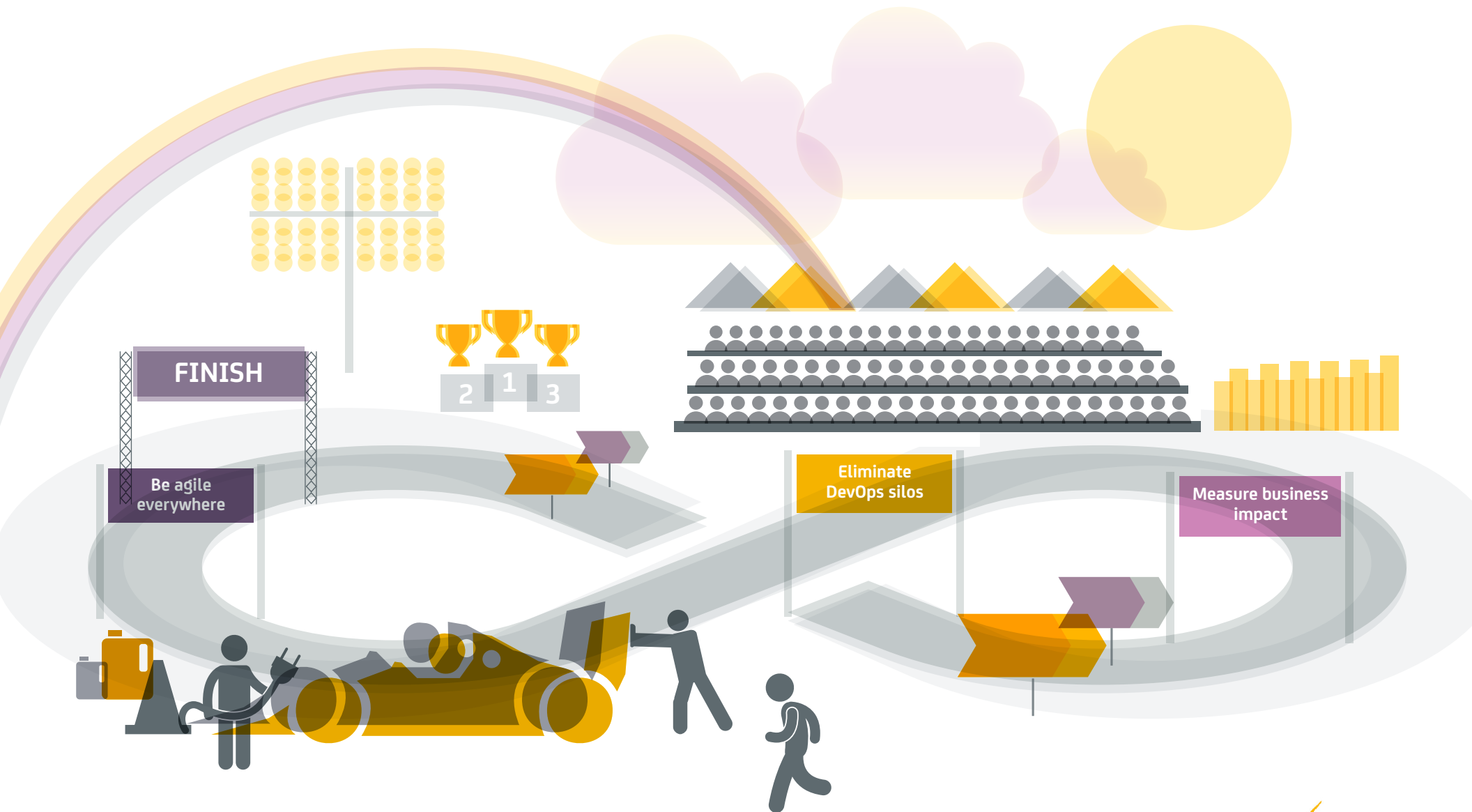


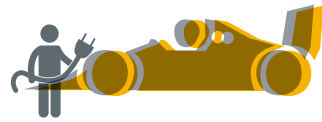
ACCELERATING VELOCITY AND CUSTOMER VALUE WITH AGILE AND DEVOPS >>



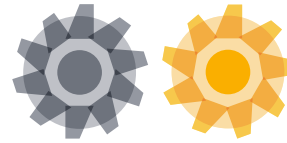
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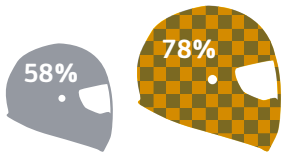
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Executive summary

Today's hyper-connected, hyper-competitive app economy moves at lightning pace. To succeed, you have no option but to continuously deliver new value to customers, at the increasing speed that they demand. Your brand is now defined by the unique, and constantly evolving, digital experiences you offer to them.

These pressures mean that improving velocity, and delivering optimal customer value, must live at the heart of every organization's digital transformation strategy. As a result, businesses are transforming the way in which they design, develop, and deliver applications. Their endgame: to offer higher quality apps to customers, faster than ever before.

In this environment, cutting-edge software development processes, such as agile

methodologies and DevOps practices, have become critical to success.

Agile is an iterative development process. It taps the voice of the customer early and often, ensuring that the organization is building the right products and features, and delivering them with quality and predictability. It also empowers employees, by aligning their work with the strategy of the business.

DevOps compounds these benefits, by enhancing collaboration among the software development and IT operations teams. This accelerates and improves the process of software delivery and encourages constant collaboration. The result is more reliable releases, which ultimately help deliver an exceptional end-user experience.

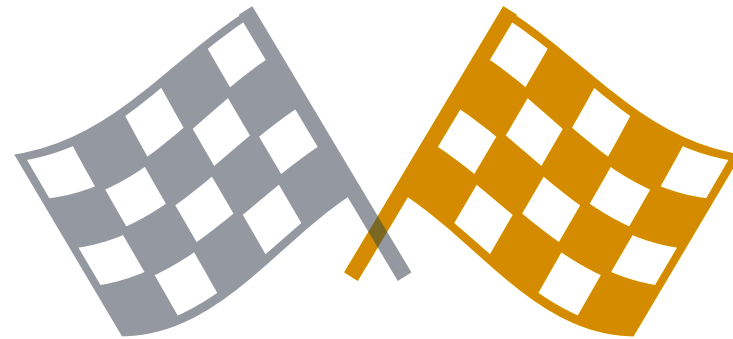
Combined, the two practices help businesses increase their organizational metabolism, allowing them to respond to changing market dynamics with speed and confidence; and get to market faster with high-quality products that customers want.

CA Technologies commissioned Coleman Parkes Research to survey 1,770 senior business and IT executives worldwide, in order to examine:

- how enterprises are leveraging agile and DevOps within their digital transformation programs
- the impact these approaches are having on business performance

Our study found that both agile and DevOps are driving significant business benefits, and the two combined enhance the positive impact still further.

Combined, the two practices help businesses to respond to changing market dynamics with speed and confidence; and get to market faster with high-quality products that customers want.



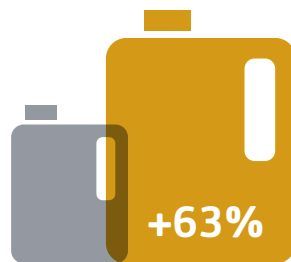
Our analysis revealed that:

- **81%** of executives believe that agile and DevOps are critical to successful digital transformation.
- More than **four in five** businesses are using each of these practices to some degree.
- A ‘maturity gap’ remains in organizations’ use of agile and DevOps, with only around **a third** having deployed either practice widely across the organization.
- Yet the benefits of mature adoption are significant:
 - Advanced agile users see a **40%** improvement in time-to-decision (that is, the time to act on new opportunities), compared to 33% for basic users.
 - Advanced DevOps users see a **42%** improvement in speed-to-market, compared to 24% for basic users.
 - **88%** of advanced agile adopters, and **87%** of advanced DevOps users, see an improvement in customer experience.
- There are also huge advantages to adding DevOps practices to an agile working environment. This improves new business growth by **63%** more than using agile alone, and operational efficiency by **41%** more.

These findings make a compelling case for adopting and refining agile and DevOps as essential components of a successful digital transformation strategy. Clearly, organizations should take steps to expand their use of these practices, and to embed them deeply throughout the enterprise culture.

New development is having to be done continuously.

Head of planning and production, European rail operator



Adding DevOps practices to an agile working environment improves new business growth by 63% more than using agile alone.

Introduction

The sheer pace of the app economy can be overwhelming. The demands of your customers change constantly, and their loyalty can evaporate quickly. They expect you to provide a high-quality experience across multiple channels if you want to retain their business.

To adapt, organizations must instill the ability to constantly produce the digital experiences their customers expect, and deliver products and services that delight users. They need to retool their own ‘software factories’ to deliver value to their customers on a continuous basis.

That’s why organizations are rethinking how they develop and release their applications—which is where approaches like agile and DevOps factor in.

Agile methodologies add the voice of the customer to the application development cycle early and often, and enable ongoing product iterations based on continuous customer feedback. DevOps practices promote purposeful collaboration between software development and IT operations, to improve the speed and quality of application delivery.

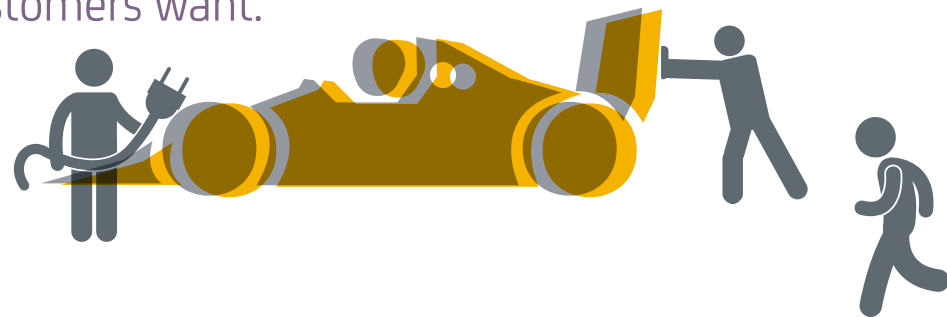
And the advantages of agile and DevOps extend far beyond the purview of the IT function. In an era when every business is a software business, these practices bring benefits to the organization as a whole. Ultimately, they contribute to better business performance.

Digitization is disrupting our industry, like all industries. In response, we’re increasingly having to create software applications to offer high-quality solutions that will keep our customers interested. We’re developing them at pace—but we need to get faster.

Digital marketing director, US manufacturer



As they adapt to life in the digital era, firms must instill the ability to constantly produce the digital experiences their customers want.



We examined enterprises' efforts to adopt agile and DevOps, as part of our wider study of how they're transforming their businesses in the digital age. We asked senior business and IT executives worldwide about:

- their experiences with agile and DevOps
- how widely they're using these practices as part of their digital transformation strategies
- the effects agile and DevOps are having on business performance
- the additional impact of using DevOps in an agile environment
- the barriers preventing them from unlocking the full benefits of agile and DevOps

This report summarizes what we found, and provides an action plan for business leaders who are looking to achieve better value for customers, faster.

The main benefit we're looking for on our digital transformation journey is improved efficiency.

IT director, US local government organization



DEFINITIONS

Digital transformation

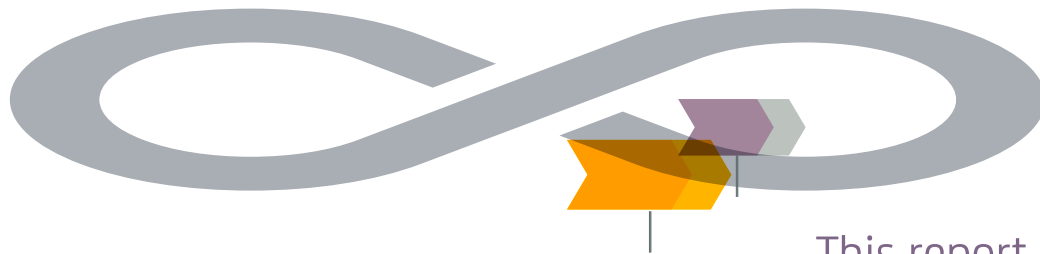
The use of digital technology and communications to reshape key aspects of an organization, including customer engagement, core operations and processes, working practices, employee productivity, supply chain management, etc.

Agile

Methods that help you to build and deliver the right products incrementally; deliver value to customers quickly; and keep development work aligned with business needs.

DevOps

The culture, practices and automation needed to facilitate closer collaboration among development and other IT-related functions to ensure faster delivery of high-quality software.



This report provides an action plan for business leaders who are looking to achieve better value for customers, faster.

01. The state of play

Our research found that global enterprises are keenly aware of the critical importance of agile and DevOps to succeed in today’s app economy. Some 81% agree that the two practices are critical to successful digital transformation.

Adoption is widespread as a result: 88% of enterprises globally have adopted agile to some degree, while 87% are currently using DevOps in at least one area of IT.

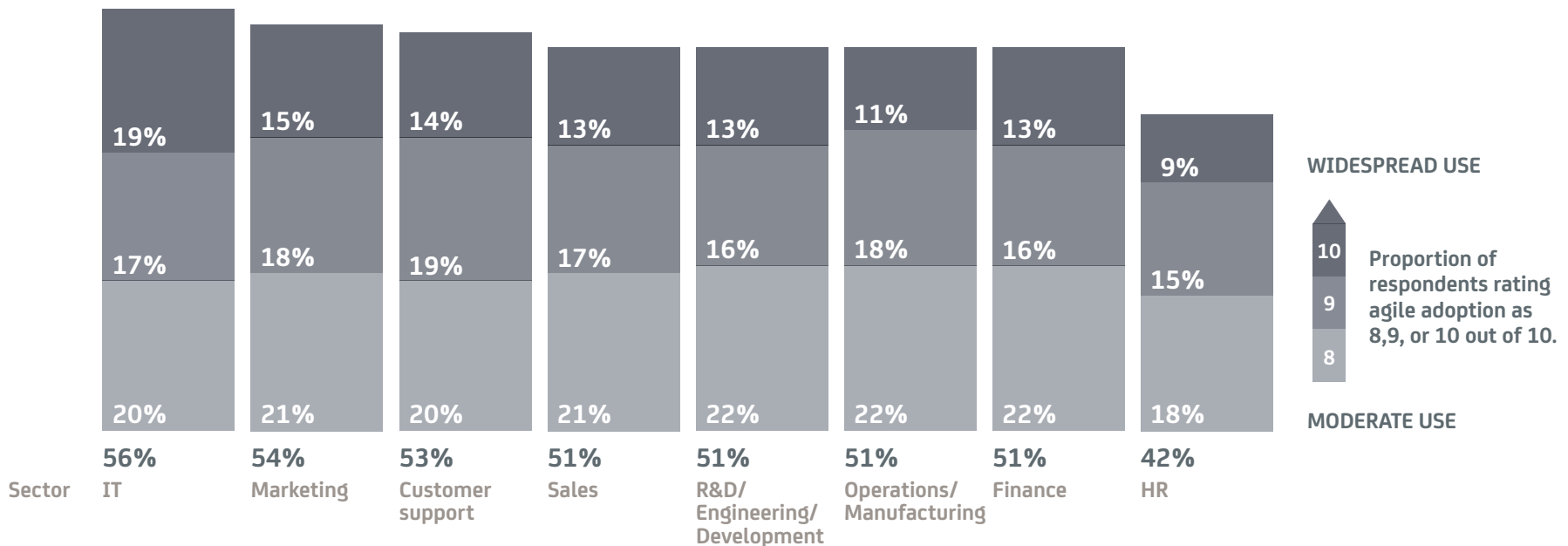
For those who have looked to expand agile usage outside of IT, all main functions are now leveraging it—although HR lags behind (see fig. 1).

Our focus will always be to enhance the experiences of our customers and streamline our business processes.

IT director, European financial services provider



FIG. 1 AGILE IS BEING SCALED EFFECTIVELY INTO THE MARKETING, CUSTOMER SUPPORT AND SALES FUNCTIONS



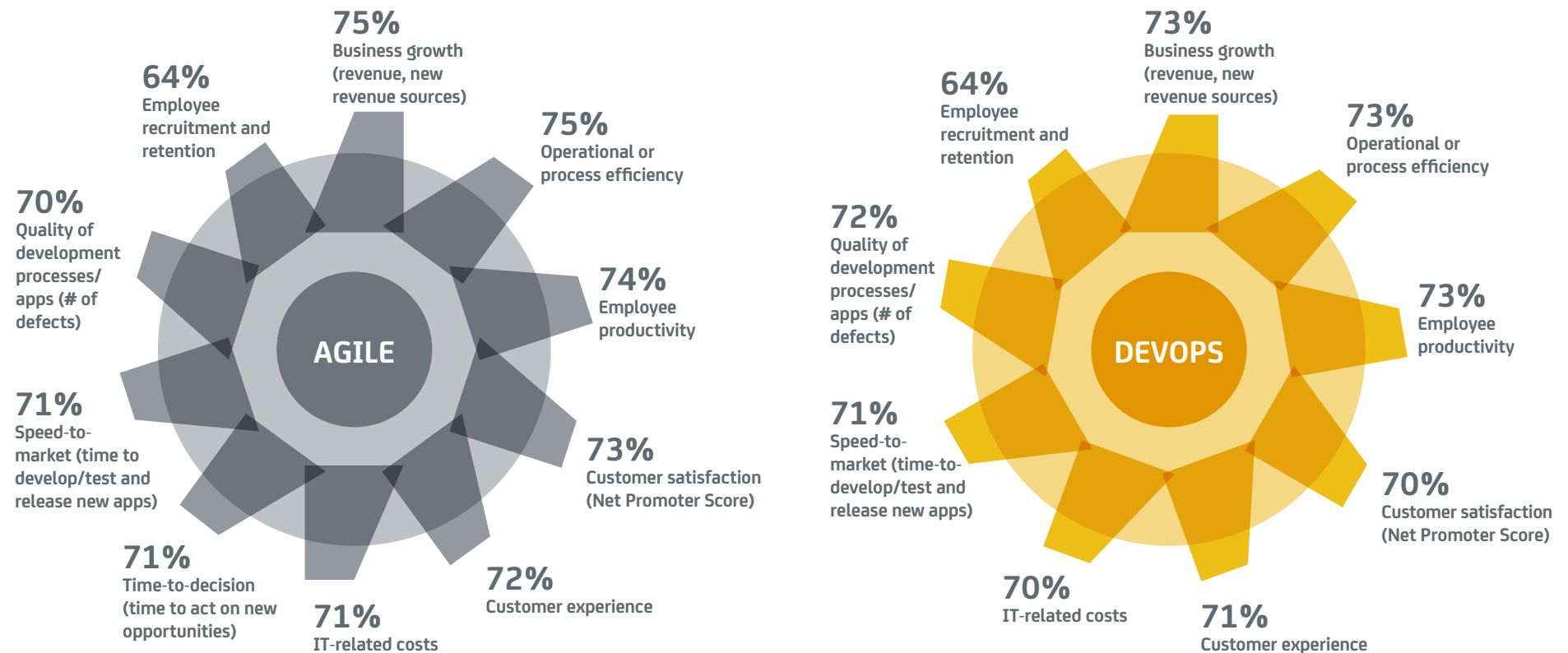
Our research also found that most organizations have established a full range of key performance indicators (KPIs) to measure the business impact of agile and DevOps use. These are being used by between two thirds and three quarters of the organizations we surveyed (see fig. 2).

It's notable that around half of these metrics are external, and focus on business or customer-related measures. This reflects how critical software has become to businesses' ability to achieve their core mission.

Yet simply implementing these practices in pockets of the organization is not enough. As we shall see, enterprises have a great deal of work to do to truly embrace agile and DevOps, and extract the full value that these approaches can unlock.

FIG. 2 BUSINESS AND CUSTOMER-RELATED KPIs ARE IMPORTANT MEASURES OF AGILE AND DEVOPS SUCCESS

Proportion of organizations using each KPI



02. The business impact

Our study reveals the significant effects that agile and DevOps are having on the firms that adopt them. Respondents reported improvements in all of the KPIs being measured.

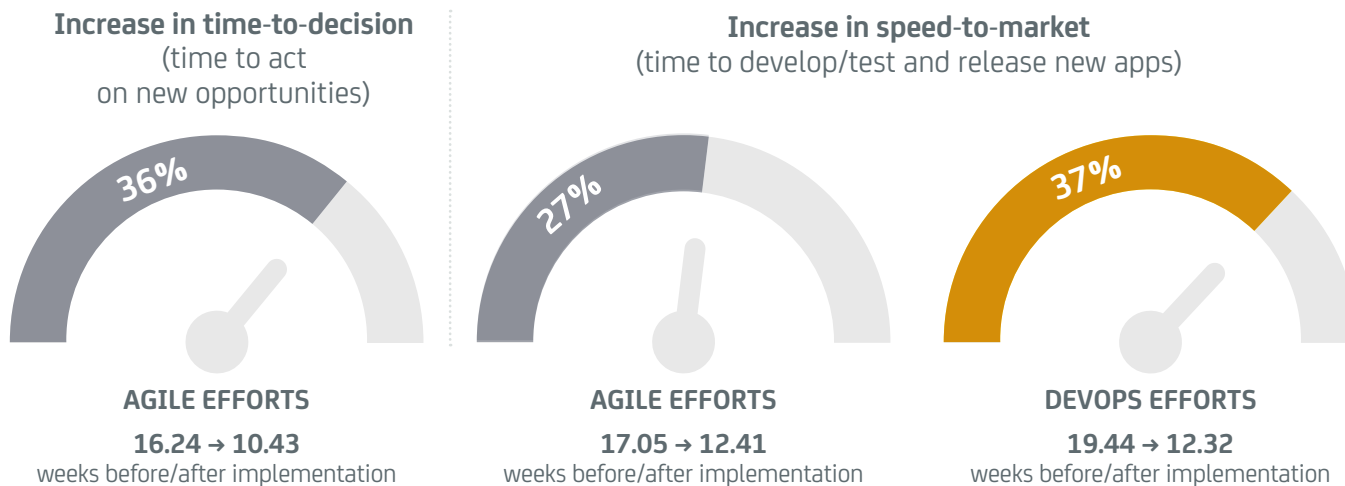
Speed is all-important in the digital economy, and agile and DevOps are accelerating time-to-decision and speed-to-market by approximately a third at the organizations we studied (see fig. 3).

In the current business environment, we need to increase performance and improve customer satisfaction.

IT director, US government agency



FIG. 3 KPI RESULTS SHOW THAT IMPLEMENTING AGILE AND DEVOPS ACCELERATES BUSINESS AGILITY



Day by day, we're improving efficiency and customer focus.

IT director, US local government organization



It's not all about speed, however. There are wider benefits available to firms that embrace agile and DevOps. Three quarters of the enterprises that have adopted these practices have greatly improved the customer experiences they offer, as well as their employee recruitment and

retention efforts (see fig. 4). What's more, users of both methods report increases of up to 45% in vital indicators such as new business growth, customer satisfaction and employee productivity (see fig. 5).

FIG. 4 MOST ORGANIZATIONS USING AGILE AND DEVOPS REPORT A POSITIVE IMPACT ON CUSTOMER EXPERIENCE AND EMPLOYEE RECRUITMENT AND RETENTION

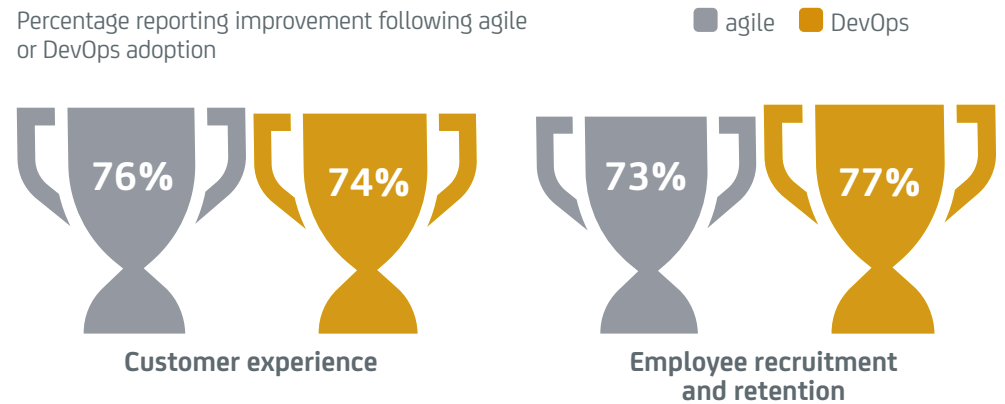
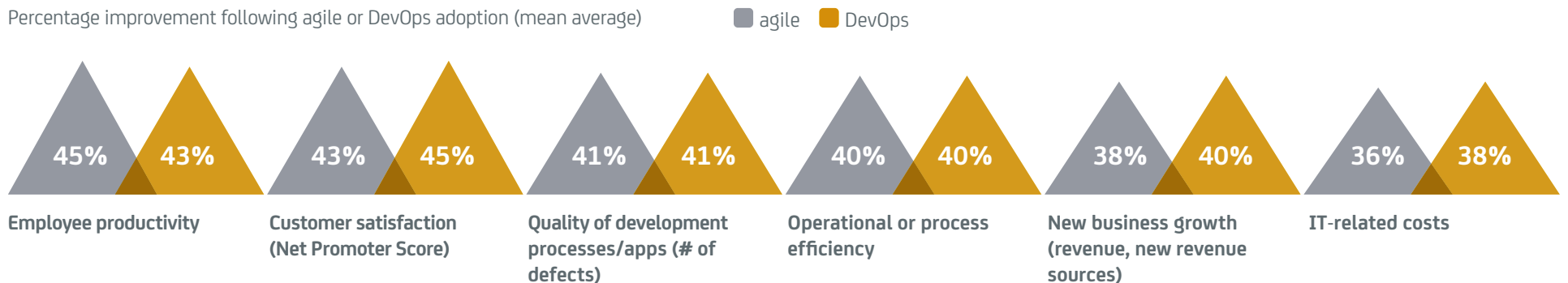


FIG. 5 BOTH AGILE AND DEVOPS ARE HAVING A POSITIVE IMPACT ACROSS ALL KPIS



03. The power of two

Respondents recognize that the true power of agile and DevOps lies in combining the two. Some 82% agree that DevOps enhances and accelerates the benefits of agile—which explains why 78% of respondents are using both agile and DevOps.

Introducing DevOps into agile development environments adds significant value to the

software development process. Indeed, our analysis found that respondents who have done this are driving far greater improvements in their business KPIs than those who use agile alone (see fig. 6).

The 63% difference between improvements in new business growth is particularly

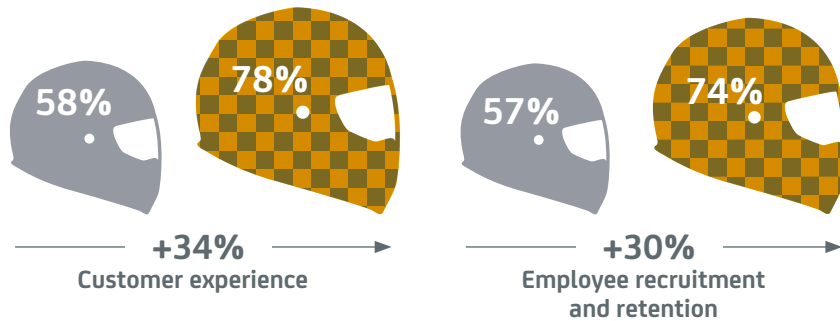
illuminating, as it illustrates the huge commercial opportunities agile and DevOps offer in the digital era.

There are also major cost efficiencies to be gained from combining agile and DevOps. Users of both practices are achieving 65% greater reductions in IT costs than those that only use agile.

FIG. 6 DEVOPS ENHANCES AND ACCELERATES THE BENEFITS OF AGILE METHODOLOGIES

Percentage reporting improvement in KPIs

■ agile only ■ DevOps + agile



Improvement in KPIs



04. The maturity gap

Organizations are clearly making progress with agile and DevOps. However, a closer look at our findings suggests that the great majority of enterprises have yet to completely realize the benefits of the two practices.

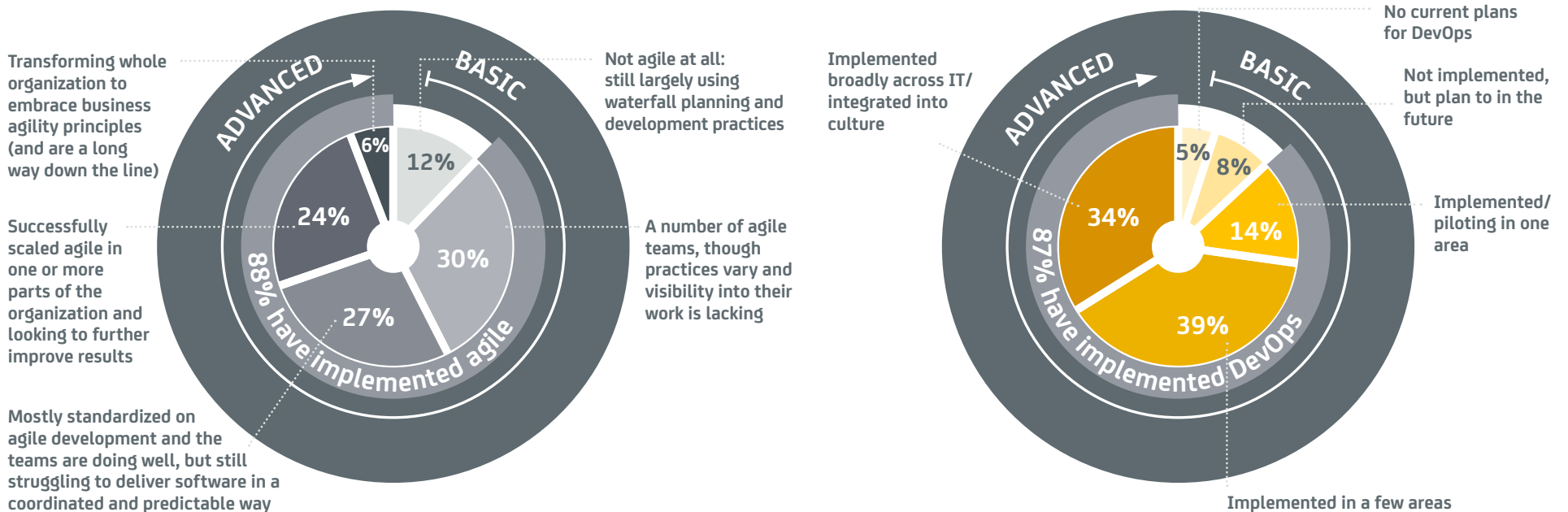
We created a maturity model to assess the breadth and depth of adoption of agile and DevOps within the enterprises we studied.

By investigating how widely these methods are used across each organization, we categorized respondents as non-users, basic users, or advanced users of agile methodologies and DevOps practices.

For both approaches, we found mature use to be limited to only around a third of businesses (see fig. 7).

Just 30% of respondents reported using agile beyond the software development sphere. Only 6% say they are using agile to transform their entire organization. Similarly, only 34% have implemented DevOps broadly across the IT function.

FIG. 7 FEW FIRMS HAVE IMPLEMENTED AGILE OR DEVOPS BROADLY



05. The case for maturity

Our maturity model allowed us to examine the business impact of mature adoption of agile and DevOps, by comparing the experiences of basic and advanced users.

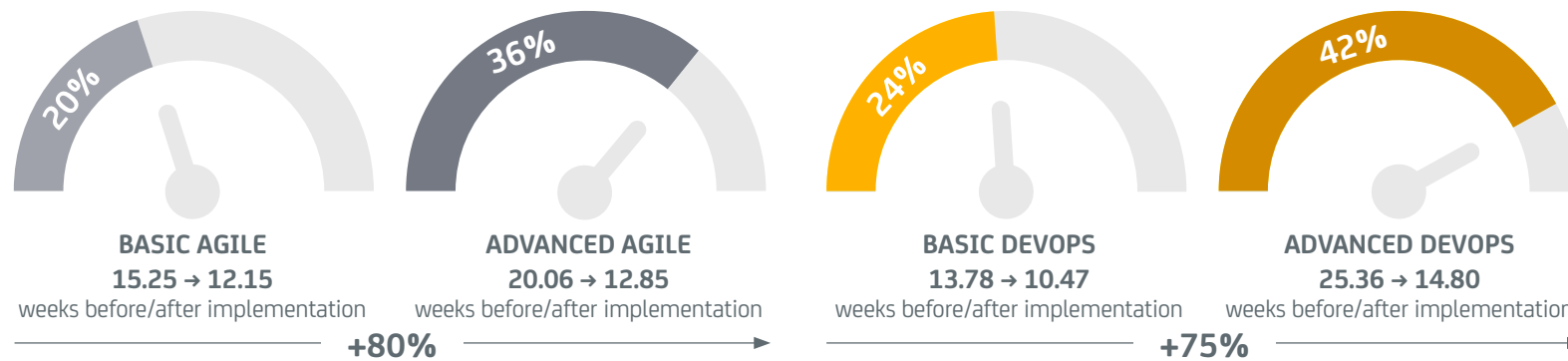
We found that both approaches drive significant improvements in business performance as organizations climb the maturity scale (see fig. 8).

Advanced users are seeing a huge difference in the crucial measure of speed-to-market. They're driving an 80% greater acceleration than basic users thanks to agile methodologies, and a 75% increase in velocity due to DevOps practices.

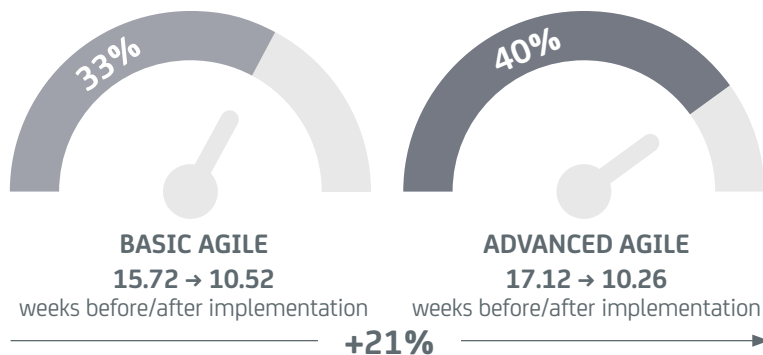
Advanced agile users are also benefiting from a reduction in time-to-decision. This is a critical indicator of how quickly an organization can act on new opportunities and deliver new value to customers. Advanced agile users see a 40% improvement in this measure, versus 33% for basic users.

FIG. 8 KPI RESULTS SHOW THAT ADVANCED IMPLEMENTATION OF AGILE AND DEVOPS INCREASES BUSINESS PERFORMANCE

Increase in speed-to-market (time to develop/test and release new apps)



Decrease in time-to-decision/time-to-act on new opportunities



Beyond the speed-to-market and time-to-decision metrics, advanced users of agile and DevOps are achieving 20-40% greater increases than basic users in all of the business KPIs

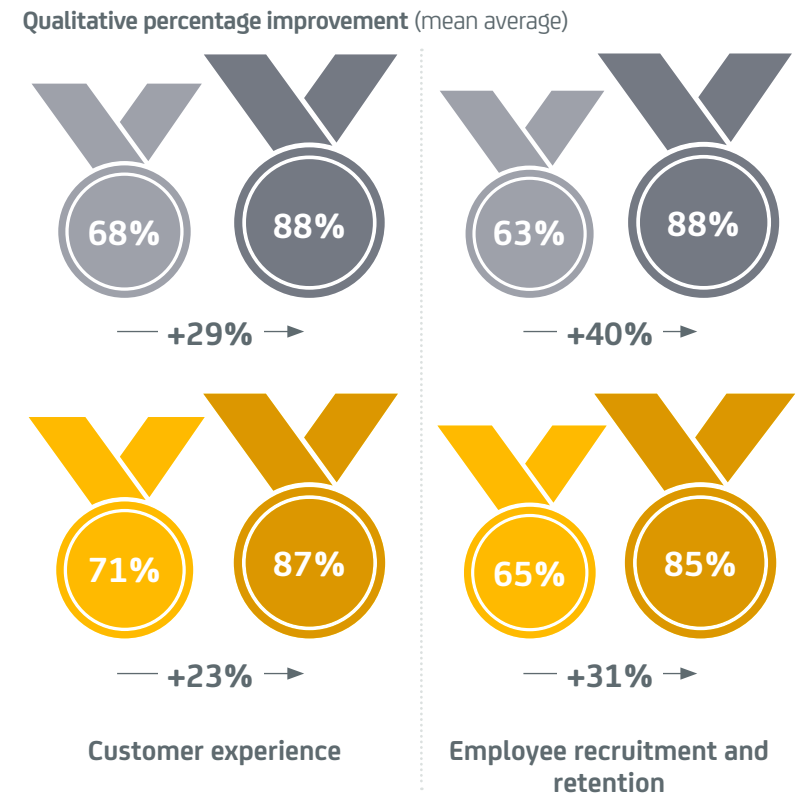
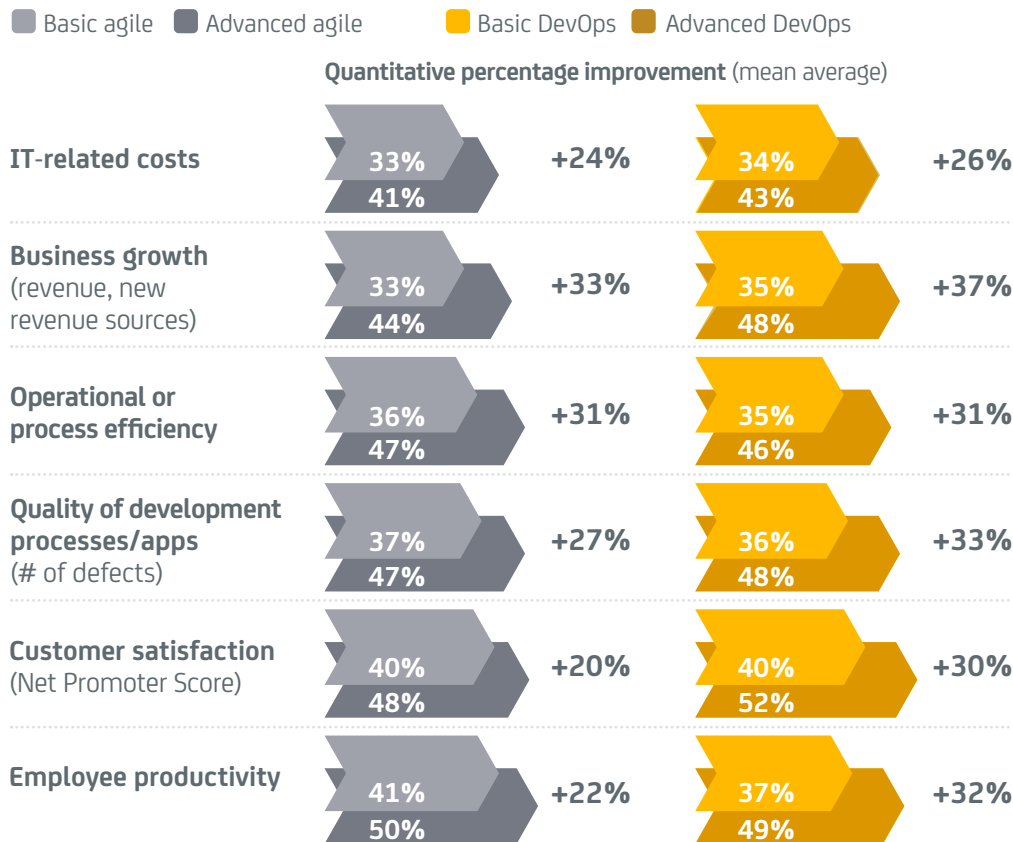
they track (see fig. 9). Again, for both practices, business growth is the area where the biggest benefits are found.

A major impact of our digital transformation program has been to bring our developers closer to our customers.

IT manager, European telco provider



FIG. 9 MOVING FROM BASIC TO ADVANCED ADOPTION OF AGILE AND DEVOPS IMPROVES KPIs ACROSS THE BOARD



Business Impact Scorecard

The wider benefits of advanced agile and DevOps adoption can also be observed in their effect on our Digital Transformation Business Impact Scorecard (BIS).

We created the scorecard as part of our research into enterprises' digital transformation efforts, as summarized in our report, *Keeping Score: Why Digital Transformation Matters*. The scorecard

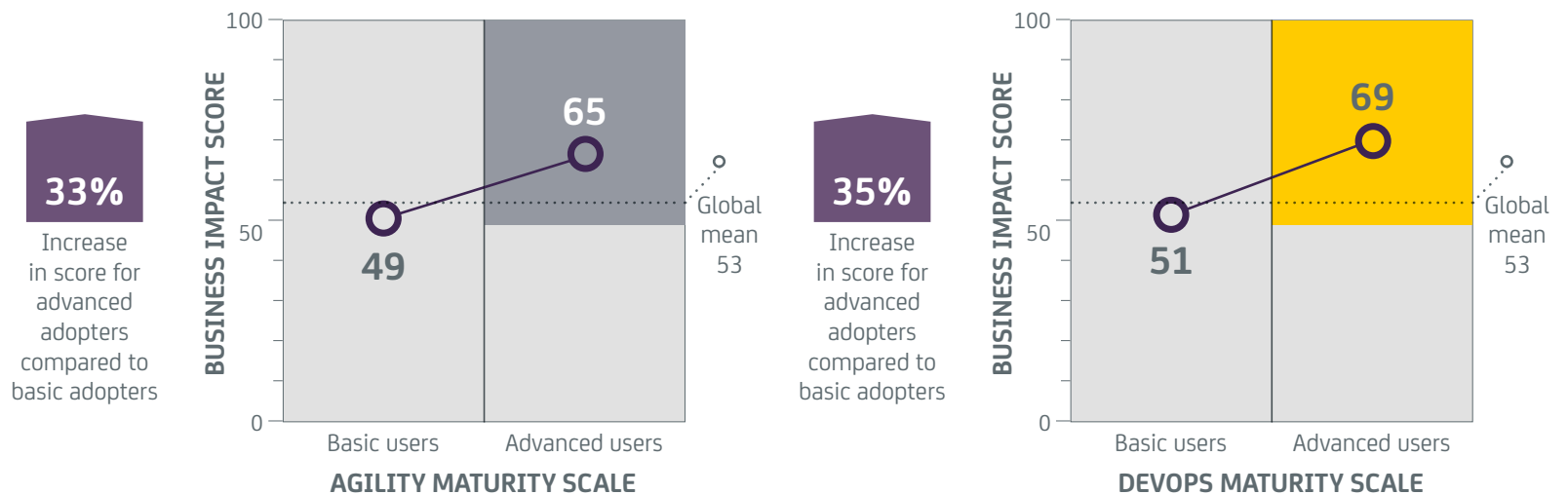
assesses the effect of organizations' digital initiatives on business performance generally, based on 14 business KPIs that are essential to successful digital transformation.

We compared the scorecard results for advanced and basic users of agile and DevOps. For both methods, advanced users' scores were around a third higher than those being achieved by basic users.

The global mean BIS result among our respondents was 53 out of 100. Mature agile adopters scored 65 on average, compared to 49 for basic users—an improvement of 33%. Advanced DevOps users achieved an average score of 69, against 51 for basic adopters—an increase of 35% (see fig. 10).

The scorecard results provide clear evidence that mature use of agile and DevOps contributes to more successful digital transformation programs.

FIG. 10 ADVANCED USE OF AGILE AND DEVOPS IMPROVES THE BUSINESS IMPACT OF DIGITAL TRANSFORMATION



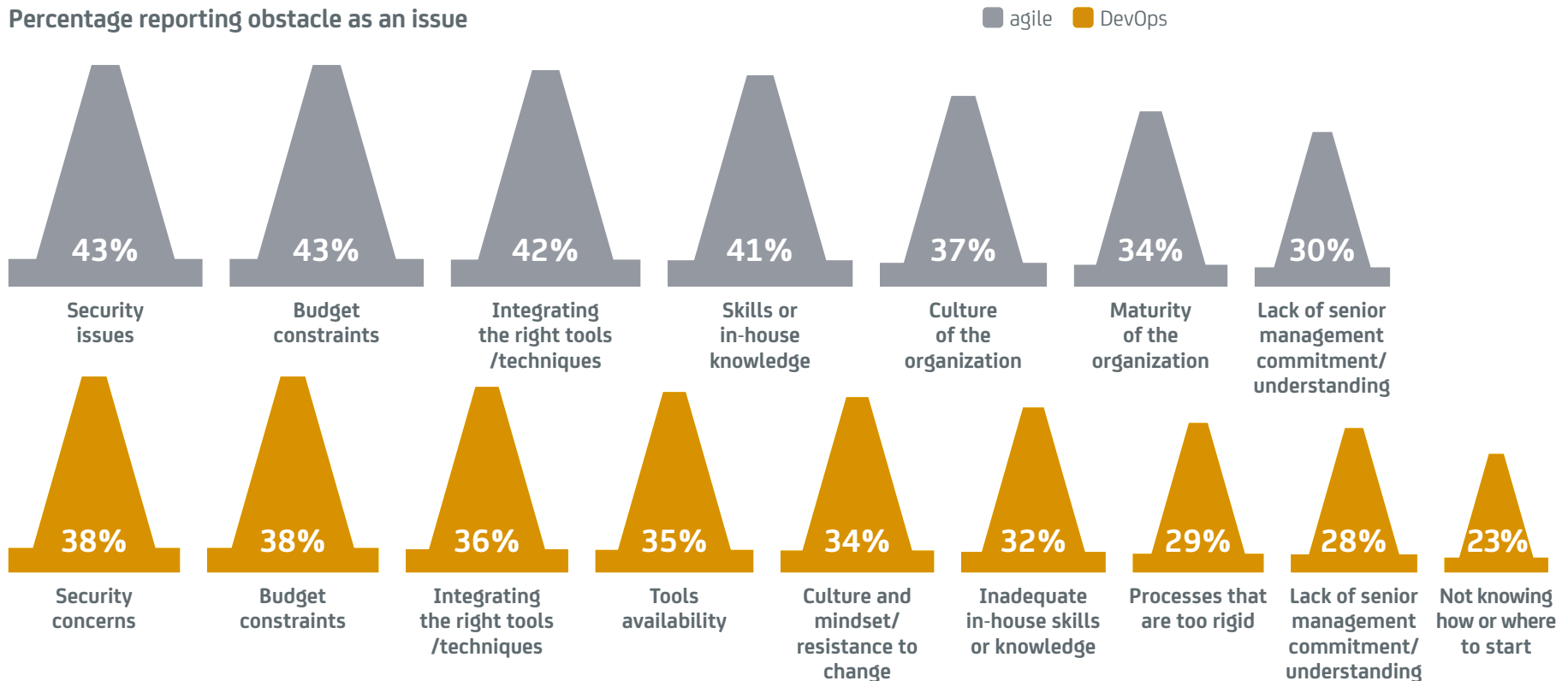
06. Barriers to maturity

Business leaders clearly recognize—and are embracing—the advantages of agile and DevOps in the digital environment. So why are two thirds of them yet to truly integrate these practices into their organizations? What’s stopping them from reaping the full business benefits?

Our study found significant numbers of firms facing a wide range of challenges in the way of mature adoption (see fig. 11). Between a quarter and two fifths of respondents admitted to struggling with numerous issues when trying to fully leverage agile and DevOps. Worryingly, where DevOps is concerned, almost a quarter said they wouldn’t know how to get started.

For both approaches, the three biggest hurdles were security, budgets, and difficulties integrating the right tools and techniques. Around two in five respondents identified these as obstacles to full adoption in their firms.

FIG. 11 THE OBSTACLES PREVENTING THE IMPLEMENTATION OF AGILE AND DEVOPS ARE WIDE RANGING



Security being identified as the greatest barrier to mature agile and DevOps adoption echoes results elsewhere in our wider study of enterprise digital transformation. This found that 68% of organizations have at times compromised security in order to get new applications to market faster. Read our report titled *The Security Imperative: Driving Business Growth in the App Economy* for more on this, and on how an identity-centric approach to security can help address this challenge.

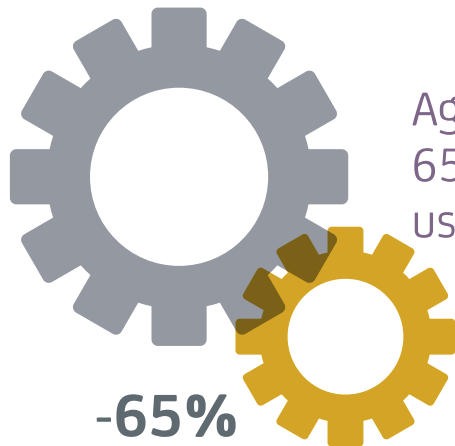
Problems integrating tools and techniques may reflect the fact that ad hoc and opportunistic purchasing of IT tools can mushroom over time. Organizations need to have a strategy and architecture in place to help rationalize the deployment of IT tools for both agile and DevOps.

Budget concerns are a pain point that firms must go through if they're to realize the gains that agile and DevOps can provide. As we've seen, the two

practices actually reduce IT costs by 65% once implemented—and by more still when used at an advanced level.

Our digital transformation objectives are driven by our vision of empowering the customer—allowing our customers to drive transactions at the speed they want.

Senior compliance officer, US financial services provider



Agile and DevOps actually reduce IT costs by 65% once implemented—and by more still when used at an advanced level.

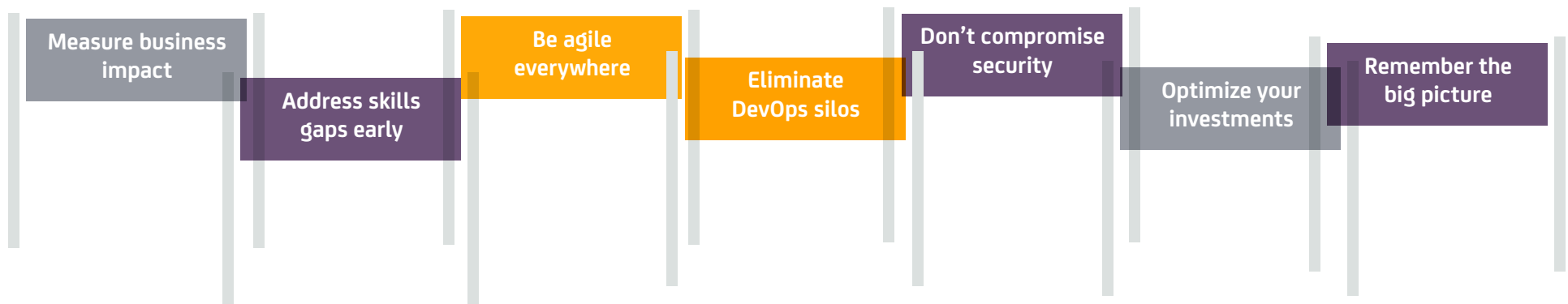
07. Your action plan

Our research builds a strong business case for fully embracing agile and DevOps practices across the organization.

So how do you go about doing this? Where should you focus first, and how can you ensure that your efforts will improve performance and drive business growth?

In our experience, the following actions are critical to leveraging agile and DevOps to achieve a successful digital transformation program.

1. **Measure *business* impact.** Too often, internal efficiency and productivity metrics are used to gauge the effects of agile and DevOps. While these are valid—and important—indicators, the true business impact is measured by external factors: customer satisfaction, customer experience, business growth, and so on.
2. **Address skills gaps early.** Successful agile and DevOps deployment calls for specific skills and experience. If you have people who understand the practices and tools required, and have demonstrated the capacity to be adaptable, flexible, and open to new ways of working, they will help you accelerate the necessary culture change.
3. **Be agile everywhere.** IT and software development are generally the first places where agile practices take hold. Yet our research shows that functions such as marketing, sales, and support are where the true pay-offs are to be found, in terms of delivering continuous customer value.
4. **Eliminate DevOps silos.** While DevOps use continues to grow, it is usually only implemented in pockets of the organization. This leads to little cross-fertilization of knowledge and best practices. To be truly effective, a ‘DevOps mindset’ must be embedded in the culture of your IT function.
5. **Don’t compromise security.** As agile and DevOps help improve velocity, don’t be tempted to deprioritize security in favor of time-to-market. Integrate security considerations into your development processes from the outset.
6. **Optimize your investments.** Our research highlights that budget constraints are a common barrier to mature agile and DevOps adoption. Yet these approaches significantly reduce IT costs once they’re in place. Taking a portfolio-management approach to assessing and prioritizing where to spend your budget will help free up resources for agile and DevOps deployment.
7. **Remember the big picture.** When integrating the tools and processes needed to enable agile and DevOps, it’s easy to lose sight of the ultimate aim: to deliver customer value. Taking a whole-value chain approach is essential; as is bringing the necessary teams together to prioritize what’s needed to build the right things at the right time.



Further information

For practical insight on how to integrate agile, DevOps and other proven software strategies into your digital transformation journey, read *Digitally Remastered* by Otto Berkes, Chief Technology Officer of CA Technologies.

For a concise guide to designing, implementing, measuring, and improving DevOps programs, read *DevOps for Digital Leaders*, by Aruna Ravichandran, Kieran Taylor and Peter Waterhouse.

Research methodology

CA Technologies commissioned Coleman Parkes Research to interview executives about the extent and impact of their organizations' digital transformation activity.

We surveyed 1,770 senior business and IT decision-makers at large enterprises in 21 countries across the Americas, EMEA and Asia-Pacific Japan (APJ) regions. Organizations surveyed had annual revenues of more than US\$1 billion (or US\$0.5 billion in some smaller economies).

Countries surveyed were:

Americas	EMEA	APJ
Brazil	France	Australia
USA	Germany	China
	Italy	Hong Kong
	Netherlands	India
	South Africa	Indonesia
	Spain	Japan
	Sweden	Korea
	Switzerland	Malaysia
	UK	Singapore
		Thailand

Sectors surveyed were:

- Automotive
- Banking and financial services
- Energy and utilities
- Healthcare
- Manufacturing
- Media and entertainment
- National public sector
- Retail
- Telecommunications
- Transportation and logistics

The research and analysis were conducted in May and June 2016.

About CA Technologies

CA Technologies (NASDAQ: CA) creates software that fuels transformation for companies and enables them to seize the opportunities of the application economy. Software is at the heart of every business in every industry. From planning to development to management and security, CA is working with companies worldwide to change the way we live, transact, and communicate—across mobile, private, and public cloud, distributed and mainframe environments. www.ca.com

About Coleman Parkes Research

Coleman Parkes Research specializes in recruiting and interviewing senior-level respondents across multiple global markets, vertical sectors and functional areas for a wide range of clients. From thought leadership research for PR and marketing campaigns, to analyzing win/loss opportunities, testing product messages and conducting in-depth senior executive interviews, we do it all. Coleman Parkes Research works collaboratively with clients to formulate proven strategies that generate market insight based on individual requirements and key hypotheses. colemanparkes.com/

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