



Are you missing the tech train?

Global investment and implementation trends surrounding transformative technologies



Contents

04 Executive summary

Full steam ahead

06 Strong levels of familiarity, implementation and investment

09 Advanced implementation

11 The sectors and sizes leading the way

12 Benefits: expectations and realities

16 Different industries, different innovation

20 Investing in the present and future

24 Targeted technological investment

Latecomers

26 Areas of concern

27 Country and sector lag

28 Implementation interrupted

30 Low investment today, low investment tomorrow

32 Public sector lagging behind

33 Smaller organisations and lower implementation levels

Leaves on the track

36 Addressing innovation challenges and barriers

37 Necessary investment

40 Market maturity

41 Conclusion

42 Appendix

Introduction

Executive summary

From business innovation to productivity; efficiency to employee engagement, technology can seemingly do it all. However, while technologies show great promise in helping organisations unlock value, it is not always clear to top executives how they should focus their technological investments to create maximum impact.

Are companies aware of game-changing technologies? Do they understand their impact? Are certain sectors better at implementing technology than others? Do some countries appreciate the importance of new technologies, and do some lag behind? And, what are the common barriers to technological adoption – and the techniques to overcome them?

That's what our survey of over 600 C-suite executives set out to uncover. Focusing on five game-changing technologies – Artificial Intelligence (AI), Robotic Process Automation (RPA), Internet of Things (IoT), blockchain and Enterprise Resource Planning (ERP) – we gathered responses from around the world.

We gauged levels of familiarity, adoption and investment surrounding these five key technologies. We asked the executives if they've implemented them, where they are in their implementation stages, and what benefits they expect to reap. We looked at the investments they've made and asked them how they think the landscape will change. We sought to understand what typically gets in the way of adoption and investment. And we've collected advice from Mazars experts to help leaders make the best of potential technological innovation.

Our findings – and this report – show strong forward momentum in regard to these five game-changing technologies. Overall, familiarity levels are high, leaders see the impact these technologies can have, and they have plans to increase investment. But there are areas of concern and certain countries and sectors pale in comparison with their counterparts when it comes to implementation and investment.

In this report we highlight how leaders need to act strategically and put their people first in order to kickstart a digital transformation journey. And we explore how technological transformation requires a culture change: shaping and driving effective change management programmes is an essential step in order to not miss the tech train.

Finally, businesses need to appreciate that no technology comes without risks and an ability to mitigate these – namely cyber security – must now come hand-in-hand with technological adoption and investment.

The survey findings are illustrated throughout the report by qualitative insight from our experts in order to deliver practical advice on how to tap into technology and truly unleash its potential.



Guillaume Devaux
Partner, Head of Technology
Sector, Mazars



Full steam ahead

Strong levels of familiarity, implementation and investment

Based on over 600 responses from C-suite executives, we can safely say the tech train continues to gain pace around the world. Our study shows there is a clear sense of forward momentum when it comes to familiarity, investment and implementation surrounding all five technologies. Countries and sectors are turning the familiarity they feel towards them into strong levels of implementation and investment – including a healthy appetite to increase future investment.

The first step towards successful technological investment and implementation is acquiring knowledge of the technology that is out there.

Nearly two-thirds (63%) of respondents said they felt informed on the five key technologies in question – 27% ‘moderately’ and 36% ‘extremely’ informed. That means over a third of all respondents believe they can easily talk about these technologies with co-workers.

“Almost two thirds of all respondents feel familiar enough with these technologies to discuss them with co-workers.”

More than buzzwords

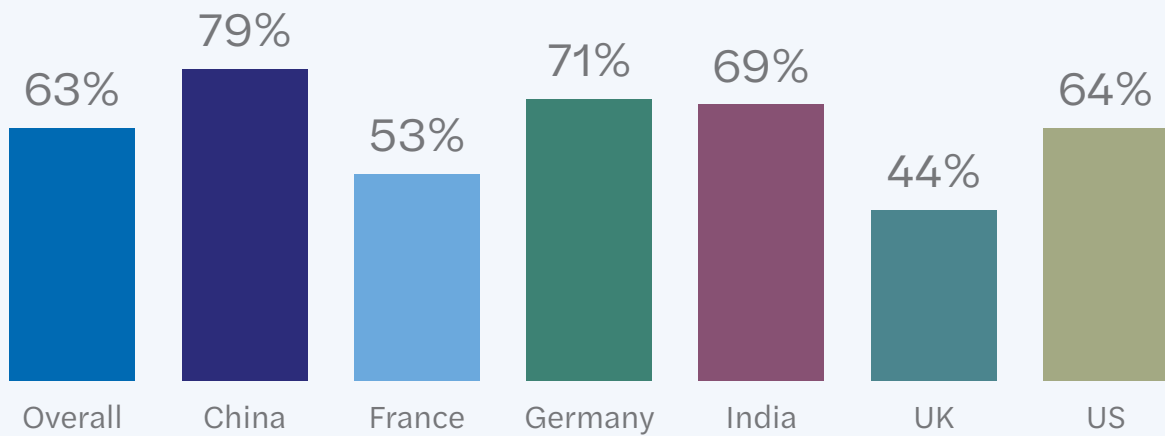
Evidently, all five technologies are likely to be on the C-suite radar – and have evolved from ‘buzzword’ status into everyday topics of business discussion.

A common feature in headlines and Hollywood for years, Artificial Intelligence was the technology that the most people around the world felt familiar with – 71% considered themselves either extremely or moderately informed on the matter. This was closely followed by Internet of Things with 69% saying they were familiar.

When it comes to familiarity levels in different countries, China and Germany topped the ranking with 77% and 71% of decision makers there, respectively, saying they felt familiar with all five technologies – a key finding that marks both countries out as best in class for preparing their teams and organisations to take full advantage of what the technology can do for them.

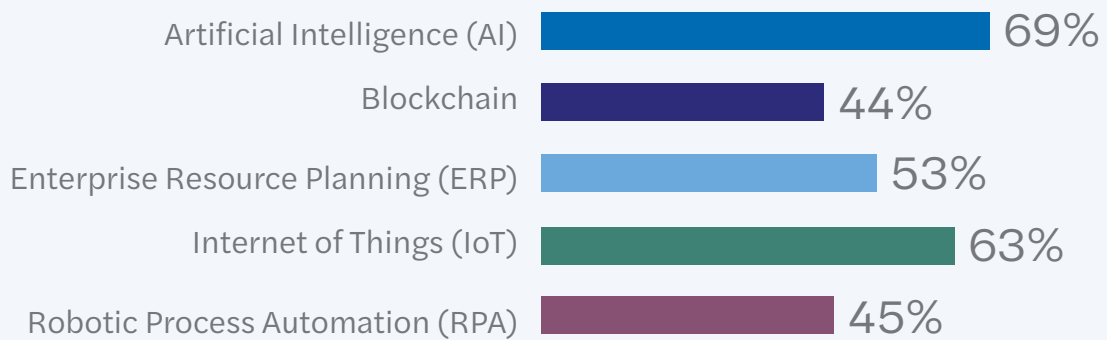


Exhibit 1: familiarity levels of the five technologies by country



China had the most 'extremely informed' responses across all five technologies.

Exhibit 2: percentage of respondents in China who feel extremely informed



Full steam ahead

Embrace and respect technology: Why China leads on familiarity

Interview

Shi Wenxian

Chief Partner of Mazars–ZSZH and
Member of the Group Executive Board
Mazars



Does it surprise you that China is the top country for familiarity on all five technologies?

An old Chinese saying goes, ‘A person will have worries today if they don’t plan for tomorrow.’ The survey findings brilliantly reflect that mindset – and show how business leaders in China have led the charge in ensuring the country looks ahead in order to be a world-leader in innovation today. That said, I am still slightly surprised by the speed at which people across China are getting to grips with these technologies, and the impressive achievements they are helping businesses to accomplish. Despite testing macro conditions, including questions over international trade restrictions, Chinese companies continue to show foresight and look to tomorrow while dealing with today.

Why do you think China tops the leader board on familiarity for these five technologies?

I think part of the answer lies in country-specific ways of learning and working. There is a real emphasis in China on learning maths, physics and chemistry at an early age. In fact, we say that if you learn those three then you can go anywhere. That foundation has meant people who enter the modern Chinese workforce can get familiar with these technologies fast. A second reason is the promotion of the link between technology and China’s economic and social development. Government and businesses alike view China’s future wrapped up in technological innovation – and so the latter sits high on the C-suite’s priority list.

What could the rest of the world learn from China when it comes to raising familiarity levels?

Respect and promote science and innovation. Embrace technology and make the effort to be good at using it. People feel familiar with technology when they’ve had a chance to see it in action – so governments and businesses need to make it accessible and easy-to-use: that’s why China’s wireless payment technology, for example, has taken off so successfully.

What is your advice to leaders who would like to get better acquainted with technology?

My suggestion would be to consider the social and historical reasons behind China’s rapid scientific and technological development. Look into how Chinese culture promotes science and encourages people to be hands-on with technology. They could also study Chinese technology businesses and learn from what they did – and how they did it.



Advanced implementation

Our survey found the extent to which these five technologies are implemented is somewhat influenced by the familiarity people feel towards them. We also discovered that their implementation is moving at different speeds, and some countries are quicker off the mark than others.

According to our findings, familiarity with a technology – when combined with its relevance to an organisation’s operations – will lead to its implementation, which emphasises the need for training and change management.

The survey also found that implementation of all five technologies is underway, albeit at different speeds. Meanwhile, echoing the familiarity findings, there are some countries that are showing a greater interest in bringing technology into the workplace than others.

With its decades-long existence and proven track record, ERP was the technology that most respondents said they had implemented. That said, the move to cloud-enabled ERP is ongoing and we will wait to see how the move alters its implementation over the coming years.

“With its decades-long existence and proven track record, ERP was the most implemented technology.”

Full steam ahead

ERP: how to use it and implement it successfully

Interview

Stéphanie Braud-Conte

Partner, Digital transformation for
Industry and Public Sector,
Mazars



It comes as no surprise that ERP is the most implemented technology out of the five. Its market maturity means it is a well-established starting point for companies looking to transform their IT systems and their internal processes.

By boosting back office efficiency and granting access to data wherever a company operates, it enables businesses to deliver support and services quicker and to a higher quality. The speed at which it can do all this is also remarkable – I've seen companies implement new ERP systems into their operations in new territories in just three months.

ERP is, typically, most successfully implemented when it's considered a company-wide project and not just something for one part of a business. When a company is changing its entire information services function or the way it deals with global data governance, that's when ERP comes in most useful.

It is not designed for specific outcomes and leaders will likely run into problems if they try to use ERP to create customer-orientated processes and complicated production planning systems.

There is a new generation of ERP rising as AI and RPA are brought into its fold. This will offer a more user-orientated experience and it's a step companies should not miss out on. Similarly, in France, we are seeing ERP increasingly used through the public cloud – a model where data storage and software are made available online. While this will cause companies to alter their existing ERP systems, it does mean lower proof of concept costs, which should help get new projects over the line.

Once implemented, leaders need to invest in change management so their people can fully exploit cloud-based ERP that incorporates AI and RPA elements. As for leaders dragging their feet, they should speak with advisory firms, which can provide targeted advice for taking the first step. In France, for example, we have created the Mazars Innovation Labs to demonstrate ERP applications in the real world.

When I see organisations working on projects in the same way they did ten years ago, I warn them they're missing out on what the new generation of ERP can do. Use it to bring agility to the methodology and put the user – not the process – at the centre of everything. In doing so, leaders can ensure the most implemented technology is also the most beneficial.

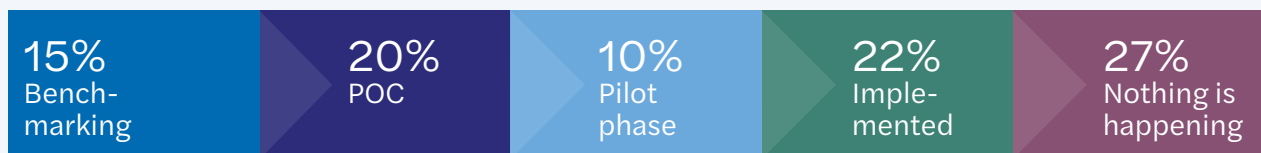
The sectors and sizes leading the way

The second most implemented technology is IoT, with a quarter of respondents confirming they are using it at work. As for AI and blockchain, implementation levels exceeded 20% – showing that beyond the hype, a significant number of decision makers are taking the first practical steps to implementing both into their operations.

China and India emerged as implementation outliers, with 87% and 83% of respondents, respectively, reporting they were at least at the benchmarking stage with all five technologies. They were closely followed by the US, where 80% of respondents said the technologies had made it to benchmarking or beyond.

India and China wholly dominate the other countries when it came to implementation: they shared the highest adoption records for all five; the former led on ERP, IoT and blockchain, while China led on AI and RPA.

Exhibit 3: Implementation stages covered in the survey and percentage of projects at each stage (all countries, all technologies)



The sectors and sizes leading the way

Looking at different organisation sectors and sizes there were – in common with the country findings – some groupings that showed a more marked enthusiasm to implement.

Insurance and manufacturing were the top two sectors for implementation: 20% and 19% of respondents working in those areas, respectively, said the five technologies had already been implemented and are changing their business models and operations.

As two sectors commonly viewed as operating on the frontline of technological disruption, the findings show the determination of sectoral decision makers to stay ahead of the curve.

As for organisational size, large companies with a headcount above 500 were the most likely to have implemented the five technologies. In that grouping, 84% of decision makers told us the technologies had made it, at least, to the benchmarking phase.

Full steam ahead

Benefits: expectations and realities

It may come as no surprise that ‘cost savings’ topped the list of the expected benefits that leaders associate with the five technologies. For all the great leaps forward that technology can bring, financial realities encourage leaders to keep their feet firmly on the ground. ‘Business model transformation’ and ‘improvements in quality’ took the other two spots as the most cited expected benefits.

RPA, AI and ERP were the technologies most respondents thought would deliver real benefits. RPA was most associated with cost savings – 31% of respondents from around the world said it would help them with their bottom line. While, AI and the nearly limitless possibilities it brings, was most associated with business model transformation (26%) and ERP emerged as the most popular in terms of delivering improvements in quality (28%).

Exhibit 4: top three expected benefits overall and % of respondents who anticipate them (all countries)



Cost savings
27%



Business model transformation
26%



Improvements in quality
24%

Ready for impact

There is a clear sense of urgency when it comes to these technologies and their impact on an organisation’s operations.

More than 80% of decision makers around the world agreed that at least one of the five will have an impact on their organisation – or that they have already made one.

37%

of respondents from around the world believed that AI, IoT, RPA and ERP will significantly transform the way they work

ERP was the technology respondents most believed had already changed how their company works – 34% – followed closely by IoT (31%.) Understandably, there is a link between impact and familiarity – teams that have seen ERP in action, for example, are more likely to feel comfortable discussing it and therefore foresee its impact in the near term. Importantly, the survey findings underlined the deep impact that these technologies are expected to make. Asked about each technology in turn, more than 37% of respondents from around the world believed that AI, IoT, RPA and ERP will significantly transform the way they work. Some 34% believed the same about blockchain.

Exhibit 5: when will these technologies make an impact on your organisation?
(All countries)



The countries most certain of these technologies' impacts are India and China – reflecting their high levels of familiarity and implementation. In both

countries, more than 90% of decision makers said these technologies will have an impact on how their organisations operate.

Exhibit 6: top benefits expected from each technology (all countries)

Benefits	AI	Blockchain	IoT	RPA	ERP
Cost saving	30%		26%	31%	27%
Improvement in quality/ compliance	27%	25%	25%	24%	28%
Business model transformation		23%		25%	
Optimised financial performance	27%		24%		26%
I don't know		23%			

■ top benefit ■ second benefit ■ third benefit

Full steam ahead

Benefits: expectations and realities

Exhibit 7: reaping the benefits – how the five technologies are transforming sectors & industries

AI	The healthcare industry is exploring how AI can be used to reduce costs and improve outcomes in total joint replacement surgery.	Car manufacturers are using AI to develop autonomous vehicles and deliver safer driving experiences, while streamlining their processes and reducing costs.	The hospitality industry is developing AI for use in sophisticated chatbots and self-service check-in facilities.
Blockchain	Banks are testing blockchain to reduce cross-border settlement costs and automate money laundering checks.	The pharmaceutical industry is experimenting with blockchain to track and trace medicine.	Humanitarian aid organisations are delivering food to people in need using blockchain-based computing platforms.
IOT	The food industry is improving its transport systems by using IoT to obtain more precise data on the temperatures at which an item has been stored and how long it spent in transit.	The aviation sector is employing IoT to detect part malfunctions, monitor fuel levels and allow passengers to track the progress of luggage.	The insurance industry is using IoT-enabled sensors such as telematics in cars, wearables and smart home devices, to more accurately calculate premiums.
RPA	Financial services companies are using RPA to streamline repetitive tasks such as claims processing and credit card applications.	The retail industry is using RPA to validate the closing information of cash registers.	Telecommunication companies are employing RPA to help improve the call centre experience by automatically aggregating data from multiple sources into a single, 360-degree view of the customer.
ERP	Professional services firms are using cloud-based ERP software to facilitate improved, end-to-end project management.	The education sector is using ERP software to provide insights to help teachers provide more effective teaching.	The manufacturing industry is using ERP solutions to improve management and control of the manufacturing process.



Full steam ahead

Different industries, different innovation

Interview

Anton Lissorgues

Senior Manager, Leader of
Hospitality Sector, Mazars



Smarter hotels with artificial intelligence

AI is reshaping the hospitality industry and while lobbies exclusively populated by diligent robots helping with luggage and check-in might be some way off, many hotels are already implementing smart technology to improve the guest experience.

Algorithms are in place, right now, across the hospitality world providing accurate insight into customer needs and educating machines to perform simple tasks. That means AI platforms can be used to personalise and improve the customer experience (virtual reality, smart rooms, customised entertainment), to tailor the pricing policy and to predict seasonal activity, which allows for more accurate service provision.

In our 2018 ['Artificial Intelligence: a game changer in the hospitality industry'](#) study we found that enthusiasm for such innovation differs on a guest's nationality. While some 87% of Chinese leisure travellers remember a memorable experience involving digital innovation, just 48% of leisure travellers from France, Germany, the UK and the US feel the same way.

Similarly, more than 65% of Chinese travellers would be strongly or mostly influenced to stay in a hotel based on its use of AI services – compared to less than 40% for travellers from France, Germany, the UK and the US.

Personal data is a crucial element in AI and machine learning and the hotel industry should be ready to reassure customers on data security, so they are comfortable sharing it and, ultimately, to help create the best possible AI experience.

AI in hospitality is on the rise and its benefits for guests and businesses alike are huge, but decision makers must bear in mind the different levels of interest in the innovation if they want to make the most of it.

Interview

Leo Schmidt

Senior Manager,
Audit and Advisory, Mazars

Marco Ehlert

Partner,
Audit and Advisory, Mazars



Making sense of manufacturing data

The amount of data collected during the manufacturing process has increased dramatically in recent years. Sensors and systems have evolved to deliver supply chain data in real time, but manufacturing businesses need ERP technologies capable of making sense of all that information if they want to apply it across their planning, quality control and forecasting processes.

The days of 'shop floor' systems where data was siloed from broader operations and from other locations are over. Today global manufacturing businesses must access that data and use it to create standardised, best-in-class processes across a growing global manufacturing footprint. Those who aren't using ERP effectively will miss out on these benefits.

To gain further competitive advantage, organisations in the manufacturing industry should combine the other four technologies covered in this report with ERP. For instance, IoT could be used to create and integrate smarter sensors; RPA and AI to automate data decisions.

The need for this well-rounded approach becomes especially clear in the automotive industry: a world where teams have had to rapidly pivot from making pistons to supplying components for electric vehicles. ERP cannot deliver that level of transformation alone, but it will drive the efficiency and integration processes that help create an environment where people can make creative, strategic decisions that keep a business moving with the times.

Manufacturing leaders have taken note: in our daily work we see clients dedicate a large portion of their IT budgets to modernising, harmonising and standardising their ERP landscape. We have also observed how ERP systems are best managed when manufacturing businesses allow smaller, empowered teams to make quick enterprise-wide decisions and move forward with the new system in a more agile approach. Otherwise they risk parts of their businesses getting left behind with legacy systems while others are keeping up with the latest technological developments.

Rightly referred to as the backbone of a business, leaders should do their homework and invest in ERP to inject more shop floor and market data and make smart sense of it. They should build bridges that connect ERP with other technologies and shape their digital roadmap around it.

Full steam ahead

Different industries, different innovation

Interview

Julien Huvé
Partner, Head of
Telecommunications
Services, Mazars



Interview

Rickard Warnelid
Partner, Head of
Infrastructure,
Mazars



How these technologies are dialling up the capabilities of telecoms

These five technologies are converging on the world of telecoms to create increasingly smart and seamless customer experiences. Consider how AI-enabled mobile banking is detecting fraud in real time, RPA is improving back office operations for global corporations and blockchain is facilitating mobile payments and keeping customers' data secure.

Backed by the global rollout of 5G, these technologies are not just helping telco firms pave the way to future growth but making customers' online lives easier and safer.

Trading renewable energy and bright weather forecasts

Technology and the energy sector go hand-in-hand. More often than not, developments in one will lead to developments in the other. All five of these technologies are being used in innovative ways by energy firms, but there are two implementations of blockchain and AI that shine a light on tech's transformative impact.

Power Ledger in Australia has created software that allows households to easily trade the energy produced by their rooftop solar panels. Using blockchain technology, people can now buy and sell renewable energy in real time to their neighbours and others. If you are a private battery owner, the software allows you to store the energy and sell it at a later date at its peak price to maximise profit.

The software is currently being used in countries including Australia, India, Japan, Thailand, and the United States. Major international energy companies are also trialling the blockchain-enabled software. Meanwhile AI is being deployed to perfect weather forecasts. Peltarion's cloud-based AI platform uses machine learning algorithms to identify patterns in weather data that organisations can use to more accurately predict the weather – come rain or shine.

Interview

**Dr. Christian Back and
Grégory Derouet**
Partners, Co-Heads of
Automotive Sector, Mazars



How the auto industry is dealing with disruption

Technology is fuelling vast opportunities in the automotive sector with the rise of the autonomous vehicles and shared ownership, for example. But it also poses difficult questions about the future of vehicle manufacturing.

In our **'2018 Global Automotive Study'**, we found that in order to secure bright futures, manufacturers are exploring research, investment, collaboration and business model transformation.

Firstly, to keep up with the world around them, we have seen original equipment manufacturers and traditional suppliers make significant investment into R&D – with their amounts set to increase annually. Secondly, leaders are investing in technological solutions. Within the next four to five years, Volkswagen alone will invest an estimated US\$35bn into mobility technology solutions.

Thirdly, there's remarkable collaboration: Toyota, Audi and BMW have all announced partnerships that are aimed at improving their offering in the new mobility landscape. And finally, with autonomous driving and electric vehicles on the up, emerging technology requirements will impact traditional suppliers – particularly when we see that more than 70% of a typical vehicle's component cluster will decrease due to these technologies by up to 30% or 40%. Consequently, many suppliers that focus on car components will need to adapt their business model as we see the amount of technology in the component cluster increase.

“Technology is fuelling vast opportunities in the automotive sector with the rise of the autonomous vehicles and shared ownership, for example. But it also poses difficult questions about the future of vehicle manufacturing.”

Full steam ahead

Investing in the present and future

According to our survey, companies are already investing and are planning to increase investment in the five technologies. In fact, more than half of respondents (57%) already spend over 25% of their IT budgets on a combination of them.

Investing in the present

Is 25% enough? Sector matters, says Mazars Partner Bruno Pouget. “The right allocation of capital expenditure, time and attention on these technologies depends on the sector in which an organisation operates. If you’re selling technology for the home, for example, you need to ensure your IoT investment is high enough to keep your offering up-to-date.”

It’s not just what you’re selling, but where you’re selling, he adds. “Customer appetite is influenced by geography. In some countries, customers are keener to try disruptive technologies than in others. In places where disruption is the norm, failing to invest 25% of your company’s IT budget and – maybe even more – could be severely detrimental to your growth.”

Thirdly, investment levels are not always the decisive factor in creating a successful tech transformation journey, warns Pouget. “Equally important, if not more so, is the ability to foster a tech-friendly culture through effective change management programmes; to focus on projects that add value to your customers’ lives and to enter into smart partnerships with organisations outside of your immediate industry.”

Our research shows it’s not just implementation levels that rise in line with familiarity: higher levels of familiarity also lead to greater budget allocations.

This correlation is particularly evident for AI and IoT: the two technologies were the ones people felt most knowledgeable about and simultaneously topped the current investment list. As for how those budgets are shared: 30% of respondents said they are investing more than 10% of their current IT budget on AI and 26% said the same for IoT.

30%

30% of respondents said they are investing more than 10% of their current IT budget on AI and 26% said the same for IoT.





Investing in the future

Looking at planned budget increases on a country by country basis, over half of respondents from China and India are planning to increase their budgets by more than 10% – despite already being the largest spenders on the five game-changing technologies. India emerged as the country where decision makers had the greatest appetite for increasing their budgets: 26% of respondents there said they plan on boosting financial backing by more than 50% – compared to just 15% of respondents overall planning to boost backing to the same extent. In places where disruption is the norm, failing to invest 25% of your IT budget in these disruptive technologies could be severely detrimental to your growth.



Bruno Pouget
Partner, Audit and Transaction
Services, Mazars

“In places where disruption is the norm, failing to invest 25% of your IT budget in these disruptive technologies could be severely detrimental to your growth.”

Full steam ahead

India: a world leader in technology and investment

Interview

Ravindra Rao
Partner, Mazars in India



What is behind India's investment appetite?

There is a time when every market matures and those operating within it realise they can't keep doing things as they used to. India is at that stage: more and more leaders are looking for ways to grow and move with the times. They are also operating in a country with a booming start-up ecosystem, which is tech-driven and dedicated to new ways of thinking and doing.

Why does India plan on investing more than other countries?

Younger professionals in India are increasingly taking leadership roles and know they need to implement technology to catch up and keep up with international competition. They are also keenly aware of risks like cybercrime so are using technology to keep their organisations safe and their customers satisfied.

Why is it important for companies to increase their technological investment?

We are already seeing industries struggle to make the most of the innovation that is out there because their people find it challenging to deliver at the pace or volume necessary. This is where technology has to step in, helping people do more of what they're good at so organisations can thrive. The future belongs to those companies that can seamlessly blend the benefits of technologies like AI and RPA with their everyday operations.

Do you have any advice to leaders who might be hesitant to increase investment?

Innovate or perish. Be it AI, blockchain, IoT, RPA or yet undiscovered innovation, technology is all around us and it cannot be avoided. Find a consultant you can trust and work hard to build your knowledge of which technology is right for your business's growth.

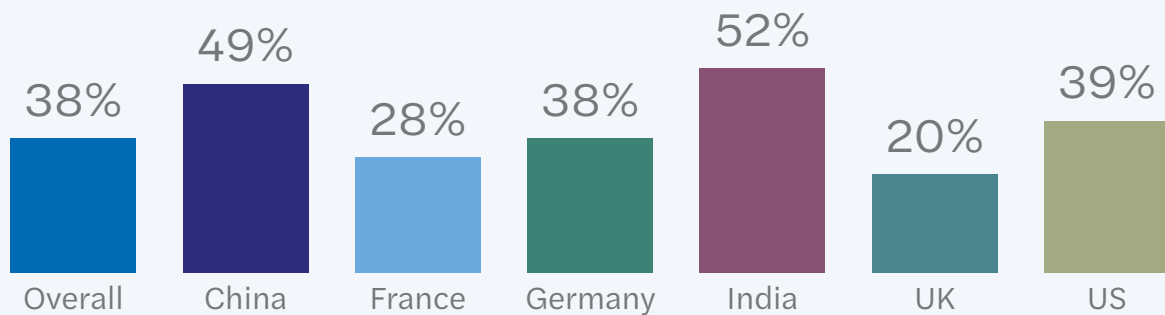
Is there anything leaders in other countries could learn from India?

Don't try to re-invent the wheel. There are plenty of tried and tested cases of how technology has worked well, and not so well, around the world. So, learn from them and think about how you could tweak implementation and investment to suit your own circumstances.

Are there other interesting or significant technological investment trends occurring in India?

I see a great deal being invested in and around cybersecurity, either in preventive or breakdown solutions depending upon the industry maturity in question. The AI environment is still nascent in India and it will take a few more years to come of age. But keep an eye on it because when it finds its feet it promises to be a world leader.

Exhibit 8: percentage of respondents who plan on increasing the share of their IT budget in all five technologies by 10% or more



Germany accelerates ahead of the other European countries in terms of planned investment with more than 39% of respondents expecting an increase over 10% – which is closely in line with their US counterparts (37%).

Germany’s enthusiasm to implement could be down to its small and medium sized enterprises – popularly known as the Mittelstand – says Mazars Partner Carsten Schlaewe. “The economic landscape in Germany differs to that of other European countries. Our small and medium sized enterprises are strongly focused on technology and export trade. Success in both those pursuits depends on companies keeping up with the latest global developments – including knowledge of the five tools included in the survey.”

He adds, “Often these Mittelstand companies have been doing business for four or five generations and along the way have become highly specialised in their area. They have to innovate to maintain that technical brilliance.”

But it’s not just the Mittelstand driving implementation and investment levels. “Large German businesses are similarly spending on technology, particularly on global ERPs in order to perform at the best possible level. In my view, the bigger the company, the more important it is to be open minded to new technologies.”

Germany’s high wages also go some way in explaining their impressive plans for investment, explains Schlaewe, “Germany is known for high-quality products, created in a market where people are paid more than in other countries.

Given this situation, investing in technologies that make companies more efficient is key. Without a commitment to technology, Germany could struggle to maintain a competitive position.”

AI is the technology that – according to our findings – will receive the highest level of investment over the coming years. Some 30% of respondents from around the world plan on increasing their overall investment in AI by more than 10%, closely followed by investment in IoT (26%).



Carsten Schlaewe
Partner, Head of Industry Sectors, Mazars Germany

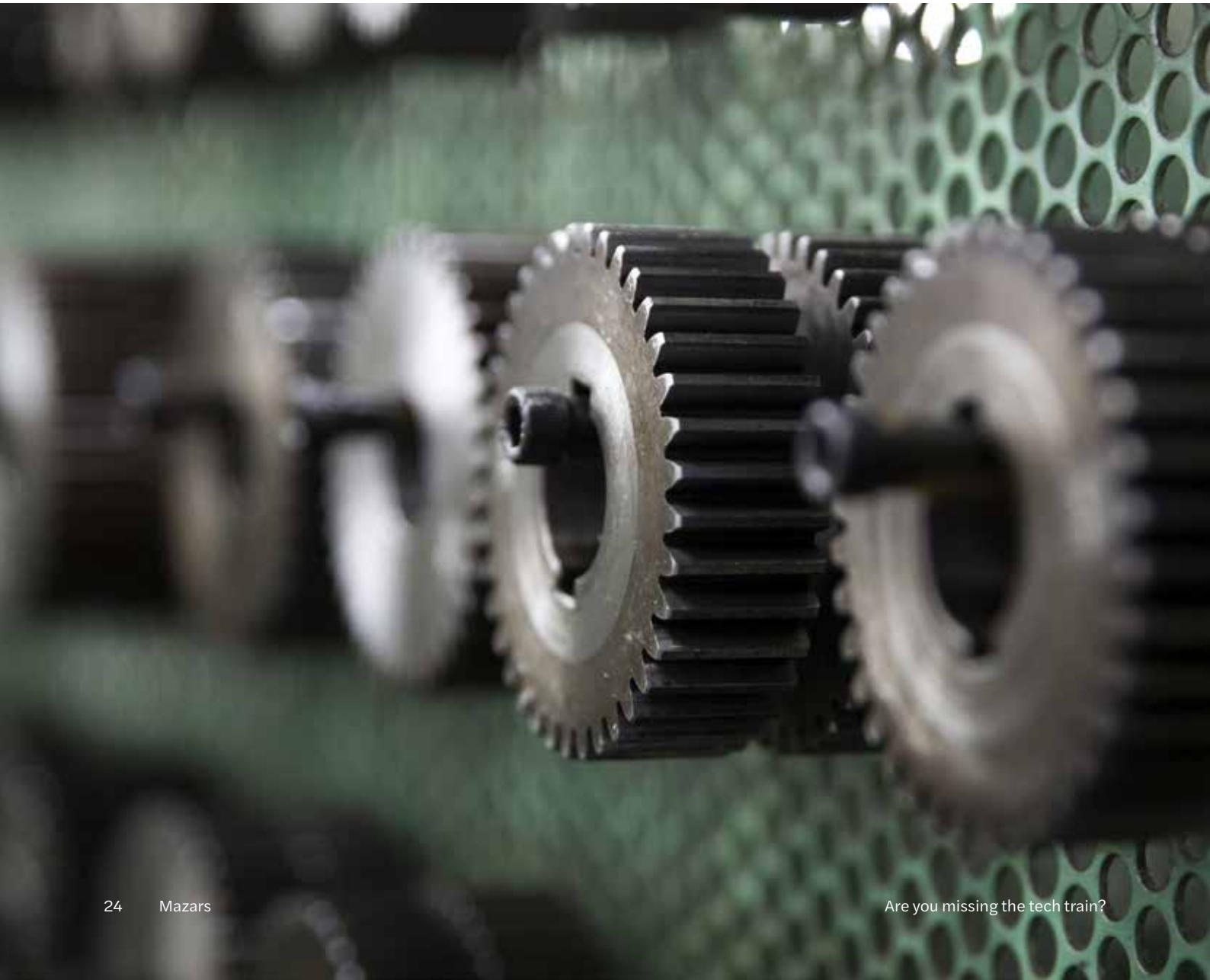
“Mittelstand companies have often been doing business for four or five generations.... they have to innovate to maintain technical brilliance.”

Full steam ahead Targeted technological investment

When seeking to implement and invest in new technologies, conversations often revolve around financial imperatives and will likely lead to questions around ROI and how to make the most out of targeted investments.

Our findings show that while investment already exists in these five technologies – and respondents told us of their plans to increase it – investment is fairly homogenous. This potentially signals that leaders have unclear visions of where to invest and what ROI they can expect from the five technologies.

So, what do leaders need to consider before investing, and how should they go about obtaining maximum ROI? We spoke to Mazars Partner Robert Kastenschmidt to find out.



Interview

Robert Kastenschmidt
Partner, Consulting and
Advisory, Mazars



How can leaders get the most out of their tech investments?

Every investment has to be made with clear business outcomes in mind. Ask yourself, will this investment help me close a competitive gap? Will this tech investment create a significant advantage for me – will it lift me up in the eyes of my client or customer? And, importantly, is my organisation prepared to make the investment successful? That last point is something many businesses fail to consider. The technology you're looking at might hold fantastic potential and make a strong business case, but if your people and processes aren't ready for it, then it's often just a theory that won't translate into action.

Can it ever be effective to split investments?

It's all situational. While it may be appropriate to split investment amongst technologies that are components of the same strategy, to simultaneously launch multiple investments – and to split leadership focus – can often lead to a lack of satisfactory outcomes. In the same vein, research and development has an important role in any successful organisation, so technology experimentation is not a bad thing within certain parameters. However, once you have emerged from the 'fail fast' environment and committed to an implementation path, stay focused and ensure you achieve the anticipated benefits you went after in the first place.

How can leaders obtain maximum ROI on tech investments?

Without a sense of the ROI, it's never a sound investment. But ROI on tech is difficult to measure in isolation. Its impact on a business will be direct and indirect and its overall impact could take years to fully appreciate. That's why leaders need to take responsibility for the technology they invest in and stick with it. It's tempting to obsess over investment timelines and budgets – but by doing so you risk losing sight of the original vision you had for the technology and its potential transformative effect on your business. What you can measure, however, are broader business results.

And after investment, what can organisations do to introduce technology more effectively?

Put simply, don't buy a hammer without making sure you have the nails. Consider if your organisation can absorb the technology and at the pace necessary. And do the R&D so you know what you want: the potential of some of these technologies is life-changing in terms of organisational efficiency and value, while others are necessary for daily operations. Invest in the technology but remember that technology is a tool: your people need to be familiar and know how to implement it if you want results. Trying to introduce tech without strategic planning and processes to back it up will often be wasteful and distracting.

Latecomers

Areas of concern

Despite the generally high levels of familiarity, implementation and investment, there are clear areas of concern across countries, sectors and organisation sizes. In each one, there are leaders who have flagged a lack of familiarity with the technologies, alongside lower than average levels of implementation and investment. This puts them, their teams and organisations at real risk of missing the tech train.

Lacking familiarity with a technology would put anyone at a disadvantage when it comes to rallying support and resources for technological implementation and investment.

Our survey clearly demonstrates how this is the case for decision makers in France and the UK, where knowledge gaps are leading to lower levels of implementation and adoption. This suggests leaders in both countries are missing out on the benefits of key technologies.

But it's not just countries that are missing out: we found the public sector and organisations that employ fewer people are also be in risk of failing to take hold of technology and make the most of it.

“Despite the generally high levels of familiarity, implementation and investment, there are clear areas of concern across countries, sectors and organisation sizes.”



Country & sector lags

France and the UK were the two countries where the most respondents professed to having a 'knowledge gap' on the technologies. Just over half of respondents in France (53%) and only 44% of respondents in the UK said they felt familiar with the five technologies, compared with 63% of all respondents.

In fact, nearly a third (31%) of respondents in the UK said they were 'not at all informed' when it came to any of the technologies.

RPA was the technology most people felt least familiar – some 44% of respondents from around the world claimed to have limited knowledge of it – closely followed by blockchain at 42%. In the UK, more than half the respondents (53%) said they were 'not at all informed' on blockchain, underlining how far some of these technologies still need to go in some countries before they can be considered mainstream.

While the impact of these technologies may be clear to decision makers in some countries, France and the UK emerged as the most 'blind' to what the five had to offer. Some 32% of decision makers in the UK anticipated the technologies will never have an impact – a far higher number than the second most sceptical country, France, with 21%.



Latecomers

Implementation interrupted

In parallel with our familiarity findings, France and the UK performed poorest for implementation. In the UK more than 50% of respondents stated they had no ongoing projects in relation to AI. (52%), blockchain (58%) and RPA (59%.)

Meanwhile in France, 35% of respondents – on average – said that their companies had not started any projects with any of the five technologies. Implementation and familiarity levels are, of course, linked to the relevance of the technology to the actual operations and future vision of an individual organisation. But what else explains poor implementation? And how can companies ensure implementation does not stall at the proof of concept stage?

We spoke with Mazars' Sébastien Ledent about the reasons behind lagging implementation.

52%

In the UK more than 50% of respondents stated they had no ongoing projects in relation to AI.

35%

of respondents in France – on average – said that their companies had not started any projects with any of the five technologies.



Explaining lagging implementation

Interview

Sébastien Ledent

Partner, RPA Consulting,
Mazars



The ways in which these technologies affect a business go some way in explaining why some are more implemented than others. AI and IoT have a direct impact on what a business can offer the customer – and therefore their effects on revenue and market position can be readily measured. That clarity creates a compelling case for their implementation.

On the other hand, ERP is, at best, considered a way to improve performance and, at worst, a cost centre. Investing in an ERP depends on seeing an ROI in terms of efficiency and economic gain and the CFO will have to convince the CEO that the ERP will add value. ERP and RPA also, today, often come as a pair: many organisations will start with ERP and then complete their IT architecture with an RPA solution. So, if a business does not have its head around the former, then the latter might not be on its mind.

As for blockchain, it requires teams to have extensive training in order to use it, while its potential for massive disruption – through business disintermediation, for example – means some organisations will get it, while others deliberately avoid it.

What surprised me in the survey was how many decision makers are implementing, investing in and experimenting with new and sophisticated technologies. More than 50% of respondents on each technology said there was at least some progress happening. A true indicator of the speed at which the world is changing.

For those finding it difficult to navigate change, my advice is to build IT strategies before or during the benchmark or proof of concept (POC) stage of the technology you want to implement. If not, you risk falling into (and staying in) the POC trap because you failed to define how you wanted the technology to transform the business.

“Build IT strategies before or during the benchmark or POC stage... if not, you risk falling into the POC trap because you failed to define how you wanted the technology to transform the business.”

Latecomers

Low investment today, low investment tomorrow

Our survey found that France and the UK also dragged their feet on investment. The two countries spend the least of their IT budgets on the five technologies out of the six countries surveyed – and they are unsurprisingly the most reluctant to increase their budgets year-on-year.

In the UK only 34% of respondents told us they spend more than 25% of their current IT budget on these technologies, while in France 51% spend more than 25% – compared with 62% of respondents in the US and 73% in China.

Looking ahead, just 20% of UK respondents and 28% of French respondents said they plan on increasing their budget in the five technologies by over 10% year-on-year. That compares to an average of 38% across the six countries included in the study.

While these findings may shock those who are championing technological implementation and investment in France and the UK, it underlines the importance of decision makers feeling familiar with the technologies so they can understand the potential benefits and be willing to invest now – and in the future.

Leaders who feel unfamiliar should, therefore, dedicate more time to learning about the technologies that are transforming how the world works. Through research and collaboration, leaders can get themselves in better technological shape, leaving them informed and enthusiastic to take advantage of ever-evolving technologies in the workplace.



Digital heroes needed for tech implementation and investment

Interview

Dr. Christoph Regierer

Member of the Group Executive Board,
Mazars



I'm often asked why Mazars Germany does not have a CTIO. The straightforward answer is, we have not been ready for one. For an organisation like ours, which is always looking to boost tech implementation and investment, the journey cannot begin with an individual but with the team as a whole.

Indeed, you need to have people participating and 'buying into' the process, or you'll never achieve the engagement levels necessary to make technological transformation happen.

With that in mind we undertook a 12-month programme to collect the views of our team – asking them what tech they wanted to work with and how they wanted it to help them in the future.

As part of the same programme we recruited around 150 team members – none of them partners – who said they wanted to be our digital heroes and help Mazars transform. As a team they are now learning how to develop software and code, and they are championing innovation internally.

In the past we had tried to implement a data analytics tool but people were not using it. After looking into the issue, we found our teams were not ready for it. By changing our approach and ensuring we are responding to actual needs, we will avoid this happening again.

People need to feel like their voices count and leaders need to create a spirit where everyone wants to jump into the future together. We've seen our people now use technology – new and old – more than ever and they are offering their ideas about new innovations that could be implemented.

Some 18 months after we launched our programme, we have a clear mandate from our team on what technology they want us to implement and invest in. And so, we have begun to search for a CTIO to spearhead the ambitions that we've shaped together.

Latecomers

Public sector lagging behind

Outside of our country analysis there are other considerably late adopters that come to the forefront: in particular the public sector and small and medium-sized companies. Our survey found tech adoption is particularly lagging in the public sector, where 50% of respondents said 'nothing is

happening' with the five technologies. When asked which technologies they had fully implemented, none of the public sector leaders surveyed had done so with blockchain or RPA. AI was fully implemented by just 2.5% of them, the same number for IoT, and only a total of 8% had fully implemented an ERP.

Interview

Sander Boomman
Partner, Public Sector Leader,
Mazars



Anyone who works with or in the public sector knows that it is typically a step behind the private sector when it comes to technology. The next leap forward will be going digital in the first place, rather than welcoming robots into the workplace.

There are several reasons why the public sector lags on these five technologies. The lack of competition means many public sector leaders don't feel the impetus to adapt and change their ways of working. Then there's the people element: lots of public sector teams are dedicated to delivering what's possible for the day ahead and don't have the luxury of thinking long-term. And, finally, there are the budget constraints. The public sector typically operates on tight and immovable bottom lines, which don't allow for investments into untested technology.

For all the difficulties, I have seen glimpses of a more positive, tech-friendly future. On matters like data, leaders have made a huge effort to use technology to protect people's privacy. What's more, I have seen IoT and AI used to great effect in healthcare, connecting medical professionals with devices to deliver more accurate services to patients.

While the survey findings are disappointing for the public sector, they should serve to encourage leaders to do more. Technology needs to be treated as a solution to the sector's issues: a way to speed up administrative processes like passport applications and a tool to better prioritise waiting lists for social housing, for example. It should be viewed as the key to staying relevant and not just something for the private sector.

Technology also plays a key role in the war for talent: if you want to be an attractive employer, people need to know they'll have access to the tools that will help them do a great job.

Public sector leaders should therefore talk to advisors, speak with sector specialists and learn from others who have already experimented with the technology. Implement strategies and then have your teams move with the times with you.

Failing to do so won't just jeopardise your chances of finding and hiring the best people, it will mean you risk letting down the people who depend on vital public sector services.



Small organisations and lower implementation levels

Smaller companies were less likely to be advancing with the technologies, according to our survey. Some 46% of those with a headcount below 100 had nothing going on in regard to the technologies. Echoing our public sector findings, the technology least likely to be at any stage of the implementation process for small companies was blockchain followed by RPA.

The technology most likely to have been implemented at smaller companies was ERP (15%) followed by IoT (12%). Is it enough to say budget constraints and singularly focused offerings explain why smaller companies fare poorly on implementation? We spoke to Gareth Jones, Head of Public Sector, Mazars, to find out.

46%

Some 46% of those with a headcount below 100 had nothing going on in regard to the technologies.

15%

The technology most likely to have been implemented at smaller companies was ERP (15%).

Advice for smaller companies lagging behind

Interview

Gareth Jones

Partner, Head of Privately Owned Business, Mazars



What explains smaller companies lagging behind when it comes to technological implementation?

There are several reasons. Firstly, small companies don't typically develop IT, they stick to implementing it. In most cases, they will watch the market as technologies develop but will only implement when prices drop.

Secondly, small companies are often focused on day-to-day operations and can't dedicate enough time to planning ahead. The purpose of most technology is to see round corners and help a company be more proactive, however the daily reality means smaller companies are likely to be reactive.

Thirdly, small companies generally have simple and straightforward processes and therefore don't need technologies like RPA, blockchain and AI. These three are used by larger businesses to automate processes, make sense of vast amounts of data and connect with staff and customers in every corner of the world. Smaller companies can simply get away without using them.

So it isn't just about cost?

Cost will inevitably play into what smaller companies decide to do. However, for lots of smaller companies, it doesn't make sense for them to be ahead in the technology game. Large companies, on the other hand, have to track technology and implement it at a faster rate because of their own operational factors – like multiple locations, dealing with huge amounts of data and communicating with staff.

What's your advice to leaders of smaller companies who want to implement more technology?

Don't focus on the technology, focus on the benefits. Ask, how can we provide better customer service digitally? How can we implement new systems that improve our supply chain? Look at the elements of your business and ask the basic questions that will make them stronger.

The other way to get a sense of what to implement is to look at what your customers want and if more technology will help you deliver it. And of course, take note of what your suppliers are doing and have a sense of competitor activity also.

Are any of the five technologies especially useful for smaller companies?

ERP, without a doubt – and the survey findings reflect that. The clue's in the name, smaller companies should use it to plan their daily workloads as soon as possible. Its value will then skyrocket when the company in question begins to focus on things outside of the daily routine, such as monitoring and increasing shareholder value.

How do you help smaller companies with their technological implementation and investment?

We take them through a straightforward 'digital readiness' questionnaire. We ask questions and assess where the client is and where the client ought to be on matters like using technology to engage with staff. Importantly, we don't use the questionnaire to compare the client with others – everyone's technology journey is different.



Leaves on the track

Addressing innovation challenges and barriers

Barriers, obstacles, leaves on the track. Whatever the name, they can all lead to one thing: innovation thrown off course. Technologies with transformative potential will go to waste if implementation and investment barriers stand in their way.

Our survey revealed three main barriers that typically get in the way of implementing technologies. Those three barriers are: obtaining necessary financial resources; finding talent and skills that can fully grasp and exploit the technology; and market maturity – whether it’s the right time for an organisation to adopt the technology. We spoke to business leaders for their advice on how to anticipate and overcome these innovation barriers.

Those three barriers are: obtaining necessary financial resources; finding talent and skills that can fully grasp and exploit the technology; and

market maturity – whether it’s the right time for an organisation to adopt the technology. We spoke to business leaders for their advice on how to anticipate and overcome these innovation barriers.

“Technologies with transformative potential will go to waste if implementation and investment barriers stand in their way.”



Necessary investment

Amidst the daily ups and downs of running a business, it can be difficult to engage a leadership team long enough to secure investment in a new area – especially if it's a technology with which few of them feel familiar. In an age when time comes at a premium and attention is hard to keep – how do you secure investment in tech?

Exhibit 10: Top three barriers to technological investment and % of respondents who cited them (all countries)

25%

Investment

23%

Talent and skills

22%

Market maturity



Leaves on the track

Securing investment in technology

Interview

Caroline Couesnon
Partner, CFO and CIO
Transformation, Mazars



What investment were you helping secure?

We were working with a mid-sized company that needed a new ERP system.

What were the issues you faced in the beginning?

The company did not consider its IT systems to be part of its success until about 20 years ago. And it was only in the last two years that its leaders realised they would not be able to carry on competing if the technology remained outdated.

What did the company want to achieve?

They wanted an ERP that would help them break their siloed ways of working; store data more securely and reduce the number of repetitive tasks that teams had to do.

Who were you trying to win over?

We had to get the executive management on board with a technology investment of around €100m.

How did you do it?

We made sure we delivered the business case for the investment at the same time as the cost case. It's easy to show what an investment will cost. What's more complicated, but more effective, is to communicate what the investment will help a company achieve.

To do that, we held a workshop and asked what this ERP investment would mean for the whole

company and individual service teams. The team told us what the ERP would enable them to do – and with that information, we could present a clear picture to the leadership about how great an impact the ERP could have.

What was the outcome?

The leadership invested in the ERP and implemented it successfully. On a day-to-day level, it means teams can validate purchase orders with their smart phones and fill out time sheets via an app. But in a grander sense the company has protected the data it holds; it has freed up people's time and it is able to more effectively communicate with suppliers. In short, the investment has given them back their competitive advantage.

What do you think is key to winning over leaders when it comes to the investment?

Firstly, put figures against the potential waiting to be unlocked by the technology. Secondly, get people with different expertise involved. We had the heads of HR, finance and technology all around the table, sharing ideas and telling us about the possible benefits so we could get the full picture.

And one piece of advice for a CTIO struggling to secure investment?

Don't make it about yourself. Present the ROI of the technology to the business as a whole and do that by presenting the cost case as well as the business case.

Talent and skills

Interview

Laurent Choain
Chief People Officer,
Mazars



Despite the new ground that technology breaks, the onus of business success still rests on a familiar foundation: people. Amid talk of skills, mindsets and experiences, what do businesses really need to do to bring out their team's digital best?

People power to kickstart your digital transformation journey

If the challenge of the 20th century was to have teams work harder, the challenge of the 21st is to have them work smarter. As old measures of productivity are resigned to the history books, companies need people who can adapt to the present, while simultaneously be able to prepare for what's next.

Innovation centres are a great way to do that: places that champion agility and research, while creating opportunities for teams to focus on digital transformation. Leaders should note Steelcase in the US, where top executives worked from these centres, which considerably boosted their engagement and interest.

Importantly, don't think you can succeed on the digital journey without involving the world around you. Hire PhD students who are undertaking relevant research, run your own education programmes and look into partnering with innovation organisations.

Meanwhile, focus on the right thing. Digital skills are valuable but they're simply tools – means to an end. Curious minds, an enthusiasm to test-and-learn and people dedicated to making new discoveries are much more valuable.

Leaves on the track

Market maturity

Market maturity was the third most cited barrier to technological adoption. Many businesses around the world struggle to know when a certain technology is ripe for their unique circumstances and will be able to deliver what it promises. Similarly, an organisation's customer base has to believe the new technology will work for them. Mazars' Guillaume Devaux explains, "An autonomous car manufacturer, for example, has to hit the market in a timing sweet spot when the customer is interested, and the technology is sophisticated enough to deliver real benefits – or the business will risk damaging its long-term prospects."

What keeps leaders up at night: regulation and cybersecurity

While technologies will open doors to new opportunities, business leaders need to know the risks that they could be letting in. How they mitigate these risks is crucial to sustainable,

long-term innovation and investment. Compliance and cyberattacks were the top two challenges that decision makers said kept them up at night – 58% and 56% respectively marked them as key concerns. Policy makers around the world have shown different attitudes to technology: while some champion the benefits it can create, others have moved to curb its growth, citing a variety of concerns like privacy and disruption to the job market. Navigating this fast-changing web of regulation and compliance is therefore, evidently, a key issue for leaders today. Cyberattacks was the second most cited concern that keeps leaders awake at night. No business wants to be the next subject of a headline about a massive data leak – and as online phishing and fraud become increasingly sophisticated, leaders will have to protect their businesses using innovative methods.

Conclusion

Contribution by

Guillaume Devaux
Partner, Head of
Technology Sector, Mazars



While some countries, sectors, and organisation sizes demonstrated a clear enthusiasm to invest in and implement the five technologies, others lagged behind. And while the survey findings unearthed today's reality, our expert contributors have helped reveal what tomorrow could bring – and given a wealth of practical advice to achieve it. Combining these insights, I will end on three key points for the C-suite decision makers who are asking, 'what now?'

1. Do your research

Start by focusing on what your business needs, not what technology you're missing. As Robert Kastenschmidt says in this report, ask yourself, "Will this tech investment create a significant advantage for me – will it lift me up in the eyes of my client or customer?"

2. Make technology the company's business

A successful tech transformation journey requires broad backing – from a company's leadership and the team at large. It needs far more than just the CEO and CTO's buy-in, as Caroline Couesnon reminded us, "Present the ROI of the technology to the business as a whole and do that by presenting the cost case as well as the business case."

3. Stay true to your vision

Remember why you made this investment and the potential impact it promised to make. While every leader needs to know when to let certain projects go, do not measure prematurely nor too frequently. If you do, you risk missing out on what a key workplace technology could do for your organisation.

Appendix

About the survey

The Mazars 2019 Tech Pulse Survey was conducted by YouGov on behalf of Mazars to evaluate familiarity, implementation and investment levels among technological decision makers around the world. It explored these trends in relation to five key workplace technologies: Artificial Intelligence (AI), Robotic Process Automation (RPA), Internet of Things (IoT), blockchain, and Enterprise Resource Planning (ERP).

The online survey targeted C-suite executives across China, France, Germany, India, the UK and the US. More than 600 responses were received. The results of the survey were analysed by Mazars global experts who, drawing on their deep functional and industry

knowledge, bring into this report their view of the challenges and opportunities facing companies across the world, with specific sector insights, as well as points of attention for top executives.

Five game changing technologies

1. Enterprise Resource Planning (ERP)

A suite of applications that help an organisation run its day-to-day processes, such as its accounting, HR supply chain and customer relationship management. ERP systems often form the backbone of an organisation's 'back office.'

2. Artificial Intelligence (AI)

Computer science related to making computers 'think' and act like humans. Current AI applications include: voice activated personal assistants, suggestive searches and behavioural algorithms.

3. Internet of Things (IoT)

Devices connected to the internet and each other – allowing them to communicate, learn and take actions to help the user, for example cars that can drive themselves and fridges that can create shopping lists.

4. Blockchain

A digital ledger that stores information in a way so it cannot be easily changed after it is created. It was invented as the ledger for cryptocurrency bitcoin but can be used for a variety of other purposes, namely related to security.

5. Robotic Process Automation (RPA)

Platform hosting a virtual employee that, after watching a human perform a task, can perform it themselves. RPA is typically used to free up people's time from performing repetitive jobs.



Contacts

Guillaume Devaux, Partner
Head of Technology Sector,
Mazars
Tel. +33 1 49 97 65 90
guillaume.devaux@mazars.fr

Mazars is an internationally integrated partnership, specialising in audit, accountancy, advisory, tax and legal services*. Operating in over 90 countries and territories around the world, we draw on the expertise of 40,400 professionals – 24,400 in Mazars' integrated partnership and 16,000 via the Mazars North America Alliance – to assist clients of all sizes at every stage in their development.

*where permitted under applicable country laws

www.mazars.com

mazars