



Internet of Things

Visualise the Impact

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Executive Summary

Governments and businesses are expecting the Internet of Things (IoT) to hit mainstream by 2020, which suggests early adopters have already acquired some experience from deployments. While there have been numerous studies exploring potential and intention, we were interested in lessons learned. The pace of change in an increasingly digital economy is forcing faster adoption cycles, and embracing learnings from early adopters is a critical enabler.

This study targeted organisations that recognised they were well on their way to integrating IoT in their operations. We spoke to 75 teams who could draw from their experience of recent deployment or a sizeable proof-of-concept. These expert interviews were framed to draw out how deployments were scoped and sponsored, resourced and delivered. Across all industries, we found four key lessons.



Scope is almost always under-estimated

The immediate opportunity for cost savings or revenue uplifts drive specific IoT deployments. But as data streams through, potential impact on other workflows attract new stakeholders. The definition of success is under pressure as new needs are inserted. This is an inevitable trade-off between speed and distance. Project teams need to manage communications and stakeholder expectations, and aggressively introduce phasing.



User experience defines results

IoT is being rolled-out to a world that has come to expect information to be served up in easy to understand formats 'anytime, anywhere'. This means IoT project teams need to consider exactly how each of their target consumer of information will use these insights. Design thinking and getting the user experience right has been critical to drive results.



Data and governance skills are critical

Although the immediate task of IoT is to connect the unconnected, the value is realised only when data is analysed and consumed. The path from sensor to decision is fraught with data quality, data privacy, data management, analysis and distribution considerations. Data managers are being included in the initial project team by more experienced IoT programme offices.



Maturity dictates value

These 4 key lessons now add up to the broader picture of analytics maturity within an organisation. The big data movement demonstrated the need for better management frameworks for analytics, and the need for cross-organisational co-operation to identify 'golden use cases'. IoT has proven to be a larger, faster manifestation of big data, and therefore requiring organisations to invest leadership and management time to work through hurdles towards organisational analytics maturity.



IoT means many things

Survey respondents were asked what the Internet of Things (IoT) was expected to mean for their customers, business and competitors. Given its wide applicability, responses fell into 17 different categories, which confirms the view that the IoT has a wide variety of meanings, and that its impact will vary across different companies and industry sectors.

A shared view of future benefits

However, there was quite a lot of consensus on the top two results of introducing IoT technology. Over 40% of respondents said that they thought that the IoT would result in improved operational efficiency, and more than one third (around 36%) that it would improve user experience. Whether this is already the experience of these companies, or currently represents their hopes and ambitions for the use of the technology remains to be seen. It seems most likely that it is a mixture of the two, given that the technology is still relatively new and untried in many sectors. The shared scope of vision, however, is remarkably consistent.

It is, perhaps, also to be expected that opinion was divided about whether customers or organisations would benefit most from IoT implementations. It may be hard to separate the benefits since the two are so closely entwined, and the trend toward increased emphasis on customer experience means that benefits accruing to the organisation often result in benefits to customers.

There were three further categories that were supported by at least one quarter of respondents. Around 29% of respondents said that the IoT would either lead to new product or service design, or to higher quality of products or services. Just over 25% felt that using IoT technology would improve resource management. The least popular category was 'improved value for money for consumers', which was interesting in light of the conviction that user experience would be improved. It is possible that broader user experience is also expected to encompass improved value for money.



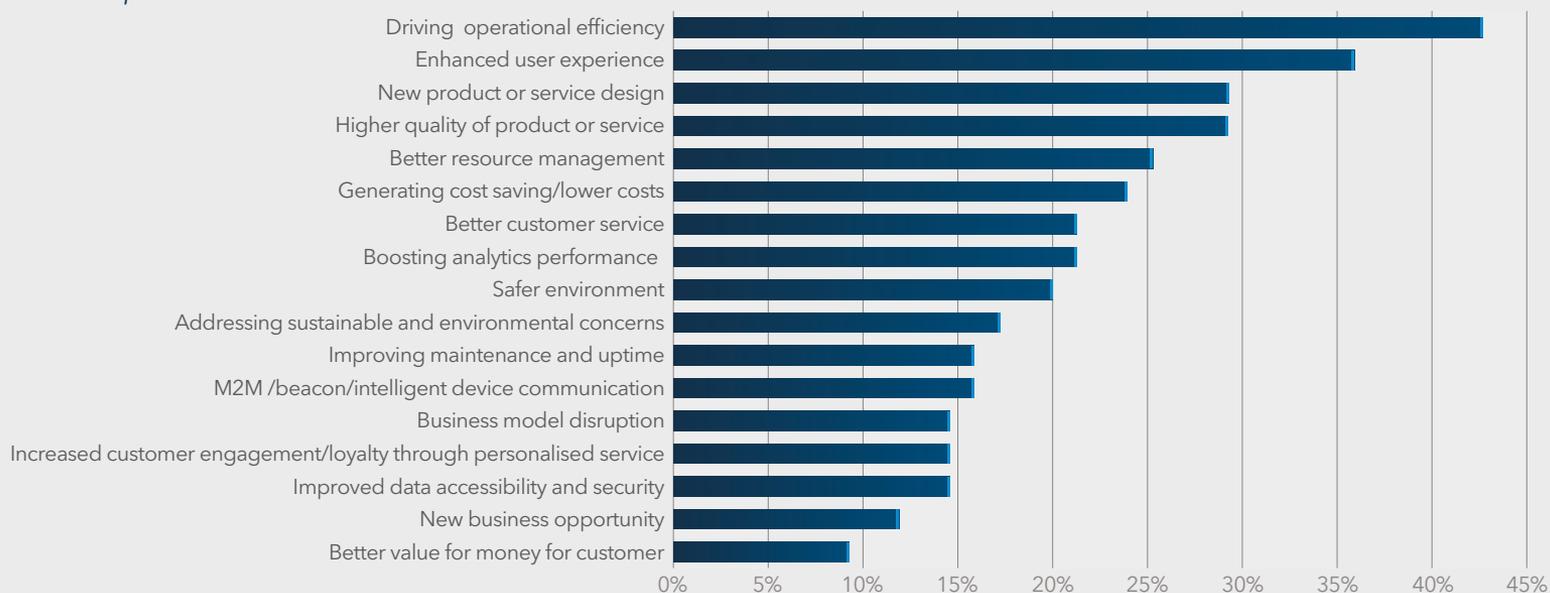
Improvements shared by customers and organisations

The suggestion that the same improvements may benefit both organisations, by improving operational processes, and customers, by affecting user experience, is supported by the comments from several interviewees. One commented, for example, that it would give the company the ability to improve either the way that they provided existing services, or deliver new services that were not possible before. Combining services might also be easier.

It is also clear from the responses that the categories may not be clear cut. Better operational efficiency and resource management, for example, is likely to result in improvements to user experience, and better value for money for consumers. One noted, that both clients and end users would benefit from better service, and that reduced costs would benefit both company and clients.

The interaction between operational processes and customer experience was seen as key. Improvements in managing data would result in better insights into customer behaviour, enabling provision of services that better met customer needs, at a better price. One respondent noted that there was huge benefit to both business and consumer if organisations could build a more 'holistic' view of customers.

Fig 1: Diverse expectations



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q1: What does IoT or the 4th industrial revolution mean for your customers, your business, your competitors?



An equally wide range of sponsors

Pursuing the connected consumer

We found that there were, in total, 15 classes of use case, with the percentage of organisations deploying them ranging from 20% down to around 4%. The majority of use case classes were in operation in between 5% and 15% of companies surveyed.

The most popular use case category, which is being deployed by 20% of those surveyed, is projects to support what we might call 'the connected consumer'. Close behind, and being used by between 15% and 20% of organisations, are auto-diagnostics on 17% and asset tracking on 16%. Those three classes of use case lead the way, and are the only ones being used by more than 15%. There are, however, a further five classes of use cases which are being deployed by between 10 and 15% of respondents. The first three, being used by about 14%, are healthcare, connected vehicles, and supply chain control. Smart factory technology and other transport applications are both being used by about 11%.

It is clear from this that IoT technology is being deployed across a wide range of fields, reflecting its wide applicability and potential to improve both processes and outcomes. It is clearly being used to improve outcomes for consumers in some cases, for example, via projects classified as 'the connected consumer' in the retail sector and in healthcare. It is also being used to improve processes, such as auto-diagnostics, asset tracking and connected transport and vehicles.

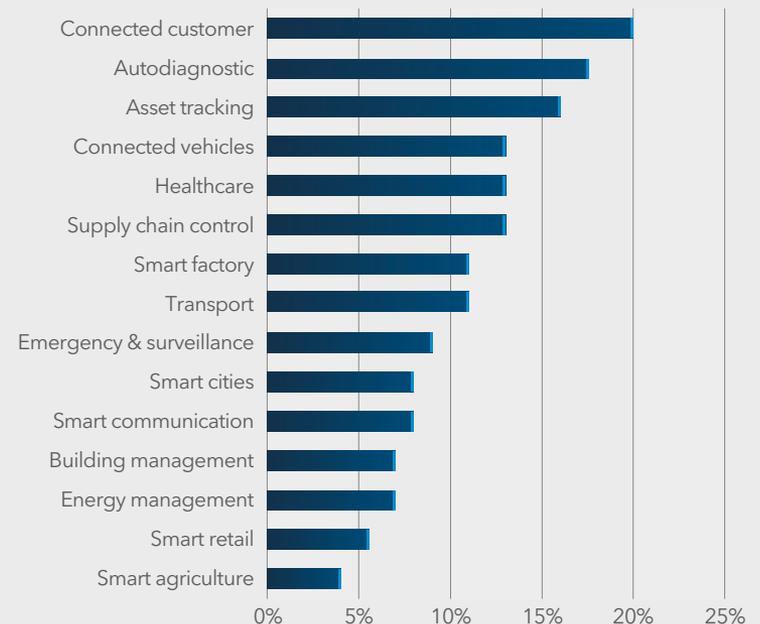
Emerging use cases

Digging down into the detail of the responses to the survey, each category or class contains a wide range of use cases. In healthcare, for instance, some organisations are working on wearables and sensors to monitor health remotely. Others are working to improve operational processes and equipment maintenance by tagging hospital linen.

Asset tracking and auto-diagnostics, which are often closely linked, both had a variety of use cases. Some respondents provided examples of more than one IoT use case, depending on customer needs, whether those were real-time monitoring or predictive maintenance. This serves to emphasise the wide range of use cases. There is, of course, considerable overlap between use cases, and it can often be hard to allocate one example to a single use-case category.

One notable exception to the general rule was a company using IoT technology to track people, not inanimate assets, to ensure their safety in high-risk working environments. This has a wide variety of possible uses, including manufacturing, warehouse and distribution and construction sectors. Use cases clearly need to be both flexible and additive, and organisations need to be open to alternative uses of the technology.

Fig 2: Equally diverse use cases



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q2: What are the top three initiatives your organisation has embarked in the past 12 months to profit from IoT?



Design thinking is critical

What have organisations learnt from their initial implementation of IoT technology that will help them in future? It is fair to say that different companies had learnt quite different lessons, with little consensus on the most important category among the responses. The range of responses may be a reflection of the great diversity among the organisations represented, but there are unmistakable commonality related to “soft skills” associated with culture and leadership, such as collaboration, education and changes to various approaches.

The importance of classical change management skills

The three most popular lessons, each mentioned by more than one fifth of respondents, will come as no surprise to any student of classic change management theory. First was the importance of applying design thinking. This is where users, or user experience, is allowed to drive design, bringing together behavioural theory with technological expertise. It is a very human-centric process, emphasising the importance of customers in developing technology, and was mentioned by almost 30% of respondents.

The next most popular lesson, mentioned by more than 25% of respondents, was the importance of testing in advance. Coupled with the fact that the third most commonly-mentioned lesson was the importance of scaling up, and that 'starting small' is important. Demonstrating 'quick wins' has long been viewed as important to change management, and piloting and testing is one way to do so with IoT technology.

Interestingly, although analytics featured quite highly as an important aid to decision-making (it was mentioned by 20% of respondents), advanced data management was mentioned by fewer than 10%. There may be a question about whether respondents really know whether they mean analytics, or are using it as a generic term for 'data management and interrogation'.

Overall, though, most of the skills required, and lessons learned, could have featured in any list of 'lessons learned from implementing a project' over the last twenty or thirty years. Clearly, change management skills will still be required for some time to come.



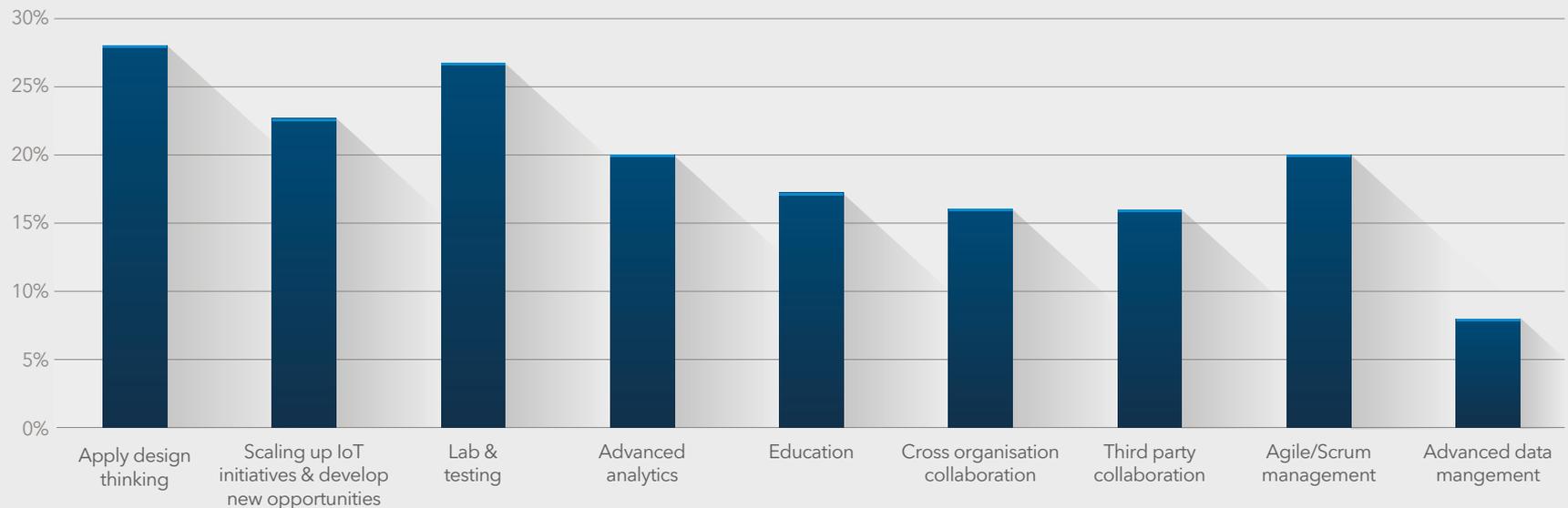
Design thinking imperative

Respondents' comments supported the importance of putting users at the heart of the change process: the design thinking approach. One respondent crisply articulated how it was all about moving to a more proactive approach that would enable them to anticipate customer needs. This, in turn, would reduce downtime, and improve operational efficiency. The key, though, was simple and easy-to-use solutions that would be straightforward for customers to understand and use.

In many cases, piloting was also a case of putting users first. Respondents noted that initiatives that did not resonate with users could and should be abandoned quickly as part of the piloting process. This was important for both goals that were over-ambitious, and also prototypes that just did not engage people.

Other respondents recognised that the real issue may not be 'introducing a new technology', but 'change', pointing out that the move to real-time analytics and decision-making might be a big opportunity, but it was also a big change. Another said that speed of movement was never fast enough, a sentiment that will be familiar to change managers throughout the world, and across all business sectors.

Fig 3: Design thinking imperative



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q3: What were the main lessons you learnt from these initiatives that will guide how you plan future IoT ventures?



Challenges span both technology and change

There are, of course, challenges associated with being able to exploit IoT technology fully. And like the wide range of lessons learned, there's a long list of challenges without strong preponderance for any one of them. In this case, the study identified 16 distinct categories of challenge, each reported by at least 5% of respondents, but none were mentioned by more than one quarter of those surveyed.

Data handling issues were identified as the biggest challenges

The top three challenges were each identified by at least one fifth of the organisations surveyed. The two biggest issues, each discussed by 21% of those surveyed, both related to data handling: they were real-time data analytics, and security concerns. Both of these emerge at least in part from the sheer quantity of data that is available from IoT technology, and they reflect the very real issues involved in extracting value from the data. Data security has been a 'big issue' for many years, with few months passing without at least one major security breach or leak involving a big company or organisation, and many people are anxious about it.

The third issue, mentioned by 20% of respondents, is cultural change management. This may be closely linked to the first two: culture change is necessary to recognise the importance of extracting value, and using data as evidence to support decision-making. It is also vital in ensuring that everyone recognises the importance of data security in managing the implementation of IoT technology, and that customers are comfortable with the way their data is being used.

The fourth and fifth challenges, both mentioned by between 15% and 20% of respondents, were technology-related. Both integrating technologies and systems, and handling complex technologies, relate to the sheer volume of data, as well as the speed of technology evolution and the range of technologies required to exploit the IoT.

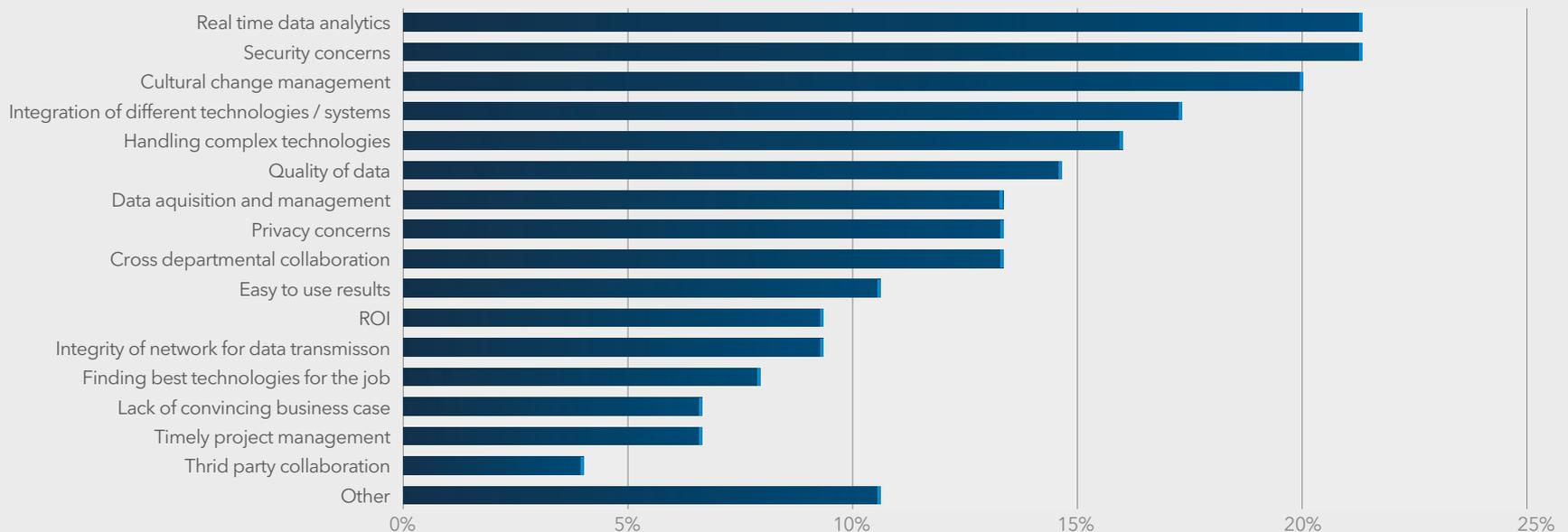


Comments from respondents reflect the overlaps between categories

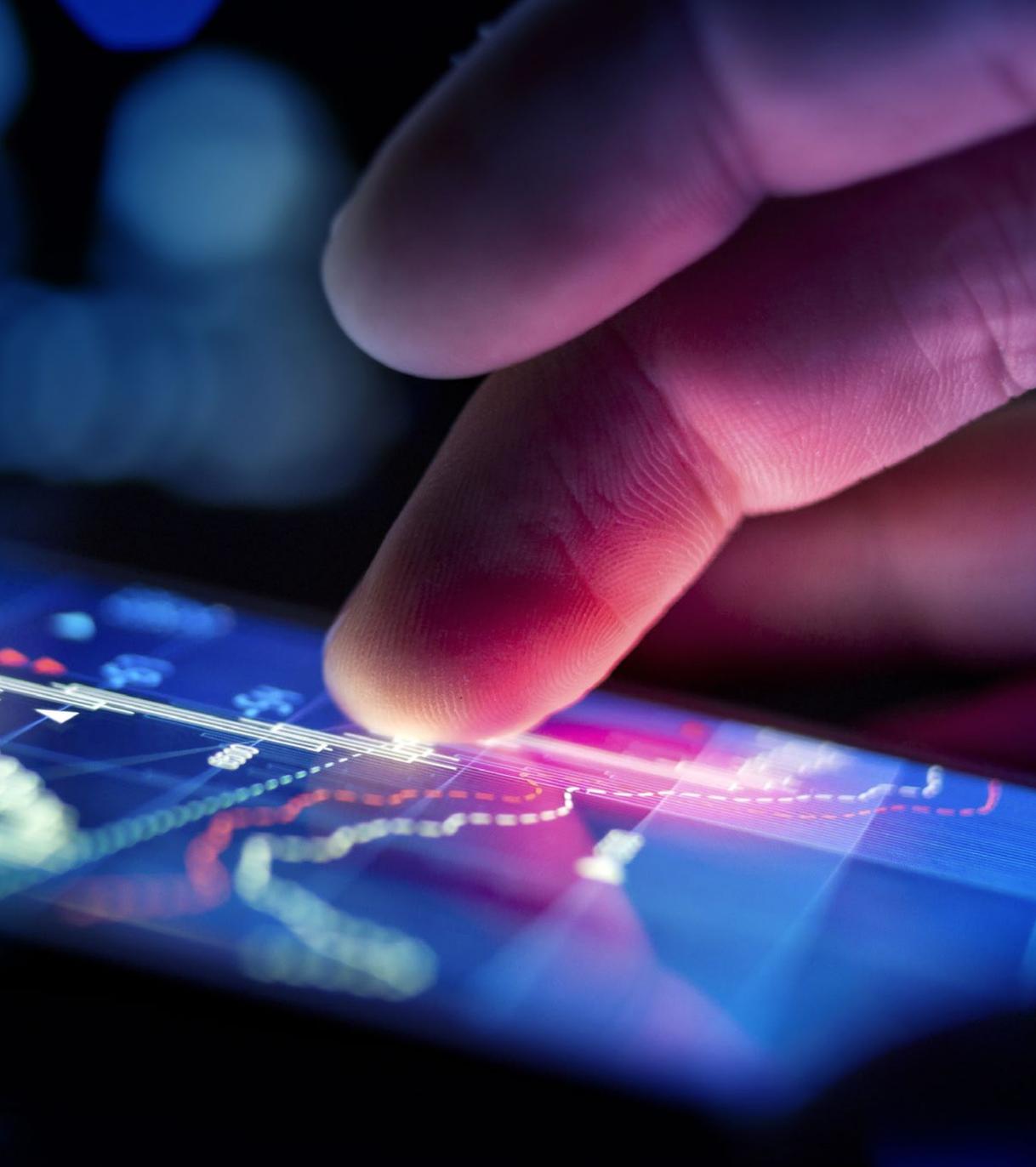
The comments from those surveyed clearly demonstrate that the categories utilised in the study are not exclusive, and also are not easily separated. One noted, for example, that the challenge was to change the culture around information sharing and data security: a combination of three separate categories. Another noted that the introduction of new technology required time for people to adapt, a classic change management issue.

Several respondents commented on the importance of analytics, and particularly the challenge of using the data well, and the issues of combining data to generate new insights, or selecting which data to use. The real concern was how to get useful information out of the data, and particularly insights that would affect outcomes for consumers or customers. One respondent in particular commented on the challenge of analysing 'massive amounts of data' in 'real-time', but emphasised the opportunities that would come from new data visualisation tools. One issue that cut across all the challenges was time. Several respondents commented that implementation had taken much longer than expected. This, too, will be a familiar issue for anyone who has even been responsible for managing a change programme.

Fig 4: Predictable challenges



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q4: What were the challenges associated with exploiting the IoT fully?



Emerging skills

Another objective of the study was to understand what was needed to get best value out of the IoT, so we asked organisations about the skills and resources that they had found most useful in their IoT projects. The results may be surprising, particularly for IT specialists.

A surprising leader in the skills stakes

If you thought that the most important skill would be analytics, or data science, then you are in for disappointment. It seems that many of the early movers have simply bypassed a need to acquire technology expertise by working with consultants. And while buying in skills is seen as a good way to manage the skills gap, someone needs to be able to manage those providing the bought-in skills. The skill that was identified as crucial by the biggest group of respondents was the ability to work collaboratively with external consultants.

Beyond the first identified skill, the next three most important skills identified by 12% or 13% of respondents in each case, all relate to technology, 13% mentioned process automation. The next is engineering skills to address sensor performance and data reliability. The third is about adapting people tasks to the new technology, and therefore relates both to technology and to cooperation. Below that, and important to 9% of respondents were both data science and security expertise, much as we would have predicted.

Perhaps surprisingly, given the broad sweep of change management challenges identified, project management skills were not seen as key by more than 5%, and change management skills were not even mentioned. What about the skills gaps? The main skills gaps, identified by 7% of respondents, were in data visualisation and storytelling and in interpreting results, although analysis was up there too on 6%.



Collaboration is crucial

The reason change management skills did not surface in this part of the study could have been the way that responses were classified. One respondent explained that in their view, collaboration and innovation are key, and another that facilitating change and providing leadership was hard. Both these would count as change management to many people.

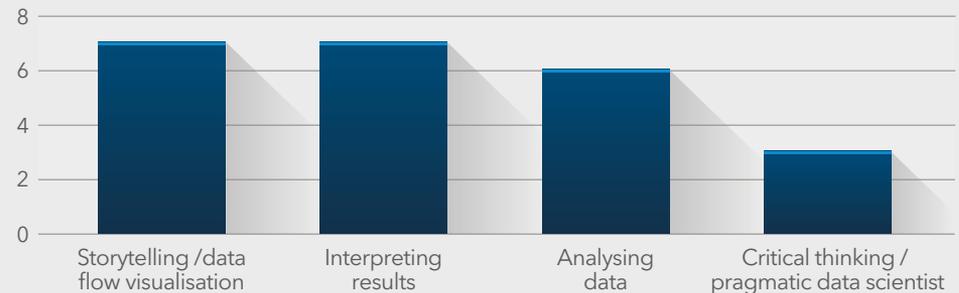
Several respondents commented on the importance of collaborating closely with consultants, and buying in skills that were unavailable in-house. A willingness to engage with and acquire new skills was seen as crucial for success, with respondents using terms like 'go shopping', and 'buy in skills', as well as an expressed need for support in particular areas.

In a neat fit with the design focus, several respondents spoke about the importance of putting customer and user needs at the heart of design. This was not just in terms of the end product but understanding customer preferences and workflows and getting buy-in for the project. One respondent said that the biggest challenge they had faced was in presenting the data in a way that was understandable for the target audience, emphasising the importance of communication and people in any change process.

Fig 5: Skills surprise



The main skills gap lies in:



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q5: What skills did you find most useful during your IoT deployment?



External specialists are an important resource

Closing the skills gap

And how are organisations closing the skills gaps identified, especially in data and analytics? The prevalent response in this study is unlikely to surprise anyone who has read the previous section. The most useful skill in exploiting the IoT was seen as an ability to manage consultants; many organisations are closing the skills gap by hiring external consultants, especially those with an expertise in technology.

Borrow, buy or build?

By far and away the most common response to the problem of a skills shortage around data and analytics, indicated by 38% of respondents, was to form a partnership with a technology vendor. After all, technology vendors have both the skills and the technology. They can also be employed to train existing staff for the necessary skills to manage the technology on an ongoing basis.

14% of respondents mentioned both the classic 'borrow, buy or build' triumvirate, where consultancy is 'borrow'. 'Buy' was represented by external hiring of skilled expertise, often on a project basis, and 'build' by training existing employees through a variety of means. Those mentioned included placements, workshops, online training, conferences, and certification.

Other responses were generally a variation on these themes. Around 10% said that they were building or accessing a trusted community of analysts or specialists. Again, this is effectively consultancy, but with a group or individual other than a technology vendor. A few respondents (around 9%) said that they were trying to understand the skills gap first, and others that they were hiring aggressively among graduates.

The thinking behind these choices

The reasons for these choices make interesting reading. One respondent, for instance, was upfront about their inability to attract or retain high quality staff with the necessary skills. Instead, they had decided to engage effectively with external consultants. Another noted that a technology vendor could provide both the skills and the software, and that having a single organisation providing both simplified the issues involved in implementation.

Several respondents already had an eye to the future in terms of growing skills. One, for example, was upfront about requiring technology partners to engage in knowledge transfer, as part of the agreement. Others were using a hybrid approach. In the short term, they were engaging skilled consultants, drawing on their technology vendor. But in the longer term, they were developing a pool of freelance analysts to help as and when necessary. Others were relying on their staff to be willing to learn new skills. The 'borrow, buy or build' approach turns out to be more nuanced than we might suspect.

Fig 6: Gap reduction strategies.

Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q6: How are you filling these skills gaps?





Vision of IoT impact

Maturity of business functions supporting IoT

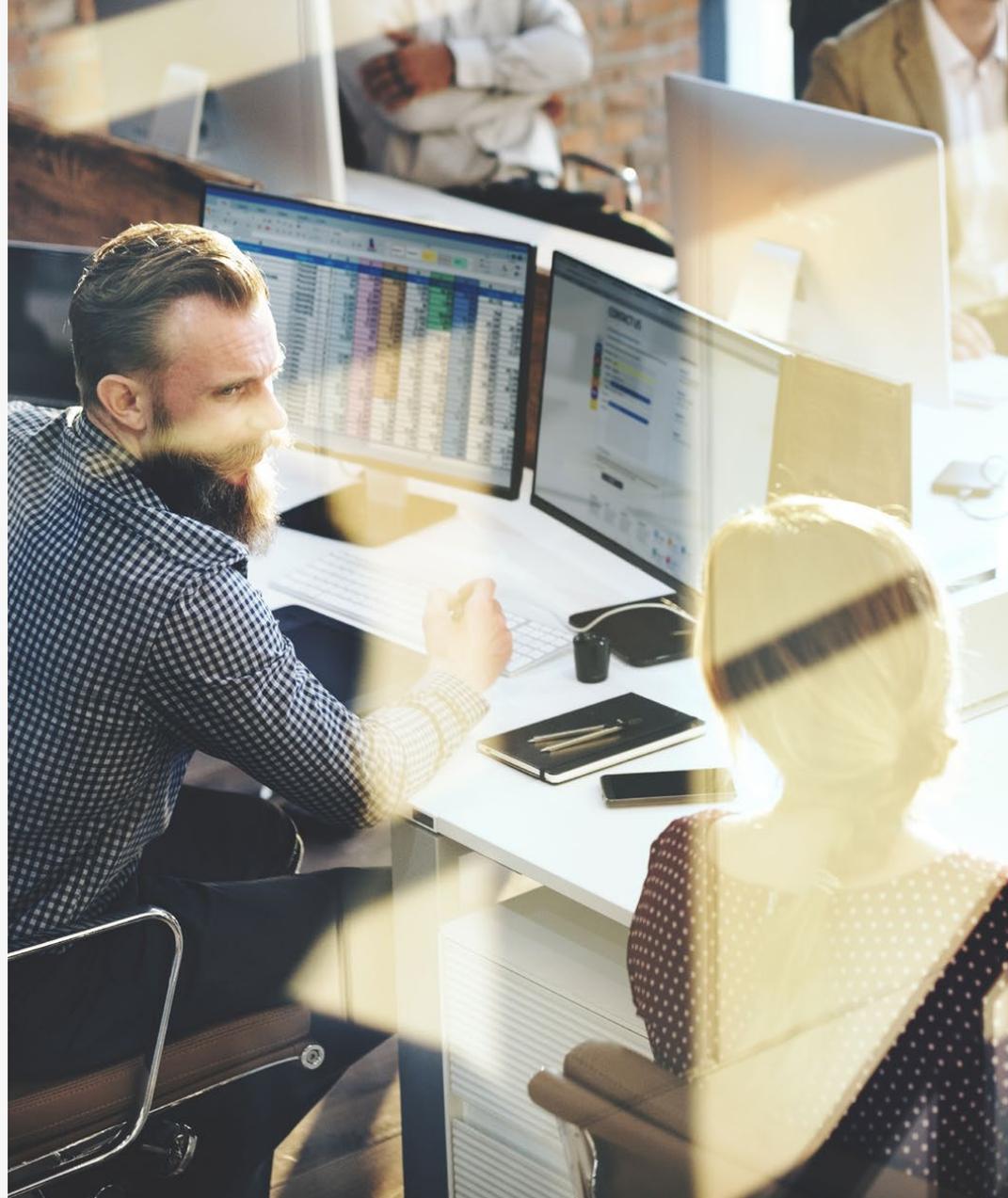
Drilling further down into the detail, respondents were asked which business functions were most mature in their use of IoT technology. A surprisingly large proportion, 20%, said that maturity was the same across all departments, although this may reflect low maturing and very early stage IoT deployment, rather than a high level of confidence.

The customer priority

Priority for customers was between 5% and 10% for each of the following areas; logistics and operations, sales and marketing, customer service and user experience, a dedicated IoT unit, manufacturing and product development and the IT department. The low level of mentions of a dedicated IoT unit may reflect the low numbers of such units currently in existence rather than any lack of maturity in these teams.

Internal process departments such as finance and HR were much less mature in their use of IoT technology, suggesting that most organisations are focusing on improving customer-facing processes or efficiency before spending time and energy on internal process departments. Investment in the IoT, it seems, is very much a commercial decision, and payoffs in terms of customers or operational efficiency are vital: as we would expect, the bottom line cannot be ignored.

The study was designed to uncover factors around maturity to the IoT. Only three reasons were given, the most common of which was that this interconnected department was using IoT data outputs: in other words, familiarity and maturity was essential. This response was provided by between 15 and 20% of those surveyed, compared with just 9% for the next most common reason, that the department was already involved with customer analytics. Only 1% of respondents said the reason for that particular department's maturity was staff safety.



Expertise spreading across organisations

It is clear that a customer focus is what is driving IoT development across many organisations. One respondent commented that the technology was being used to assist customers, and was therefore by definition in operations or customer service. This customer focus is, in many cases, what has driven the 'whole organisation' approach to IoT use: departments have worked together to improve services for customers. This was echoed by another respondent, who noted that one of the challenges of IoT deployment was that it spanned traditional silos. This meant that 'whole organisation' maturity was the only option.

While many organisations had one or more departments that were ahead in their use of IoT technology, the consensus was that others would catch up. One respondent commented that it is hard to envisage any part of the organisation not being part of the 'journey' towards IoT use. Others observed that success in one department had spun off into developments elsewhere, including in more internally focused departments such as HR, as others saw the potential of the technology, and took advantage of its availability. Success, it seems, breeds success.

Fig 7: Breaking organisational silos



Reason for IoT maturity



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q7: Thinking about the businesses and support functions across your organisation, which would you consider to be the top 3 today in terms of mature use of IoT?



Perceived risks of not engaging

As well as the challenges associated with the exploiting IoT technology, it is always helpful to know what is driving change. The study asked about the risks that were seen as associated with not implementing IoT technology.

Responses related to risks were able to be classified into fewer groups than those for other questions: just eight categories, all of which were mentioned by at least 10% of respondents. None were discussed by more than 18%. Perhaps this is because risks are necessarily speculative, rather than concrete: organisations can only suggest what they see as a possibility should they fail to take advantage of the opportunities on offer.

The top three risks were all identified by the same proportion of respondents, 18%, which related to concerns about losing market share to competitors, losing efficiency, and not being able to provide a cost-effective service or product to consumers. The first of these is probably inevitable: most organisations rightly fear falling behind their competitors if they miss an opportunity that others can exploit. The second is also not too surprising given the high proportion that identified the IoT as a way of improving efficiency.

Nearly as many, 16%, were concerned that they would fail to gain an insight into a potential new product or service, or miss an opportunity. This is probably closely linked to fear of falling behind competitors. Many incumbents fear disruptive innovation (a completely new product/service that turns the market upside down) more than incremental improvements by other incumbents, because it is much harder to predict or counter. New technology always holds this fear, although of course it is also an opportunity for those who can exploit it.

Experiences shared across public and private sector

'Fear of falling behind' was not a fear confined only to the private sector. Public sector respondents, including those representing smart cities, also expressed concern about being overtaken. While their concern was perhaps more reputational than financial, a 'failing' smart city will be less attractive to new business and risks lower growth, with a very real economic impact.

Several respondents viewed the rise of the IoT as inevitable. As a result, one suggested that it was better to be the disruptor than the disrupted. Another commented that even market leaders cannot afford to sit back, saying that to stay ahead, it is necessary to continue to innovate and disrupt. Phrases and sentiments that kept recurring included the desire to stay ahead, the need to be among the 'first movers', and the importance of constantly improving the customer experience.

Others identified risks as the inverse of what they were already gaining. In other words, they were now seeing that the IoT enabled them to track goods, improve customer service through better visibility, and reduce environmental impact, for example. Not using it would mean that they would lose all these benefits—and, potentially, lose ground to their competitors.

Fig 8: IoT expected to re-define addressable market



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q8: What do you see as the biggest risks associated with not fully exploiting Internet of things opportunities?



Speed

Respondents were asked how they assess if their appetite and initiatives around IoT are moving as quickly as the market demands. It is always difficult to assess whether you are moving quickly enough, especially in a new area where the technology is moving at such speed anyway. Our respondents, however, showed that they were pragmatic.

Practical efforts to stay ahead of the curve

The focus of many of our respondents was simply to keep moving. 15% said that they simply kept developing innovative or disruptive solutions, in the hope that they would remain in the lead. Nearly as many, around 13%, said that they kept investing and focused on expanding their use of the IoT technology. This is a very pragmatic approach to a fast-moving area: if it moves, you move with it.

A much smaller proportion focused on horizon scanning and checking their policies. Around 7% said that they focused on reviewing their IoT strategy to ensure that it remained current. Just 6% said that they conducted research through internal resources, such as an innovation lab, to make sure that they could stay abreast. Conducting market research and talking to analysts were both low on the agenda, with just 4% of respondents saying that they used either strategy.

A consensus among respondents emerged that stopping to check what others are doing, and assess the state of the market, may lead to being left behind. In a rapidly-moving world, stopping to catch your breath means that others may overtake: it is better to keep moving and keep innovating. It is possible that this is a stronger reflection on the current state of the IoT market in many sectors: the companies currently getting value from it are very much the 'innovators' and 'early adopters.' By their very nature, these are the companies that do not sit still and watch.



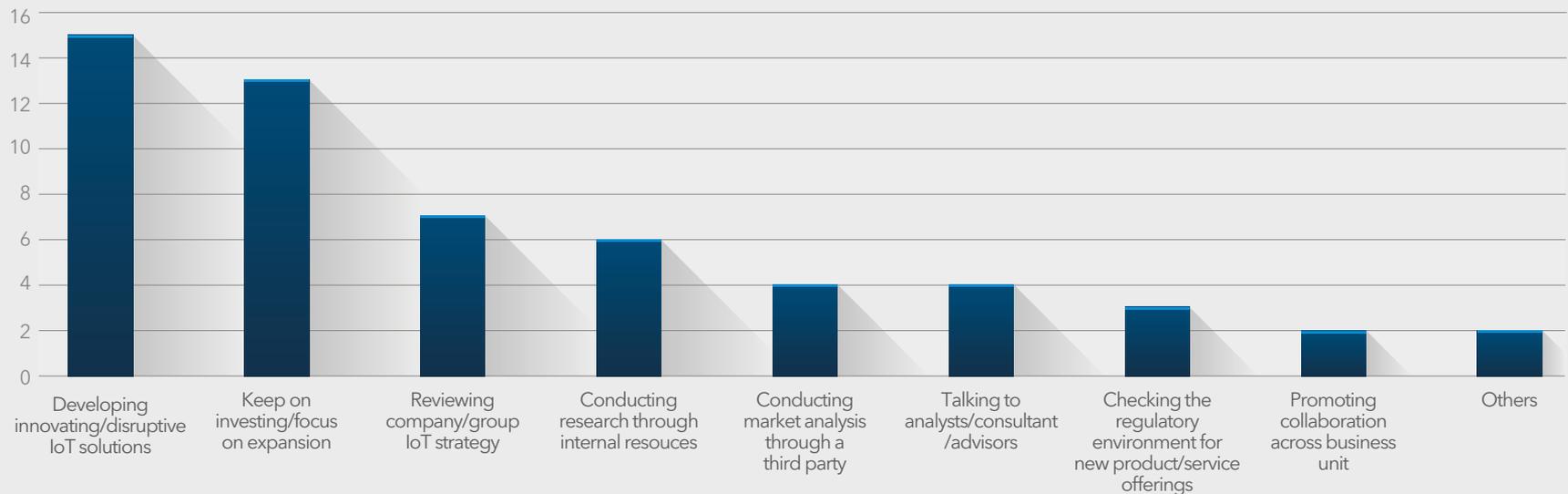
A focus on customer demand and needs

We learned a lot about the companies' approach to innovation from the detailed answers for the study. One respondent noted that innovation was a key purpose of the company, and their partners. It was, effectively part of their DNA, and they were focused on pushing the boundaries and developing further.

Another respondent noted that customer demand was important. It was, they suggested, possible to ensure that you were keeping up by responding to customer requests. This is, of course, only likely to work for incremental improvements following initial implementation, and for not a major disruptive change such as initial adoption of IoT technology. Another respondent, however, pointed out that it was important to ensure that users came with you on the journey: innovating for innovation's sake would not help.

Other companies were focusing on rolling out their existing technology to new geographies or new users, expanding into more sectors as they went. They were also adding new modifications, or identifying new uses of data. This was a particularly common use of an innovation lab or dedicated product development team, and shows continuous incremental innovation at work.

Fig 9: Benchmarking



Source: SAS IoT Impact Study, September 2016. N = 75. Multiple responses allowed. Q9: How do you assess if your appetite and initiatives around Internet of Things is moving as quickly as the market demands?



Changes in the addressable market

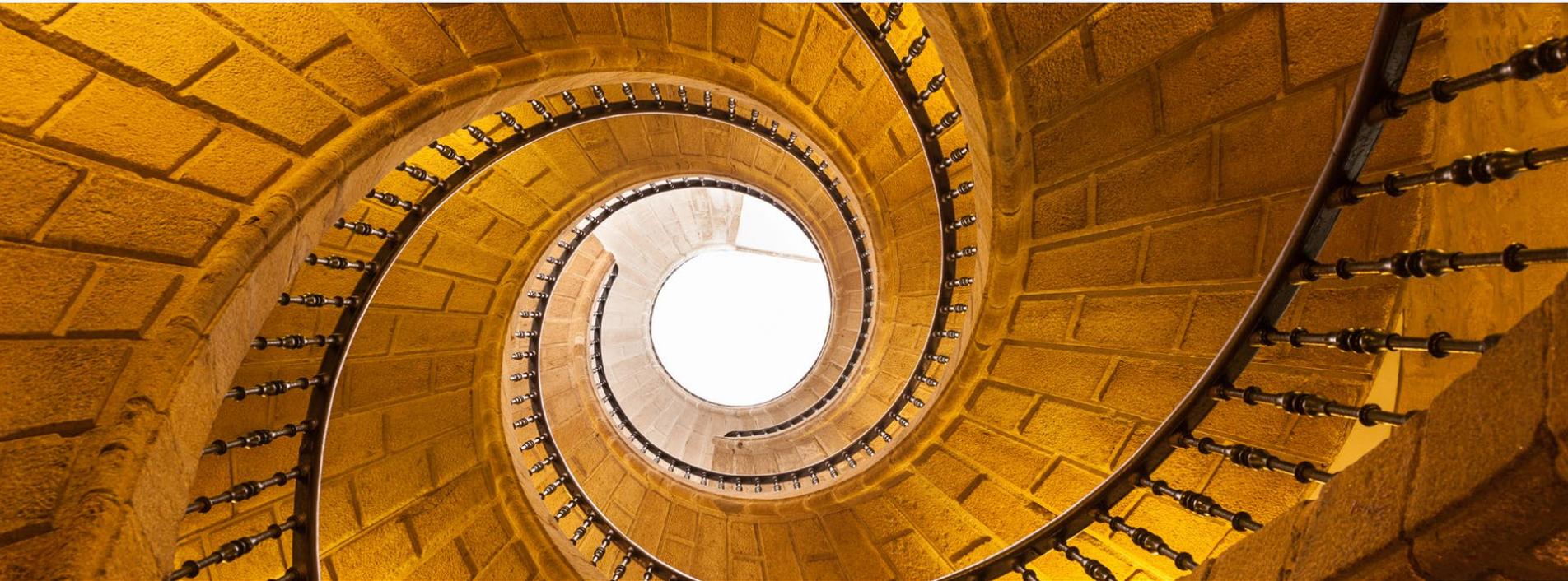
Finally, respondents were asked how they saw their addressable market changing over the next five years. While some might characterise this as 'crystal ball gazing,' it is clear that many companies had thought long and hard about this.

Incremental achievements and improvements

It will probably not come as a surprise to learn that most companies already active in using IoT technology saw the way forward as being through incremental improvements. The top three response categories, each given by more than 15% of those surveyed, were all about improvements and expansions, rather than big changes. The most popular of these, from 18% of respondents, was to scale up or extend current IoT projects. This is consistent with the idea that most IoT projects start small, rather than going for a 'big bang'.

Improved customer services and other offerings, and an enhanced digital offering, were both seen as the way forward by 17% of respondents. The reality is that many companies see incremental improvements as an important way to expand, fitting with the requirement to take both staff and customers along on the forward journey.

Fewer respondents, only 11%, saw the expansion of the connected customer being key, or that IoT would become a key industry focus in their sector. Increased data traffic and use of analytics were mentioned, but again, not by many. It is, of course, always harder to predict disruptive innovations, or see where the market is going in bigger ways. Who, after all, predicted the rise of the smartphone twenty years ago? Not many people, that is for sure.



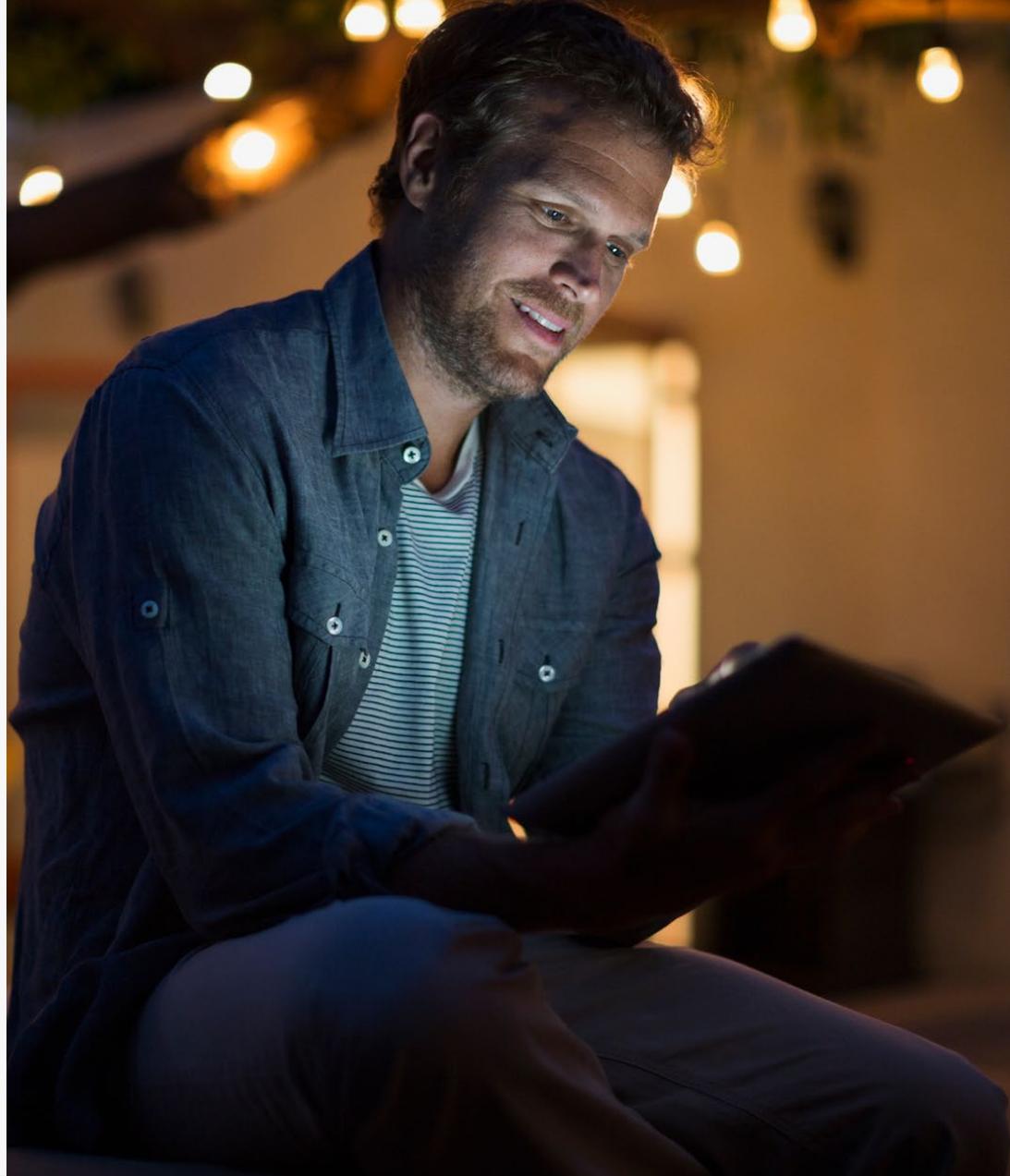
More focus on customers

But whether or not respondents were predicting major changes in their sector, there was a consistent core message: customer demand was central. Respondents talked about the rise of partnerships with customers, and how the IoT would allow them to improve services for customers.

Several noted that the rise in mobile devices was already changing how people shopped and interacted with organisations across the spectrum from financial institutions to government agencies. They expected this to continue over the next five years. While this was an opportunity, it was also a threat: companies would need to get smarter to attract customers' attention in an ever-connected world, and particularly among younger consumers who were more digitally-savvy.

There was a sense that the IoT would change the world as we know it among some respondents. Some talked about new capabilities that were unimaginable a few years ago. Others discussed the potential to transform sectors that had seen little technological change for years. What these responses had in common was a sense of excitement about what might come, and of being part of a huge movement of change.

It is those who embrace this excitement and who want to be at the forefront, rather than those who fear missing out, who will be most likely to be able to exploit the IoT to the fullest.



Appendix

Suggested Resources

Please consider one or more of these reports or whitepapers to learn more about IoT and the pivotal role that analytics play in the path to value with IoT for organisations of all kinds:



TDWI: Four Use Cases Show Real-World Impact of IoT



IoT in Retail: Engaging the Connected Customer



Improve Grid Reliability with Predictive Analytics



The Internet of Things: Finding the Path to Value



Making Meaningful Predictions in the Fast Lane



10 ways analytics can make your city smarter

About this study

Despite market excitement about the potential of IoT, concrete examples of mainstream adoption with sustainable results are scarce. SAS initiated this research study to identify organisations with such experiences, to better understand challenges and opportunities from the deployment process. We were specifically interested in the data and analytics aspects. Our experts interviewed 75 large organisations during the summer of 2016, and together with secondary research, this report represents the first of our analysis.



- Manufacturing incl. Automotive **16%**
- Consumer Goods & Retail **16%**
- Travel, Transportation & Logistics **12%**
- Healthcare & Life Sciences **12%**
- Engineering **9%**
- Facilities & Utilities **9%**
- Other Service Industries **10%**
- Public Sector **8%**
- Construction & Real Estate **8%**

Appendix

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