your sector. Our industries area includes videos, case studies, news and more.

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The M2M Adoption Barometer 2014

2015 is the third year of the M2M Barometer. To find out how things have changed, take a look at last year's report.

m2m.vodafone.com/barometer2014

Start your journey

To find out more about Vodafone's M2M solutions, please contact your Vodafone account manager, email **m2m@vodafone.com**, follow us on Twitter **@Vodafone_M2M**, or visit **m2m.vodafone.com**

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For more information, visit: **m2m.vodafone.com**

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Vodafone is one of the world's largest telecommunications companies and provides a range of services including voice, messaging, data and fixed communications. Vodafone has mobile operations in 26 countries, partners with mobile networks in 55 more, and fixed broadband operations in 17 markets. As of 31 March 2015, Vodafone had 446 million mobile customers and 12 million fixed broadband customers.

For more information, visit: **vodafone.com**

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Michele Mackenzie is an analyst for Analysys Mason's IoT and M2M Solutions research programme. She has 15 years of experience as an analyst. Prior to joining Analysys Mason she produced reports for Machina Research and for other clients on areas such as mobile broadband and digital media. Michele worked for Ovum for 12 years where she focused on consumer mobile applications.

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