

The State of **Application Development**

Is IT Ready for Disruption?

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1. Executive Summary

Organizational agility is more important today than ever. Digital transformation has dominated business strategy for several years. The quest has been to seize new market opportunities, to win, serve, and retain customers to fuel business growth, and to avoid being disrupted by competitors that are becoming more numerous and varied in nature.

As if these challenges weren't enough, many business leaders, advisers, and even IT industry analysts are starting to worry about the global economic outlook in 2019–20. Agility is not just for growth—as Darwin taught us, adaptability is how species and businesses survive.

How agile is your organization? And, for that matter, how adaptable is your IT organization?

These questions serve as the backdrop to our sixth annual survey of IT professionals as we seek to better understand the state of application development. We set out with five critical questions in mind:

- 1 How are organizations' app dev practices adapting to meet digital transformation and agility objectives?
- 2 What are the main challenges to meeting application development goals?
- 3 What strategies are IT teams employing to speed up application delivery?
- 4 Are these strategies working to overcome resource constraints and reduce backlogs?
- 5 Are new app dev practices such as low-code and citizen development making a difference?

Our research took us around the world, connecting us with more than 3,300 IT professionals in all kinds of industry across six continents. Our insights from that research are captured in the pages that follow.

2. Key Findings

Digital Transformation Is a Work in Progress

Evaluating their progress with digital transformation on a six-point scale, on average, respondents awarded their organizations a score of 3.74, meaning digital transformation efforts are typically widespread, but not yet strategic or continuous.

Disruption Is a Rising Concern

Uncertainty and disruptive threats appear to be on the rise. Asked to evaluate potential risks, senior respondents ranked changes in customer preference or behavior as their number one risk factor, closely followed by regulatory change, cyber-attack, and more nimble competitors.

Stock market volatility was the least of their concerns. Even so, 51% thought this was likely or very likely to disrupt their organization in the year ahead.

Demand for App Dev at All-Time High

The number of applications respondents have slated for delivery in 2019 is 60% higher than last year's assessment. Focusing on organizations with more than 500 employees, 65% of IT professionals said they had plans to deliver 10 or more apps, 38% plan to deliver 25 or more apps, and 15% said they plan to deliver 100 or more apps in 2019.

Development Time Is Faster—But Not for All

Last year, 54% of respondents said the average time to deliver a web application was 4 months or less. This year, that figure has risen to 61%. Mobile app development is little changed since last year, with just 55% on average saying that they deliver apps in 4 months or less.

Backlogs Remain Stubbornly Long

Sixty-four percent of IT professionals said they have an app dev backlog, and for 19% of these respondents, the backlog was more than 10 apps. Only 39% said their app dev backlog had improved in the last year, and 50% say it's about the same.

Development Skills Are in Short Supply

The vast majority of responding organizations have hired multiple app dev roles in the past year. Only 15% of respondents described such recruitment as easy, and for many specialties, recruitment was described as hard or very hard. Despite such recruitment, only 36% of organizations have larger app dev teams than a year ago. So, for many organizations, retention of developer talent appears to be an equally grave challenge.

Agile and Other Customer-Centric Practices Are on the Rise

Most organizations have invested in customer-centric practices in the past year, including agile (60%), design thinking (30%), customer journey mapping (20%), and lean UX (11%). Despite these efforts, agile maturity is still lacking in many organizations, the average assessment being somewhere between "just started" and "well defined."

Low-Code Is Mainstream

Forty-one percent of respondents said their organization was already using a low-code platform, and a further 10% said they were about to start using one. This correlates closely with the adoption forecast provided in last year's report, in which we found 34% of respondents using low-code, and another 9% saying they were about to start.

Since 41% of respondents are using a low-code platform, in sections 8 and 9 of this report, we explore in depth how low-code is being used and how it is "moving the dial" for those who have adopted it.

3. About the Survey

In March 2019, we surveyed more than 3,300 IT professionals across six different continents.

You will find a detailed breakdown of respondent demographics in section 12, including job functions, geography, size of organization, and industries.

Over 80% of respondents were application developers, managers or IT leaders responsible for application development and delivery, or in related IT roles.

Those in senior IT roles and business leadership roles provided additional feedback regarding business transformation goals, disruptive challenges, and organizational agility.

Respondents shared their challenges with digital transformation, application development, delivery speed, and attracting and developing talent. They answered questions about low-code and, if they were using it, what kinds of applications they had delivered.

In the sections that follow, we'll share our analysis of those results and conclude with what we gleaned about organizational agility and low-code.

4. Digital Transformation Challenges

Respondents with senior job functions were asked to identify their organization's top digital transformation goals. They also shared their opinions about possible causes of disruption, the agility of their organization, and their top priorities for application development. Their answers underscore the crucial importance of **adaptability** for all organizations in 2019.

Top Goals for Digital Transformation

Four priorities for digital transformation accounted for 68% of responses:

- Improve agility/accelerate innovation (**22%**)
- Reduce costs/improve efficiency (**17%**)
- Achieve growth in new markets (**15%**)
- Address evolving customer behaviors or preferences (**14%**)

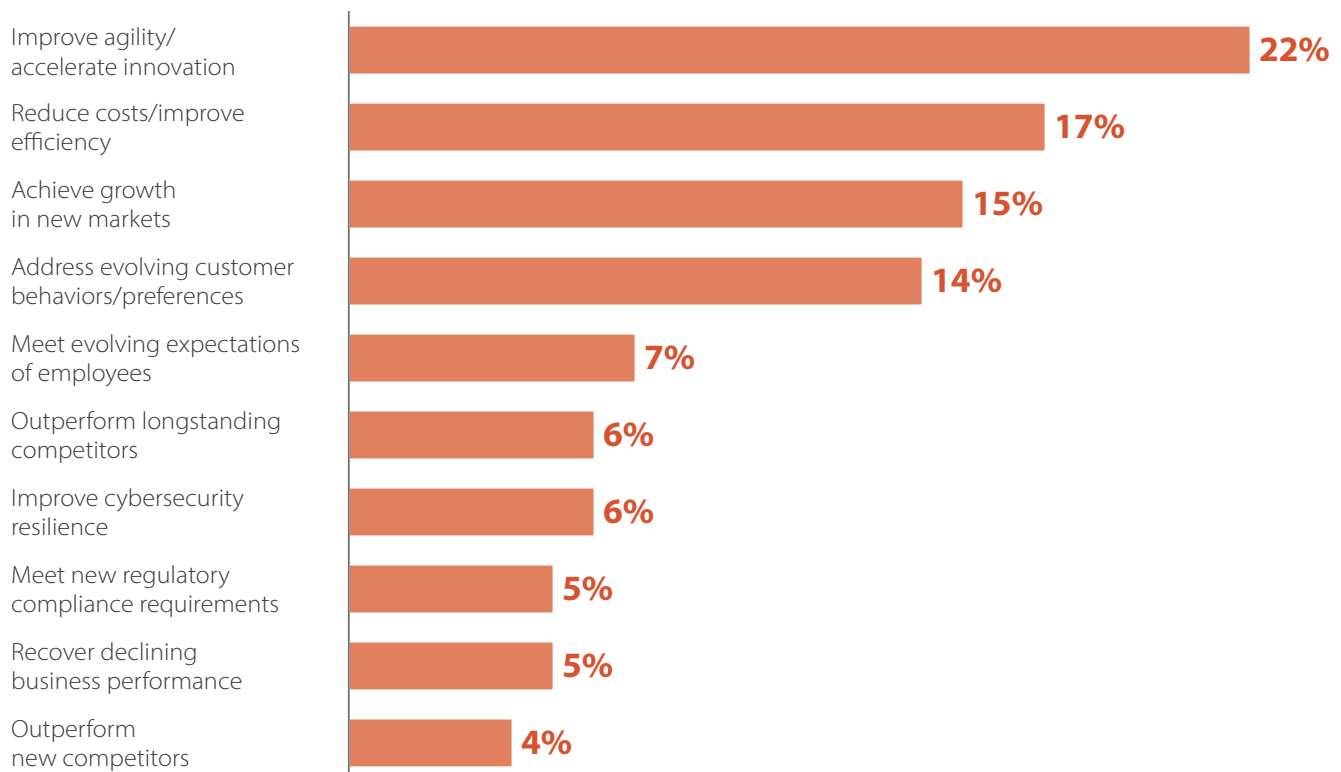


Fig.1: Top Goals for Digital Transformation

Source: State of Application Development 2019/2020. OutSystems ©

These priority rankings were consistent across most industries, with the following notable exceptions:

- **Airlines and aerospace (including defense):** Reducing costs or improving efficiency and outperforming longstanding competitors were the top priorities.
- **Banks and financial services (not insurance):** Meeting new regulatory and compliance requirements were ranked above addressing evolving customer behaviors or preferences.
- **Education:** Supporting growth was not a top priority, but addressing evolving customer behaviors and preferences, and meeting the evolving expectations of employees were top-four priorities.
- **Government:** Improving cybersecurity resilience was a top-three priority—the only industry sector to rank it so high.

Progress With Digital Transformation

Respondents were asked to assess their organization’s progress with digital transformation, using a self-assessment matrix derived from Altimeter’s “Six Stages of Digital Transformation”¹:

Digital Transformation Maturity Assessment	
Level 1	Unaware: We seem to ignore the risk of digital disruption.
Level 2	Isolated: Pockets of experimentation are happening in a few business areas.
Level 3	Widespread: Multiple experiments are coordinated by change agents with executive support.
Level 4	Strategic: We plan digital transformation ownership, effort, and investment in multiple business areas.
Level 5	Converged: A dedicated, overarching digital transformation team guides a consistent approach for the organization.
Level 6	Continuous: Our digital transformation team is funded to continuously innovate digitally at scale.

Table 1: **Digital Transformation Maturity Self-Assessment**

Source: State of Application Development 2019/2020. OutSystems ©

1. Altimeter - The State of Digital Transformation 2018-2019.

The average digital transformation maturity score was 3.74, meaning digital transformation efforts are typically widespread, but many respondents were unwilling to describe their organization's approach as strategic, converged, or continuous. The distribution of responses is shown in Fig. 2.

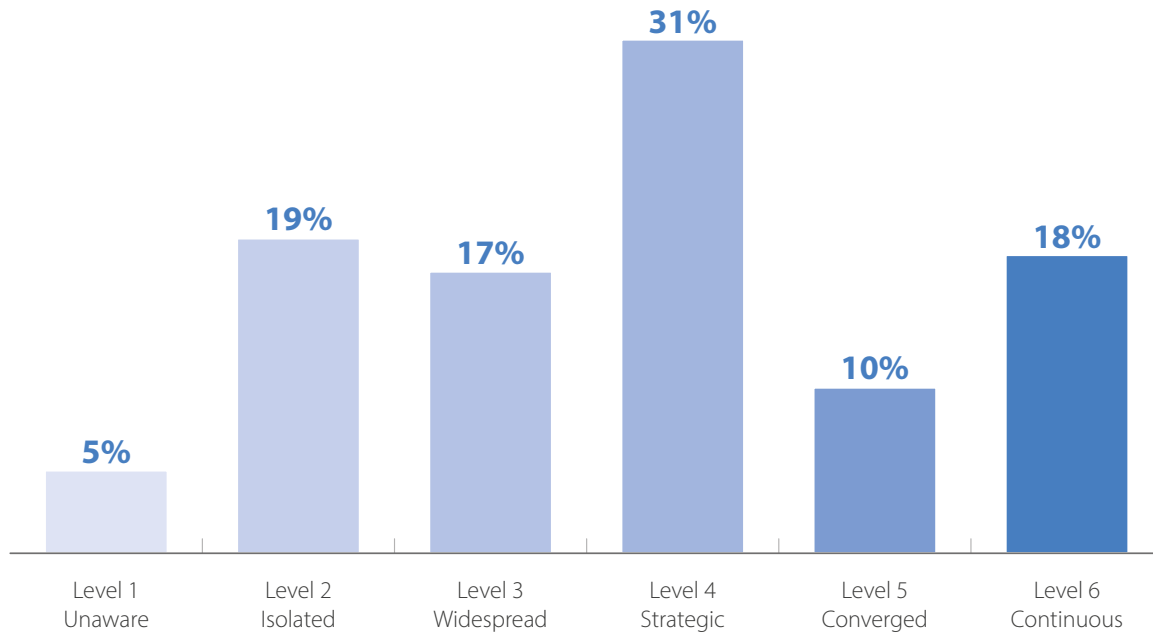


Fig. 2: Digital Transformation Maturity Level

Source: State of Application Development 2019/2020. OutSystems ©

Responses varied depending on the role and seniority of respondents. Senior leaders from outside of IT provided an average digital maturity score of 3.38, CIOs 3.58, and all other IT roles (excluding the CIO) 3.83. Fig. 3 shows how these scores vary from the overall mean and reveals that people in IT (apart from the senior leadership team) may be overestimating their organization's progress with digital transformation compared to more senior colleagues.

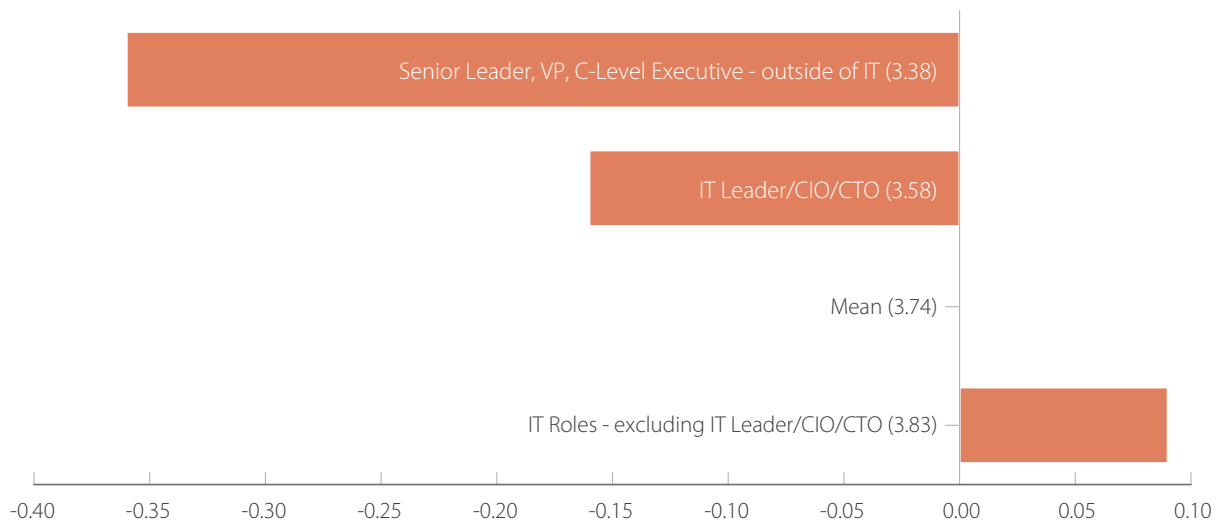


Fig. 3: Differing Opinions of Digital Transformation

Source: State of Application Development 2019/2020. OutSystems ©

Respondents from different industries had widely differing views on the progress their organization was making with digital transformation.

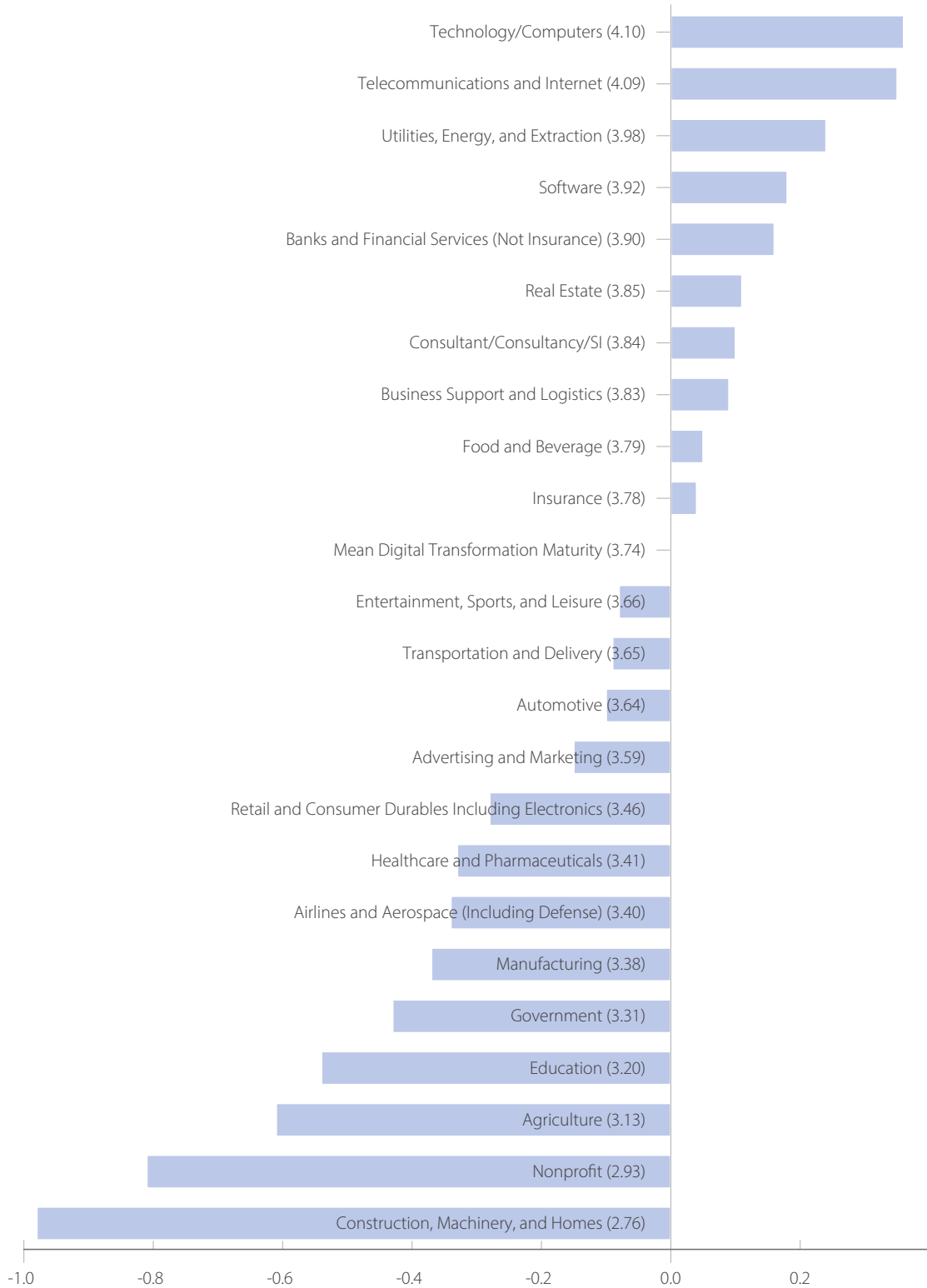


Fig. 4: Digital Transformation Maturity by Industry (Variance From Mean)

Source: State of Application Development 2019/2020. OutSystems ©

Disruptive Forces

Senior respondents told us how likely they thought it was that their organization would be disrupted by external forces in the year ahead.

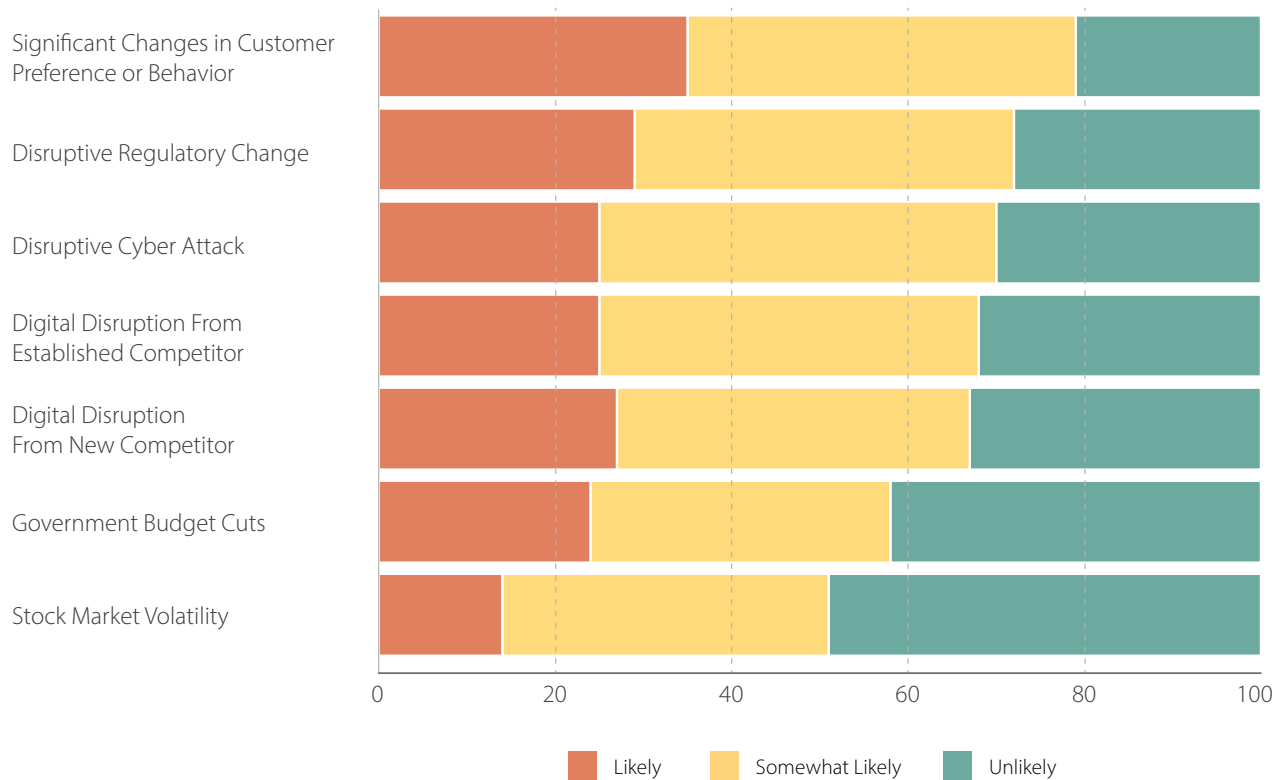


Fig. 5: Likely Causes of Disruption in the Year Ahead

Source: State of Application Development 2019/2020. OutSystems ©

Only a minority of respondents described these potential disruptions as unlikely. Adding likely and somewhat likely together, the figures in rank order were:

- Significant changes in customer preference or behavior: **80%**
- Disruptive regulatory change: **72%**
- Disruptive cyber attack: **70%**
- Digital disruption from an established competitor: **69%**
- Digital disruption from a new competitor: **67%**
- Government budget cuts: **58%**
- Stock market volatility: **51%**.

Opinions about these risk factors varied considerably depending on organization size and industry. For example:

Source of Business Disruption	Most Fearful	Least Fearful
Disruption from stock market volatility	<ul style="list-style-type: none"> Small organizations (<500 employees) Retail and consumer durables including electronics 	<ul style="list-style-type: none"> Large organizations (>10,000 employees) Government and education
Changes in customer preference or behavior	<ul style="list-style-type: none"> Insurance Retail and consumer durables including electronics 	<ul style="list-style-type: none"> Banks and financial services Government
Government budget cuts	<ul style="list-style-type: none"> Government Education Healthcare and pharmaceuticals 	<ul style="list-style-type: none"> Business support, logistics, and transportation
Competitors (both established and new)	<ul style="list-style-type: none"> Banks and financial services Insurance 	<ul style="list-style-type: none"> Government Education Utilities, energy, and extraction
Disruptive regulatory change	<ul style="list-style-type: none"> Banks and financial services (not insurance) Healthcare and pharmaceuticals 	<ul style="list-style-type: none"> Consultants and system integrators

Table 2: **Disruptive Fears - Variance by Industry**

Source: State of Application Development 2019/2020. OutSystems ©

Agility

Senior respondents were asked to assess their organization’s agility using a self-assessment matrix derived from Prosci’s “Agility Attributes Assessment”:²

Agility Self-Assessment

Please describe your organization's agility using this matrix.	Agree	Somewhat agree	Somewhat disagree	Disagree
Agility is baked into our organization's DNA				
We regularly out-change our competitors and industry peers				
We continually and systematically research and anticipate change				
We execute planned changes well				
We cope well with unplanned change				

Table 3: **Agility Self-Assessment Matrix**

Source: State of Application Development 2019/2020. OutSystems ©

Around three-quarters of respondents agreed or somewhat agreed with each of these statements.

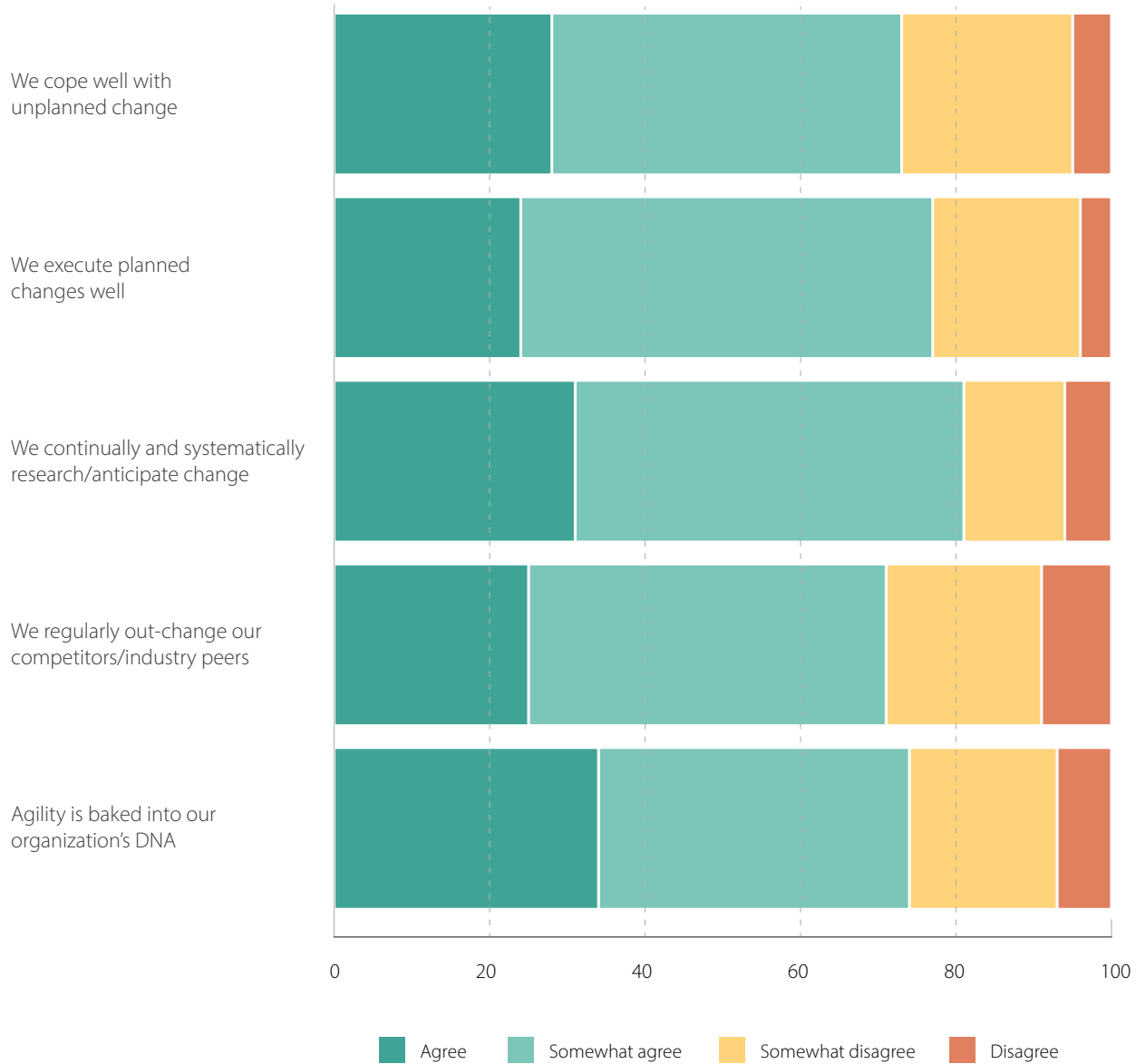


Fig. 6: **Organizational Agility Assessment**

Source: State of Application Development 2019/2020. OutSystems ©

As shown in the following charts, respondents from different industries and sizes of organization had widely differing opinions about their organizations' agility.

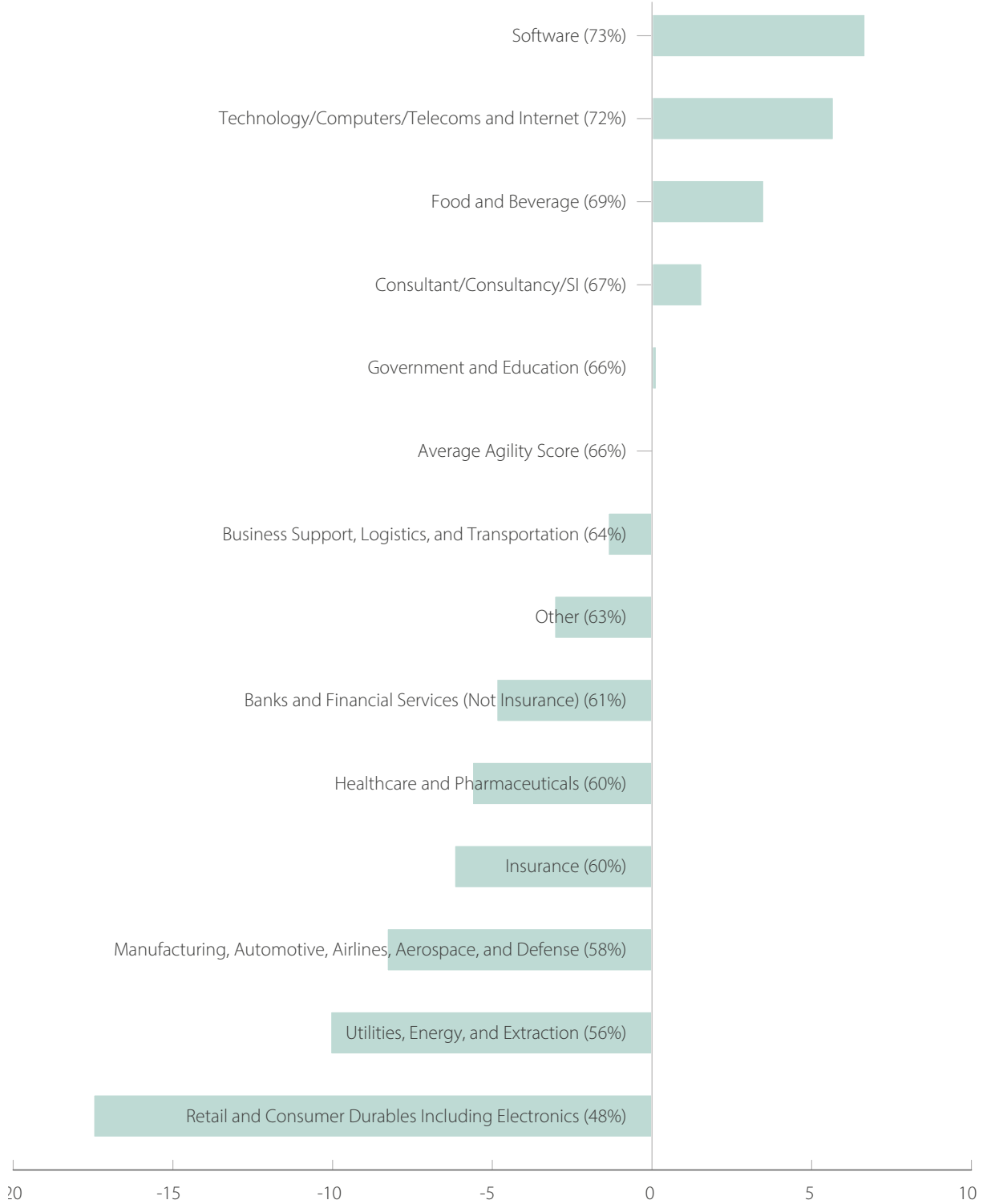


Fig. 7: Organizational Agility by Industry

Source: State of Application Development 2019/2020. OutSystems ©

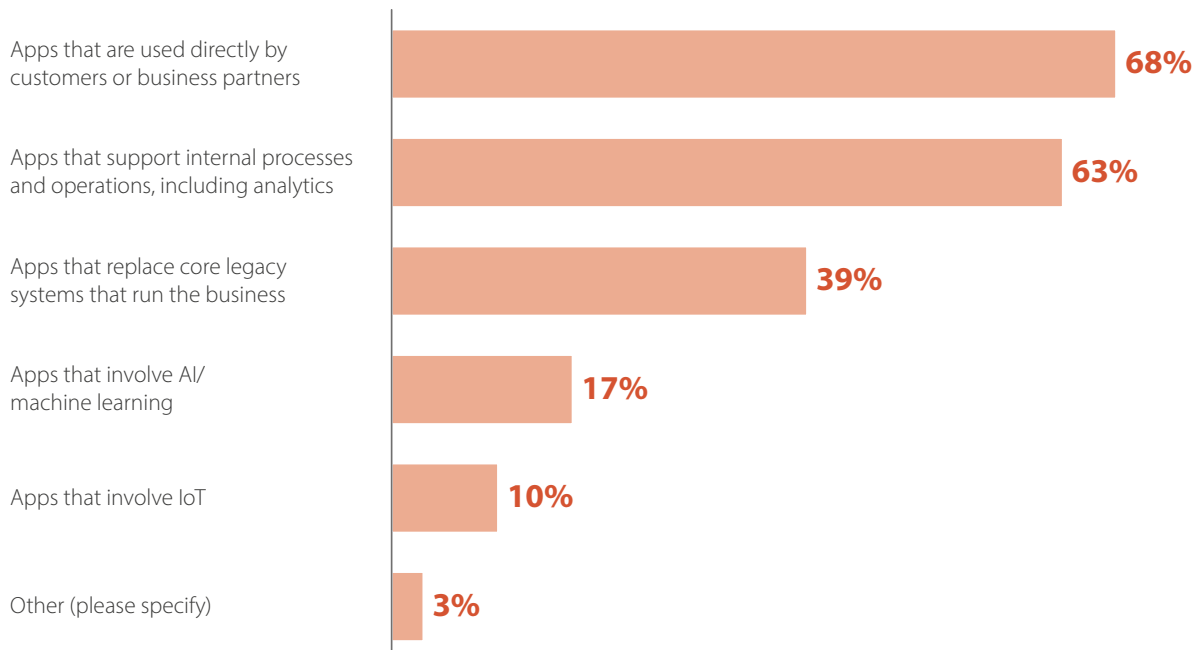


Fig. 8: **Organizational Agility by Organization Size**

Source: State of Application Development 2019/2020. OutSystems ©

Types of App to be Delivered in 2019

We asked respondents to describe the two most important types of application that they would develop in 2019. In first place are **apps used directly by customers or business partners** (68%). **Apps that support internal processes and operations, including analytics** came second (63%). All responses are shown in Fig. 9. Responses for “Other” varied considerably. APIs, blockchain, e-commerce, ERP, and robotic process automation were among them.



Respondents had to select two answers, hence a total of 200%.

Fig. 9: **Two Most Important Types of App Dev Projects**

Source: State of Application Development 2019/2020. OutSystems ©

As shown in Fig. 10, these priorities varied in different industries. Notably, there was a greater focus on internal apps rather than those used by third parties in utilities, energy, and extraction, as well as manufacturing, automotive, airlines, aerospace, and defense.

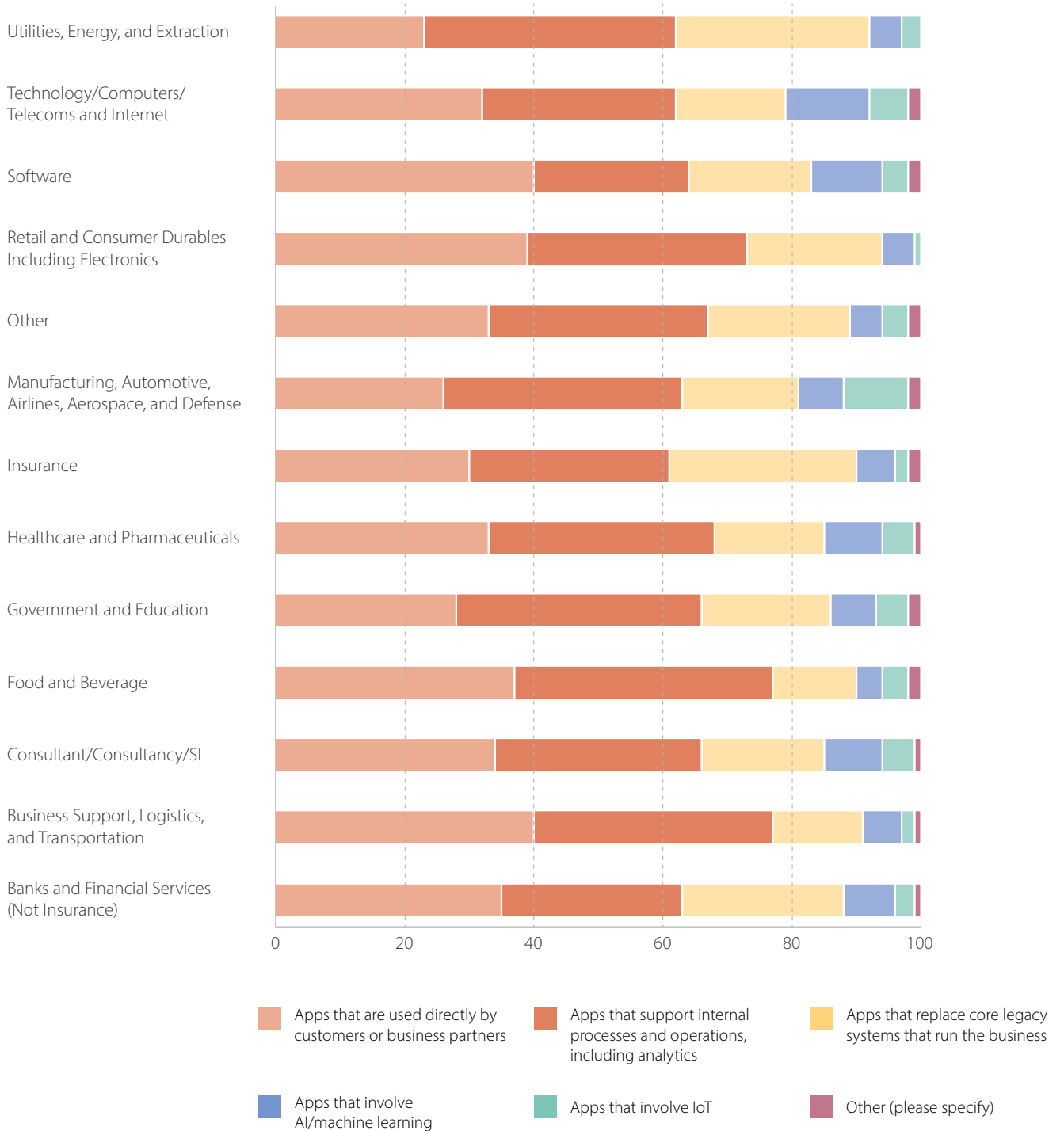


Fig. 10: App Dev Priorities by Industry

Source: State of Application Development 2019/2020. OutSystems ©

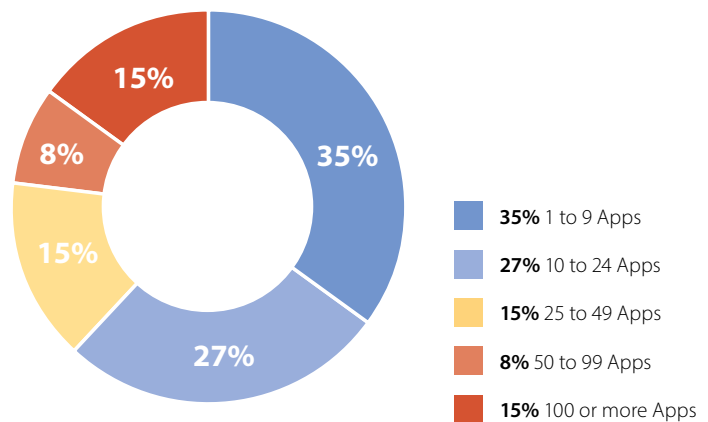
5. The Challenges of Application Development

The responses to questions about the number of apps in the pipeline, maintenance, backlogs, and more revealed a great deal about the barriers and issues that affect application development.

The Relentless Demand for Custom Applications

Fueled by digital innovation and differentiation initiatives, demand for application development seems higher than ever. Focusing on organizations with 500 or more employees, we found 65% have 10 or more apps planned for delivery in 2019. Thirty-eight percent have 25 or more apps planned in 2019.

Larger companies tended to have even more ambitious targets. Forty-two percent of companies with over 10,000 employees said they planned to develop 50 or more apps in 2019, compared to just 13% of companies with between 500 and 5,000 employees.



Source: State of Application Development 2019/2020. OutSystems ©

Fig. 11: Applications Planned for Development

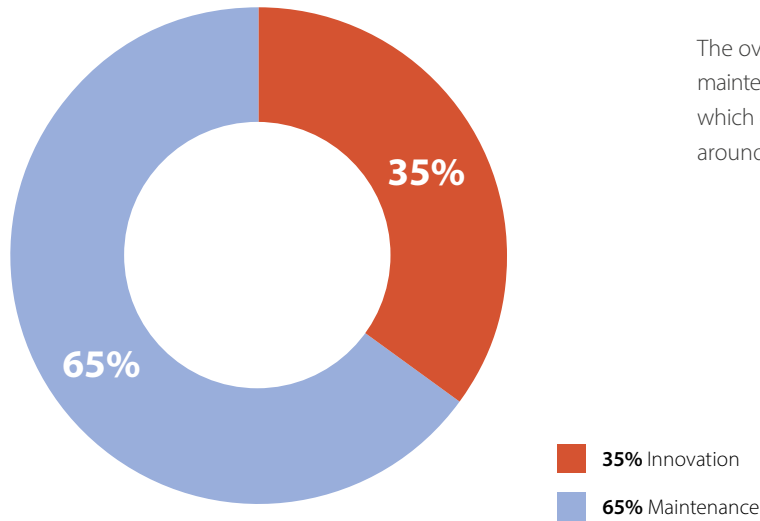
Innovation vs. Maintenance

As shown in Table 3, of all these apps slated for development, the majority are replacements for or updates to applications that already exist rather than innovative (net new) apps.

Question	Answer Option	Response
Roughly what percentage of the applications you will develop in 2019 are new innovations, rather than replacing and updating applications that you already have?	Innovation less than 25% of all apps	44%
	Innovation 26–50% of all apps	32%
	Innovation 51–75% of all apps	15%
	Innovation over 75% of all apps	9%

Table 4: Innovation vs. Maintenance Responses

Source: State of Application Development 2019/2020. OutSystems ©



The overall split is therefore around 35% innovation and 65% maintenance. This broadly concurs with industry analyst reports which estimate that “keeping the lights on” activities consume around 75% of most IT organizations’ resources.

Fig. 12: Estimated Split of App Dev Projects

Source: State of Application Development 2019/2020. OutSystems ©

Development Times Are Long

We asked respondents how long on average it took their organization to deliver a new web or mobile application.

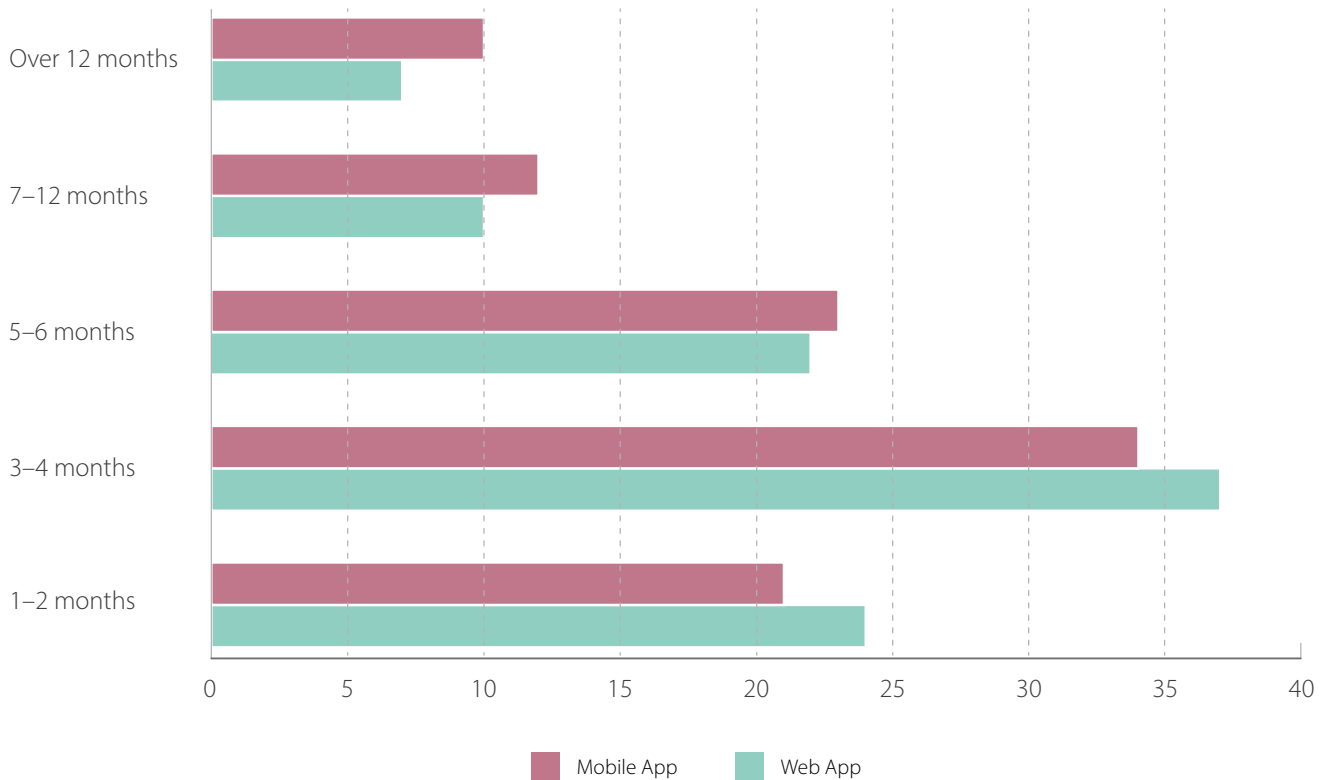


Fig. 13: Application Development Time

Source: State of Application Development 2019/2020. OutSystems ©

By focusing on just those who said application delivery takes 5 months or longer, it becomes more obvious that mobile application development takes longer.



Fig. 14: **Application Development Time 5 Months or Longer**

Source: State of Application Development 2019/2020. OutSystems ©

In the case of web applications, this represents a marked improvement in speed compared to our 2018 survey, in which 46% of respondents said delivery of web apps was taking 5 months or longer. As discussed in section 9 of this report, an increased proportion of respondents who are using low-code application development platforms has contributed to this speed improvement.

Backlogs

We wanted to understand whether the backlogs identified in last year’s survey are getting better or worse. Forty-five percent of respondents said they had between one and 10 web or mobile app development projects in the backlog, and 19% of respondents said they had more than 10 projects backing up. The picture varied according to company size, as shown in Fig. 15.

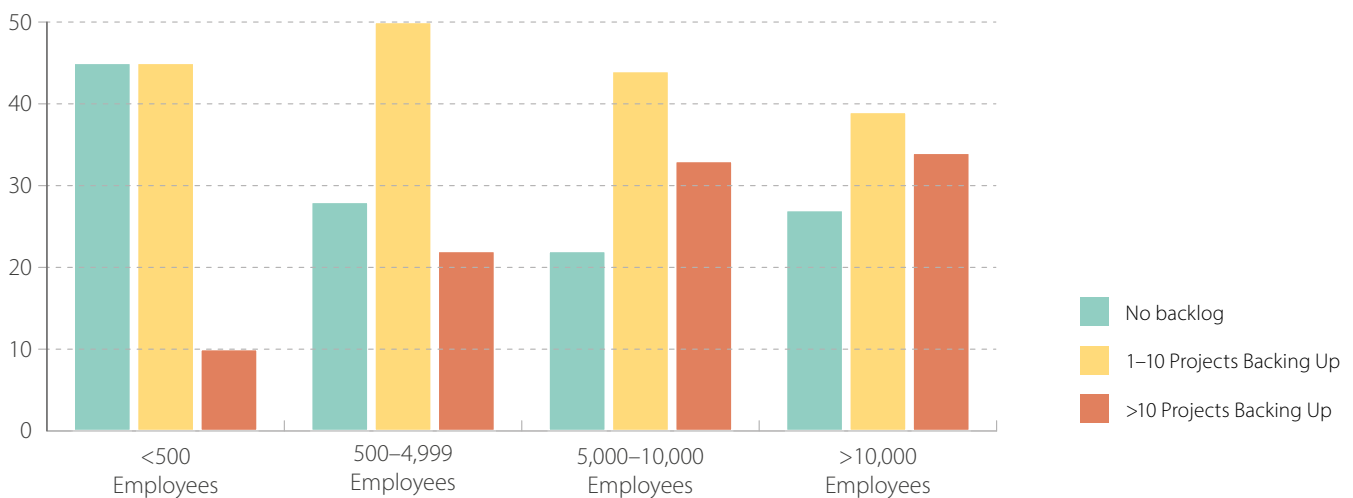


Fig. 15: **Backlog by Organization Size**

Source: State of Application Development 2019/2020. OutSystems ©

Eleven percent of respondents said their backlog was getting worse, 50% said it was about the same, and 39% said their backlog had improved in the past year.

Top Challenges That Slow Down App Delivery

Respondents identified the top three challenges that complicate or delay the delivery of web and mobile applications:

- Integration with legacy systems
- Fuzzy and changing requirements
- The time necessary for testing and QA

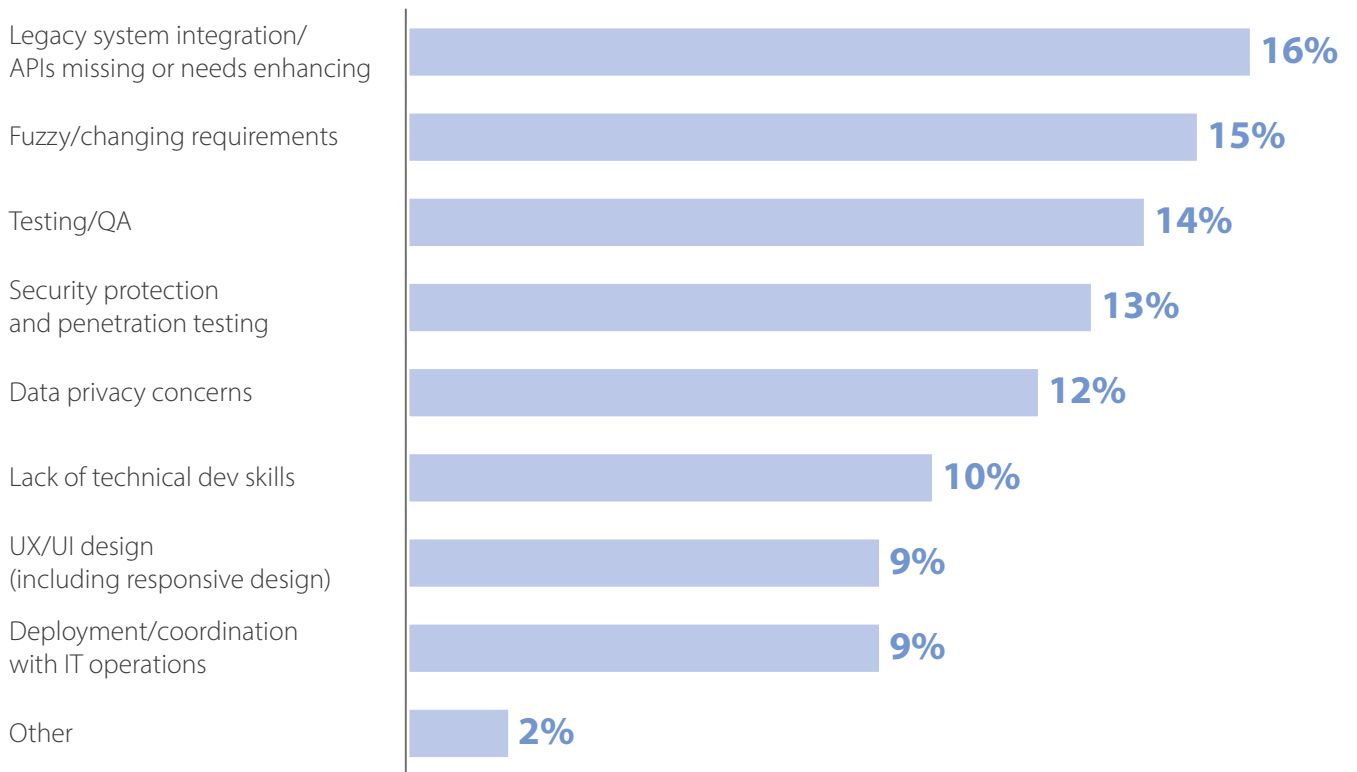


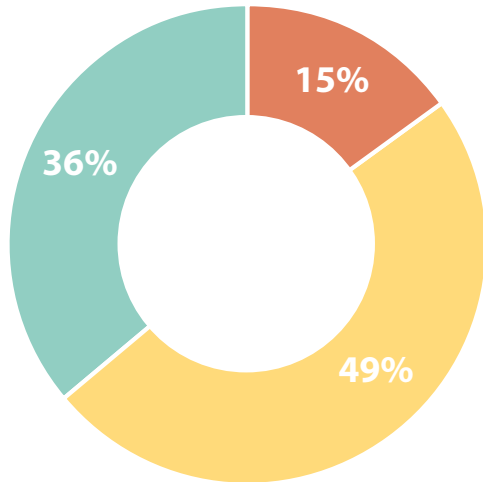
Fig. 16: **Top Causes of Application Delivery Delays**

Source: State of Application Development 2019/2020. OutSystems ©

There was a diverse mixture of other issues; the following themes received multiple mentions (in order of frequency):

- Leadership and project management issues
- Lacking collaboration from business representatives
- Resources, skills, and budget
- Compliance challenges.

Shadow IT and Citizen Development



With many organizations complaining of slow application delivery speed and backlogs, shadow IT can be a growing concern to organizations, especially in cases where IT lacks oversight or capacity to govern the efforts of so-called citizen developers.

Respondents told us how effective they thought that their IT department was at governing citizen development. (We defined citizen developers as “Non-professional developers who don’t report to IT, but use tools sanctioned by IT for business-led development.”)

- **15%** Shadow IT is a risk for our organization
- **49%** Citizen developers exist at a varying degree of governance
- **38%** We don't have shadow IT or citizen developers

Fig. 17: Shadow IT and Citizen Development

Source: State of Application Development 2019/2020. OutSystems ©

Shadow IT

Shadow IT is out of sight to IT personnel and is likely to pose a risk to IT security and privacy. Without oversight, there are many unknowns, such as what tools and platforms are being used, the control and governance of data, and security and privacy risks.

Citizen Development

Citizen Development is sanctioned by IT and uses tools IT has approved. However, without adequate governance, it may pose many of the same threats as shadow IT.

Respondents described widely varying levels of success in their attempt to govern citizen development. In section 9 of the report, we explore how low-code and no-code platforms help IT organizations govern citizen development more successfully.

Responses differed by industry. Some believed shadow IT was less of an issue for their organization, and others were more likely to consider shadow IT a threat, as shown by figures 18 and 19, respectively.

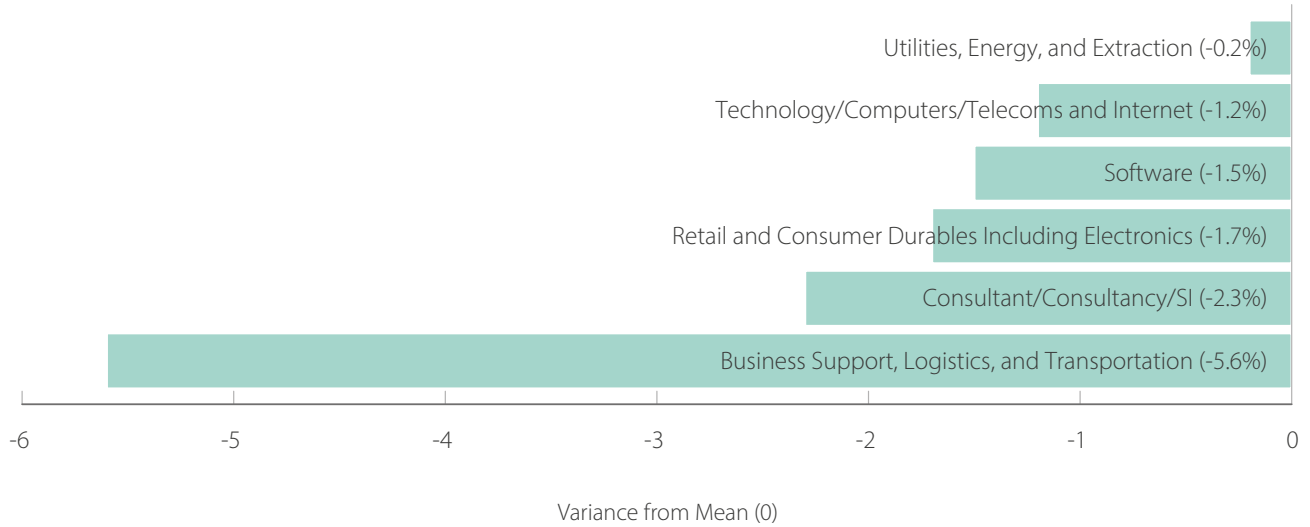


Fig. 18: Industries With Lower Risk of Shadow IT

Source: State of Application Development 2019/2020. OutSystems ©

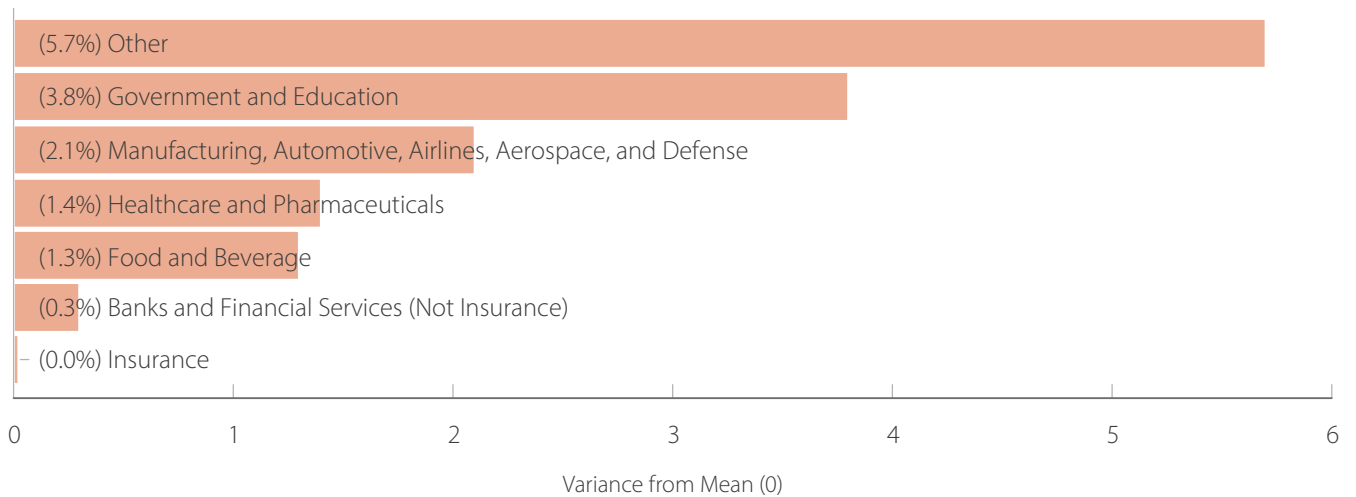


Fig. 19: Industries With Higher Risk of Shadow IT

Source: State of Application Development 2019/2020. OutSystems ©

The “Other” category included:

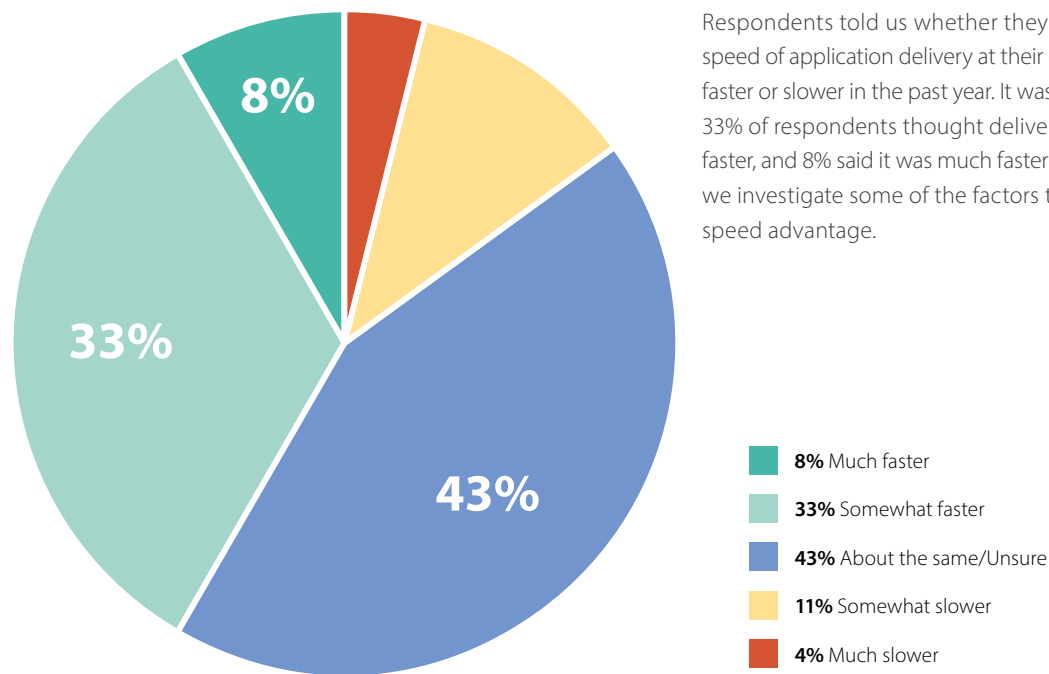
- Advertising and marketing
- Entertainment, sports, and leisure
- Agriculture
- Nonprofit
- Construction, machinery, and homes
- Real estate

6. In Search of Speed

All organizations are seeking to improve their efficiency, speed, and quality of software delivery. We wanted to find out what investments organizations made in approaches and technology in the past year that were aimed at increasing delivery speed.

Fifty-seven percent of respondents with senior IT responsibilities said that the speed of application delivery was a KPI for their IT organization.

Has App Dev Gotten Faster or Slower in the Past Year?



Respondents told us whether they thought that the typical speed of application delivery at their organization had become faster or slower in the past year. It was encouraging to learn that 33% of respondents thought delivery had gotten somewhat faster, and 8% said it was much faster than a year ago. In section 9, we investigate some of the factors that are driving this delivery speed advantage.

Fig. 20: Has App Dev Speed Improved in the Past Year?

Source: State of Application Development 2019/2020. OutSystems ©

Software Release Cadence

Respondents told us how frequently their organization typically releases new software versions. Sixty-eight percent said that releases are quarterly or more frequent.

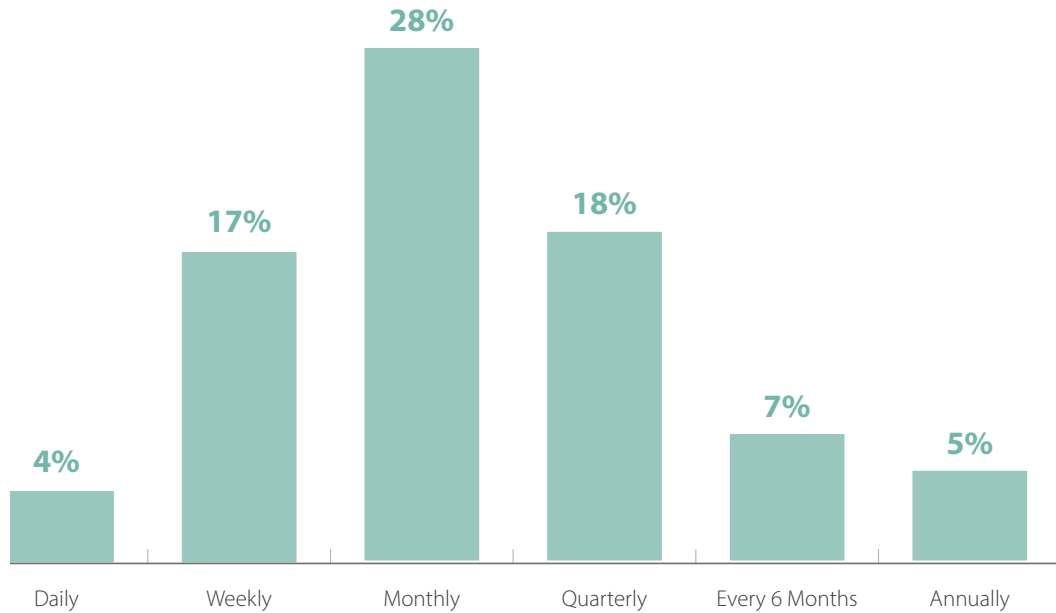


Fig. 21: **Frequency of Software Version Release**

Source: State of Application Development 2019/2020. OutSystems ©

Overall, 30% of respondents thought that the business side of their organization was satisfied with this release cadence, and a further 31% said somewhat satisfied.

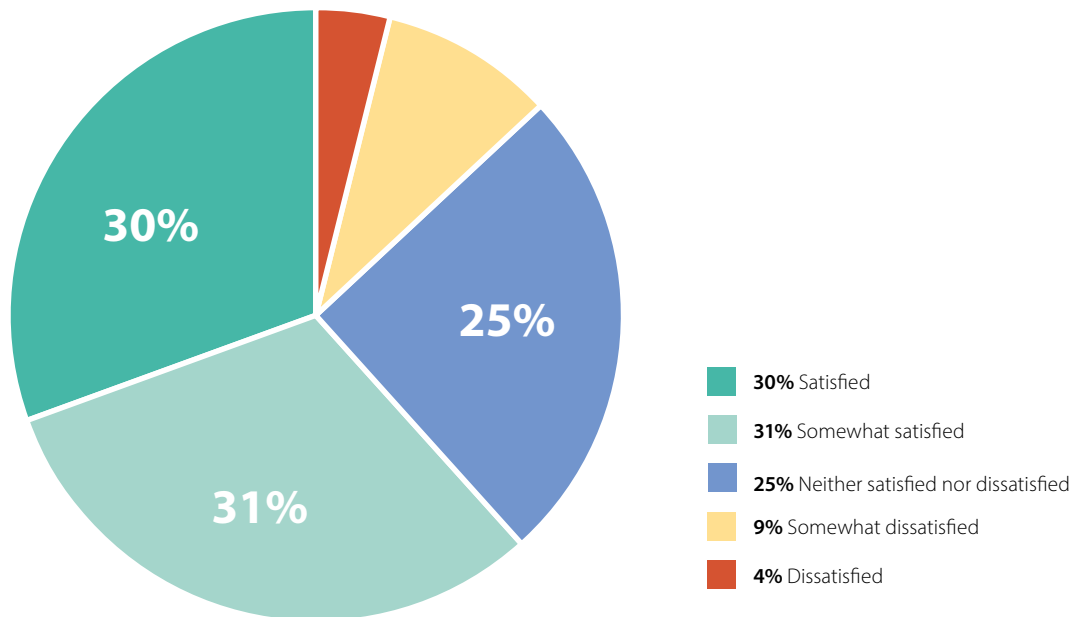


Fig. 22: **Business Satisfaction With Release Cadence**

Source: State of Application Development 2019/2020. OutSystems ©

Approaches to Increase Delivery Speed

We asked respondents what approaches their organization had recently invested in to try and speed up application delivery. Customer-centric practices including customer journey mapping, design thinking, Agile Methodology, and lean UX accounted for over 60% of these responses.

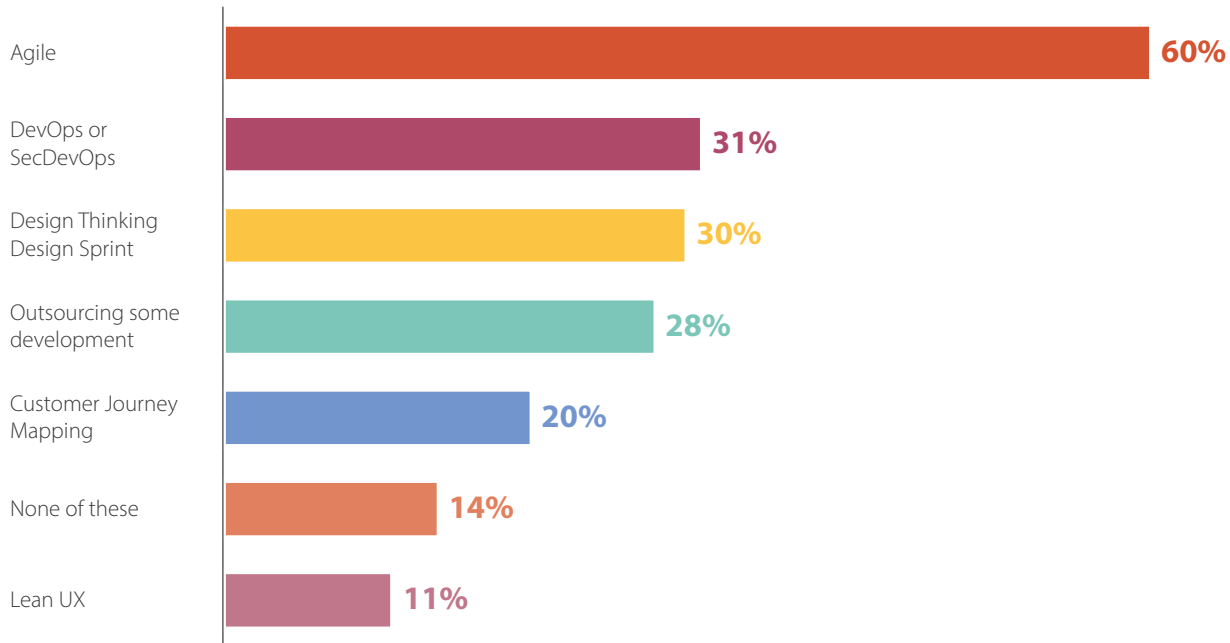


Fig. 23: Investment in Approaches to Speed up Application Delivery

Source: State of Application Development 2019/2020. OutSystems ©

Agile Maturity

We wanted not only to understand whether organizations were investing in Agile but also to gauge the progress of these practices. So, we asked respondents to assess their level of Agile adoption using this five-level maturity model.

Agile Maturity Assessment	
Level 1	Initial: We lack consistency and need training to get everyone aligned.
Level 2	Just Started: Processes not fully defined. Basic level of agile adoption. Development and testing are not fully in sync yet
Level 3	Defined: Our whole team is using well-defined agile processes, and we're consistently delivering sprint after sprint.
Level 4	Measured: We're measuring code quality and other key measures. Our focus is on engineering maturity.
Level 5	Optimizing: We develop on schedule and release on demand. We've invested in automation for continuous integration and deployment. Consistent delivery across teams. Self-organized, sustainable, continuous improvement based on KPIs.

Table 5: Five-Level Agile Maturity Assessment

Source: State of Application Development 2019/2020. OutSystems ©

As shown in Fig. 24, nearly 60% of respondents chose level 2 or 3 in their self-assessment. The overall average agile maturity score was 2.7, up very slightly from 2.6 last year.

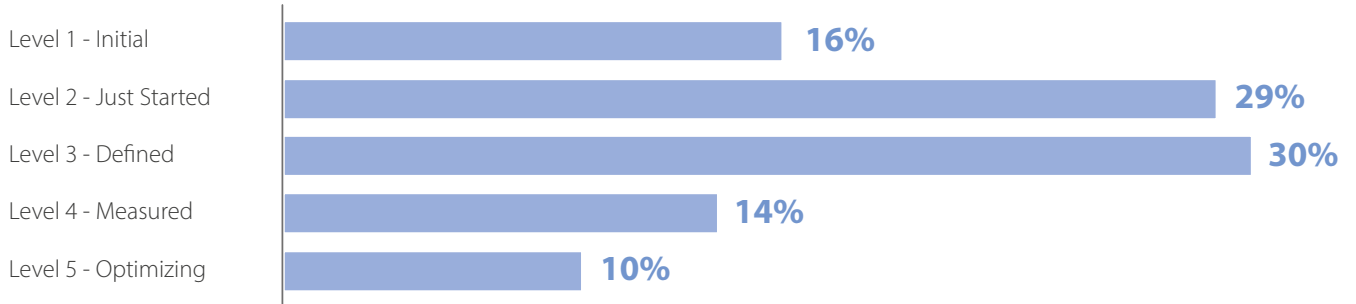


Fig. 24: Agile Maturity Levels

Source: State of Application Development 2019/2020. OutSystems ©

In section 9 of this report, we explore some of the characteristics shared by high performers.

Technology Used to Speed up Application Delivery

We asked what technology organizations had invested in over the past year to increase the speed of application delivery. Respondents could select multiple options. Overall, 55% of organizations had invested in cloud, 39% in low-code, and 26% in mobile application development platforms. Containers and microservices and new languages and frameworks also scored above 20%.

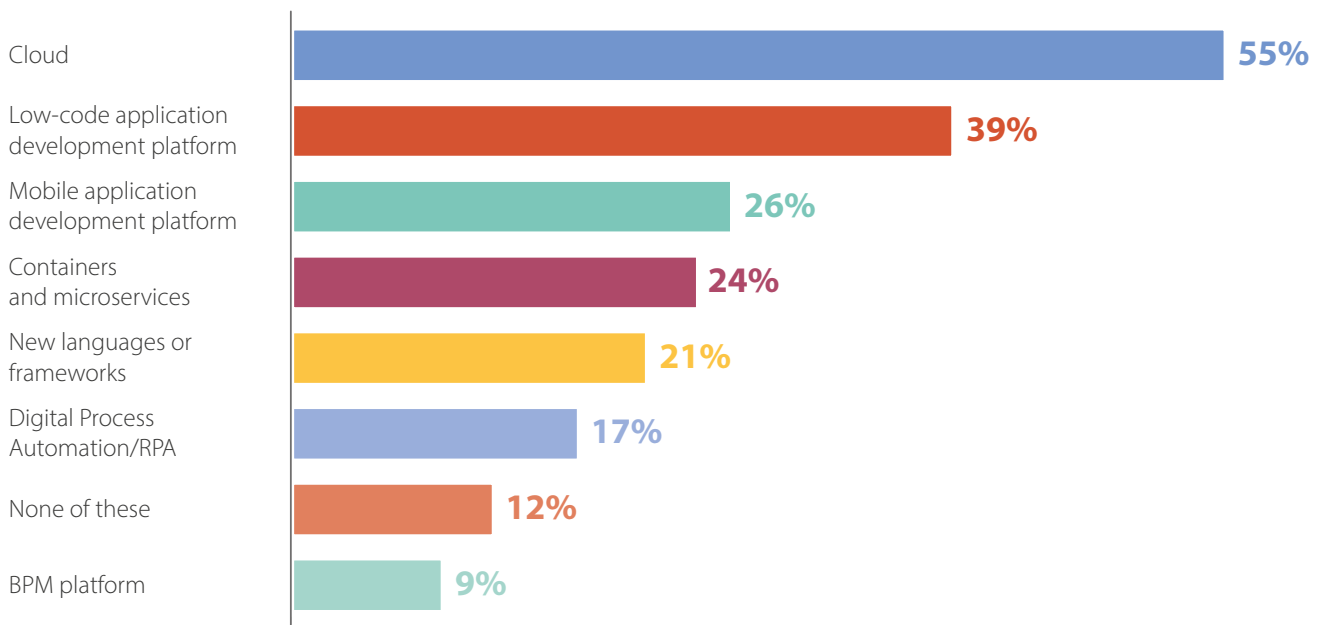


Fig. 25: Investments in Technology to Speed Up Application Delivery

Source: State of Application Development 2019/2020. OutSystems ©

7. Developer Headcount, Skills, and Sourcing

Respondents told us how many software developers they employed and whether headcount had increased during the past year.

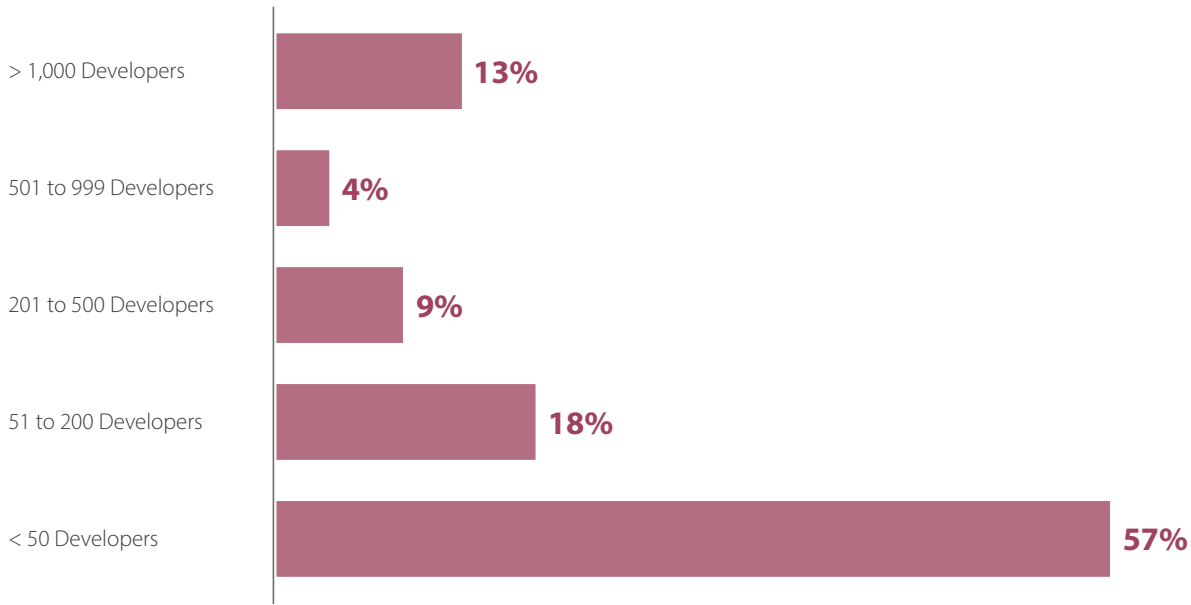
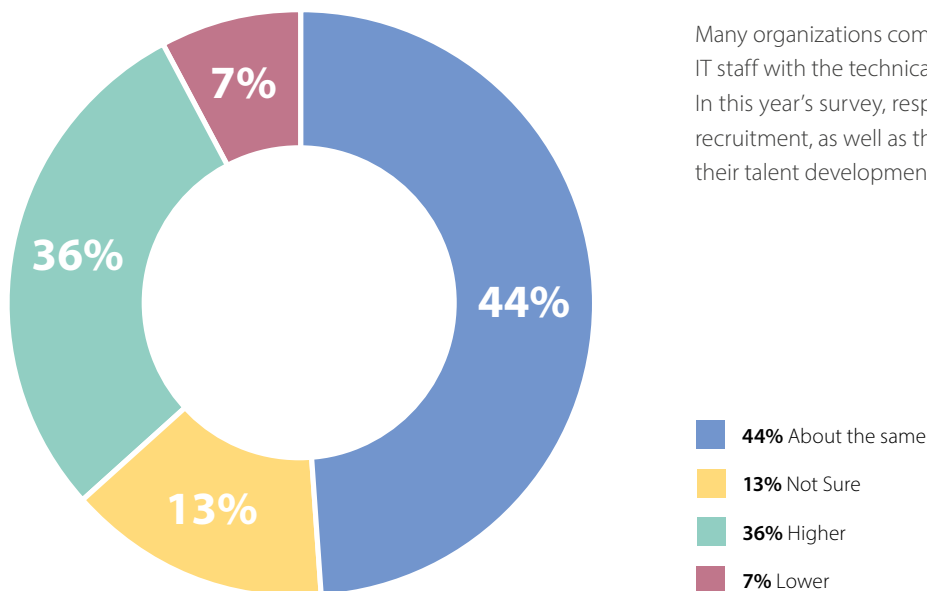


Fig. 26: Number of Developers Employed

Source: State of Application Development 2019/2020. OutSystems ©



Many organizations complain that it is increasingly hard to hire IT staff with the technical or development skills that they need. In this year's survey, respondents told us about their app dev recruitment, as well as their use of consultants. They also ranked their talent development priorities for a number of specialisms.

Fig. 27: Developer Team Size Higher or Lower Than Last Year

Source: State of Application Development 2019/2020. OutSystems ©

Recruitment

Respondents told us which app dev skills their organization had hired in the past year. Over two-thirds had hired web developers, and over 40% said they had hired both full-stack and mobile developers.

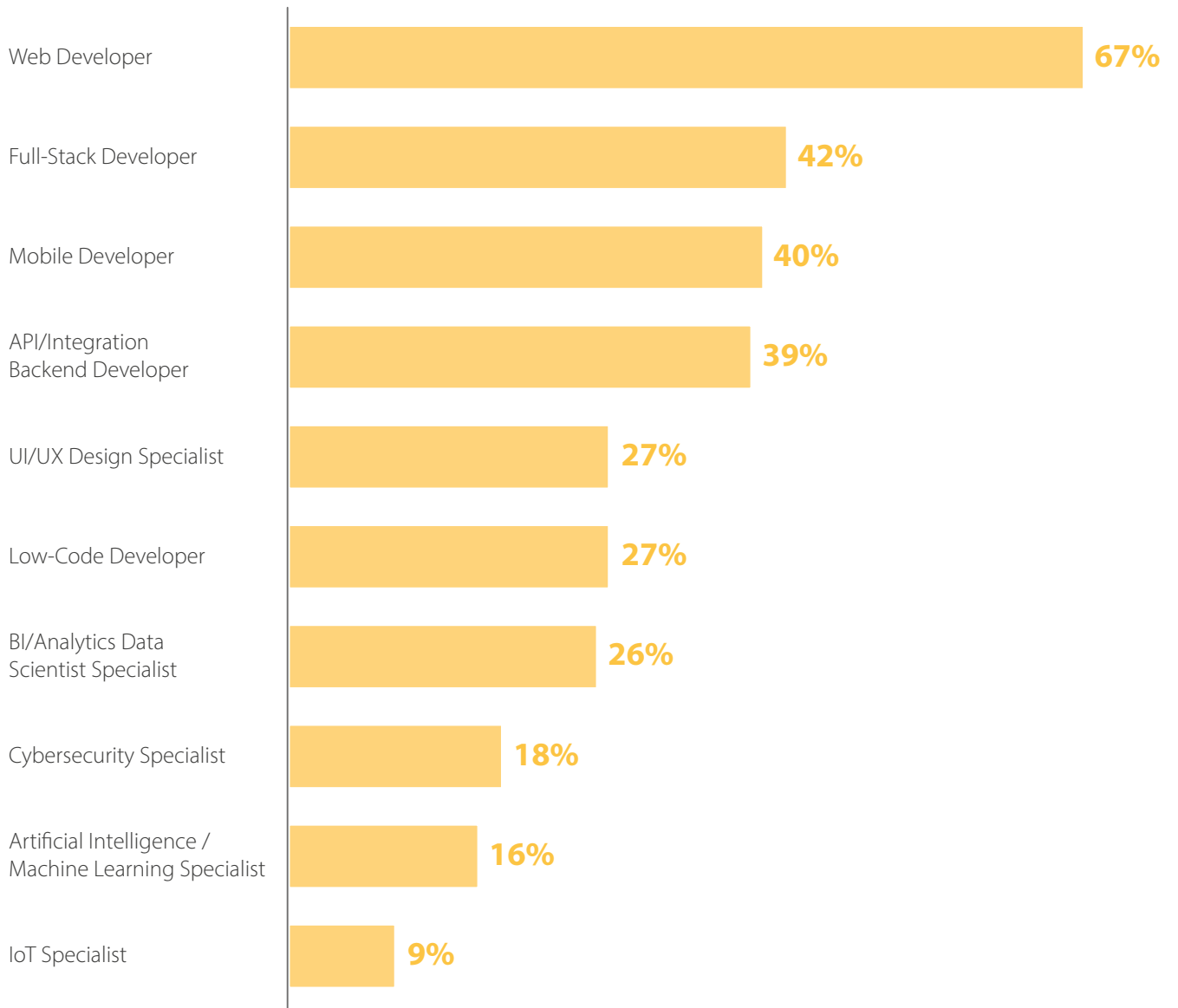


Fig. 28: **Roles Recruited in Past Year**

Source: State of Application Development 2019/2020. OutSystems ©

Skills Shortages

Respondents shared their opinion of how difficult it was to hire suitably skilled staff. As shown in Fig. 29, the four most difficult to hire are artificial intelligence/machine learning, cybersecurity, IoT, and full-stack developers.

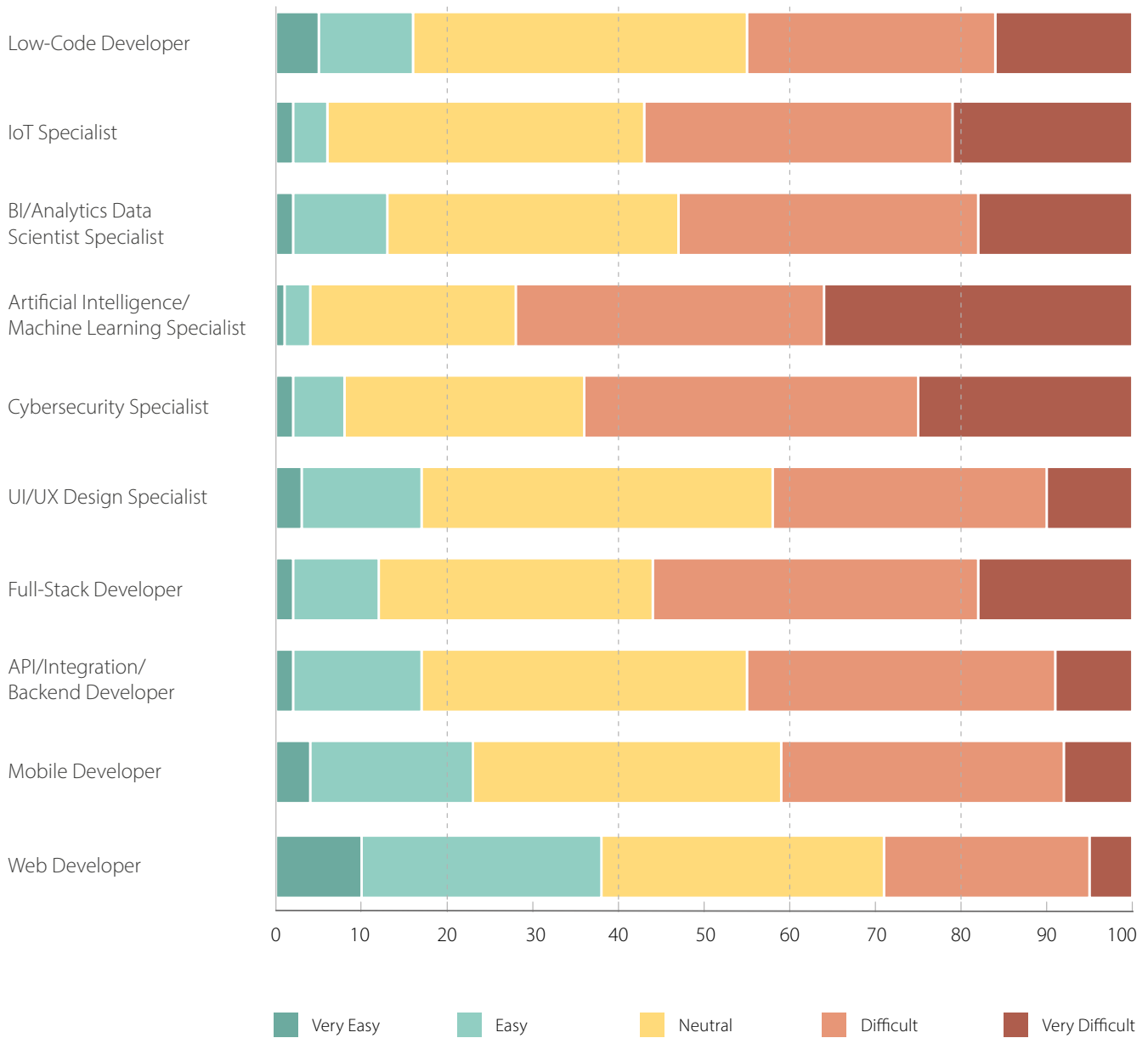


Fig. 29: Skills Recruitment Challenges

Source: State of Application Development 2019/2020. OutSystems ©

Use of Consultants and Outsourcing

Respondents told us which app dev skills their organization was likely to source from consultants or outsourcers in the next year. Even though web developers were described as easier to hire than any of the other specialists, 15% of respondents expect to partly source their requirements from consultants in the year ahead.

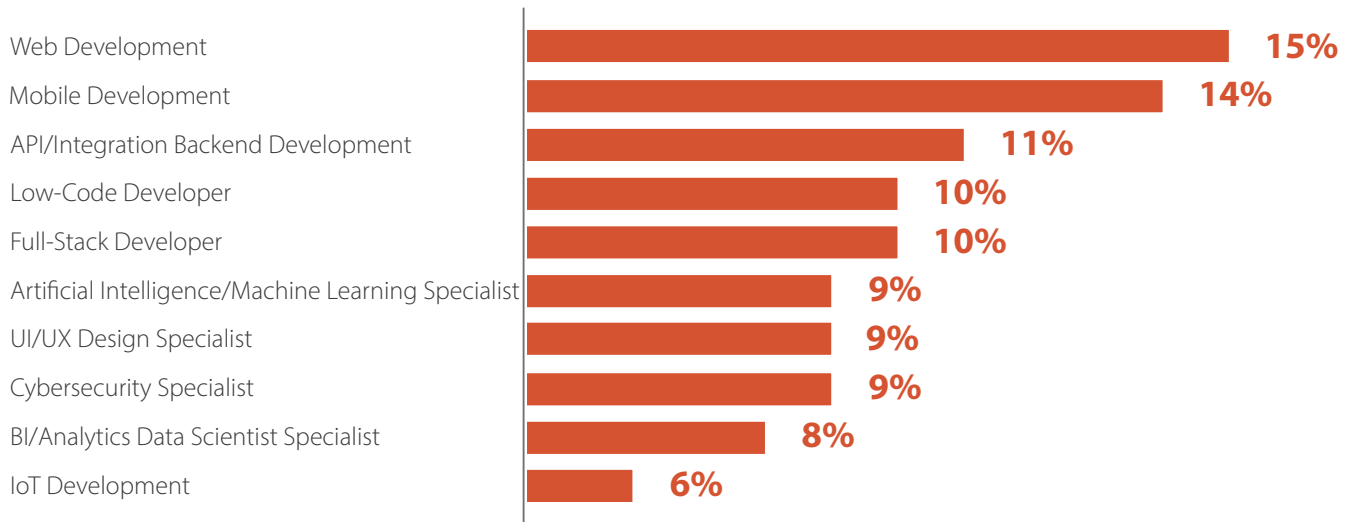


Fig. 30: Skills to be Sourced From Consultants or Outsourcing in 2019

Source: State of Application Development 2019/2020. OutSystems ©

Skills Development Priorities

Respondents told us which app dev skills their organization was prioritizing for staff development in 2019. Web development, mobile development, and API/integration/backend stood out as the top priorities.

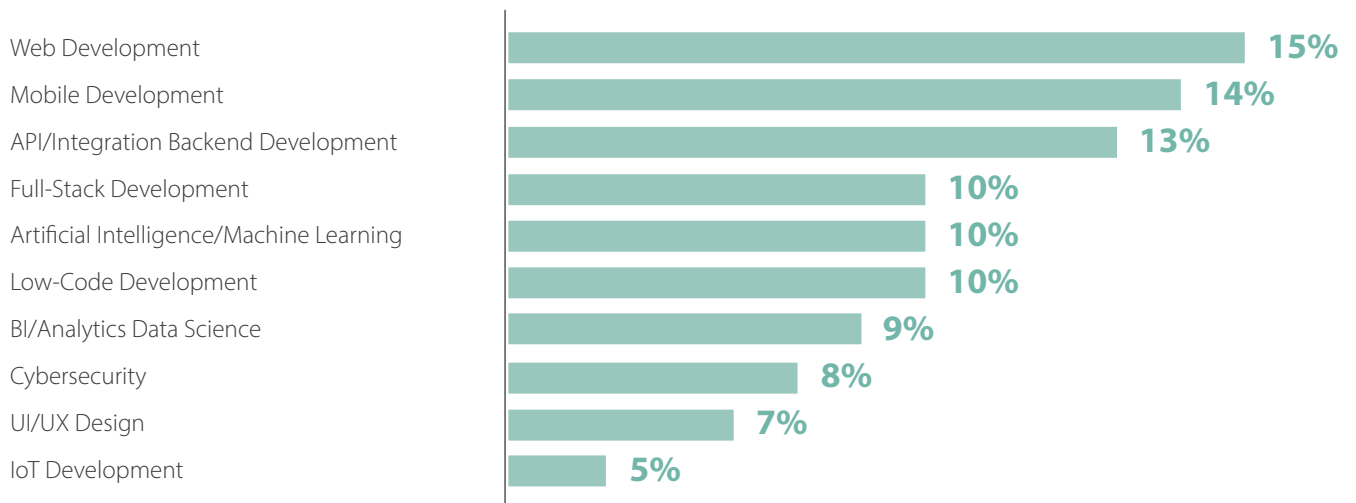


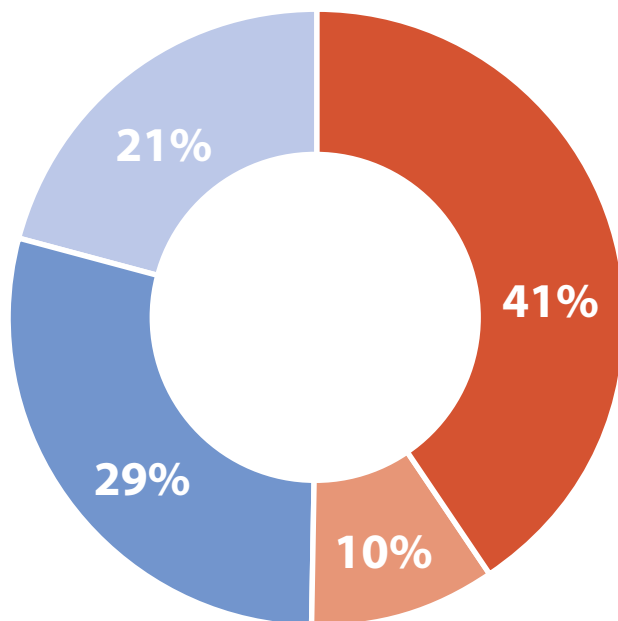
Fig. 31: Skills Development Priorities in 2019

Source: State of Application Development 2019/2020. OutSystems ©

8. Low-Code Is on the Rise

In our 2018 State of Application Development survey, we found that 34% of respondents were using low-code application development platforms, and a further 9% said that their organization was about to start using one. So, this year we were keen to answer three questions:

- Did increased adoption come about?
- What kinds of developers are using low-code platforms?
- What kinds of applications are being delivered with low-code?



Who Is Using Low-Code?

We asked respondents whether a no-code or low-code development platform was currently part of their IT strategy. Forty-one percent said that their organization was already using such a platform, and a further 10% said they would start to use one soon.

Is a no-code or low-code development platform currently part of your IT strategy?



Fig. 32: **Low-Code or No-Code in IT Strategy**

Source: State of Application Development 2019/2020. OutSystems ©

Observant readers may notice that in Fig. 25 we reported a 39% adoption figure. That question was slightly different, as it asked about technology investment in the past year that was specifically related to speeding up development and was alongside multiple competing answers.

Adoption by Organization Size

Adoption of low-code did not vary significantly across different organization sizes. All were within a range of 38–42%.

Adoption by Industry Sectors

Adoption of low-code varied considerably across different industries. Compared to the mean adoption level of 41%, we found adoption varied from +17% in the utilities, energy, and extraction sectors, down to -15% in the government sector.

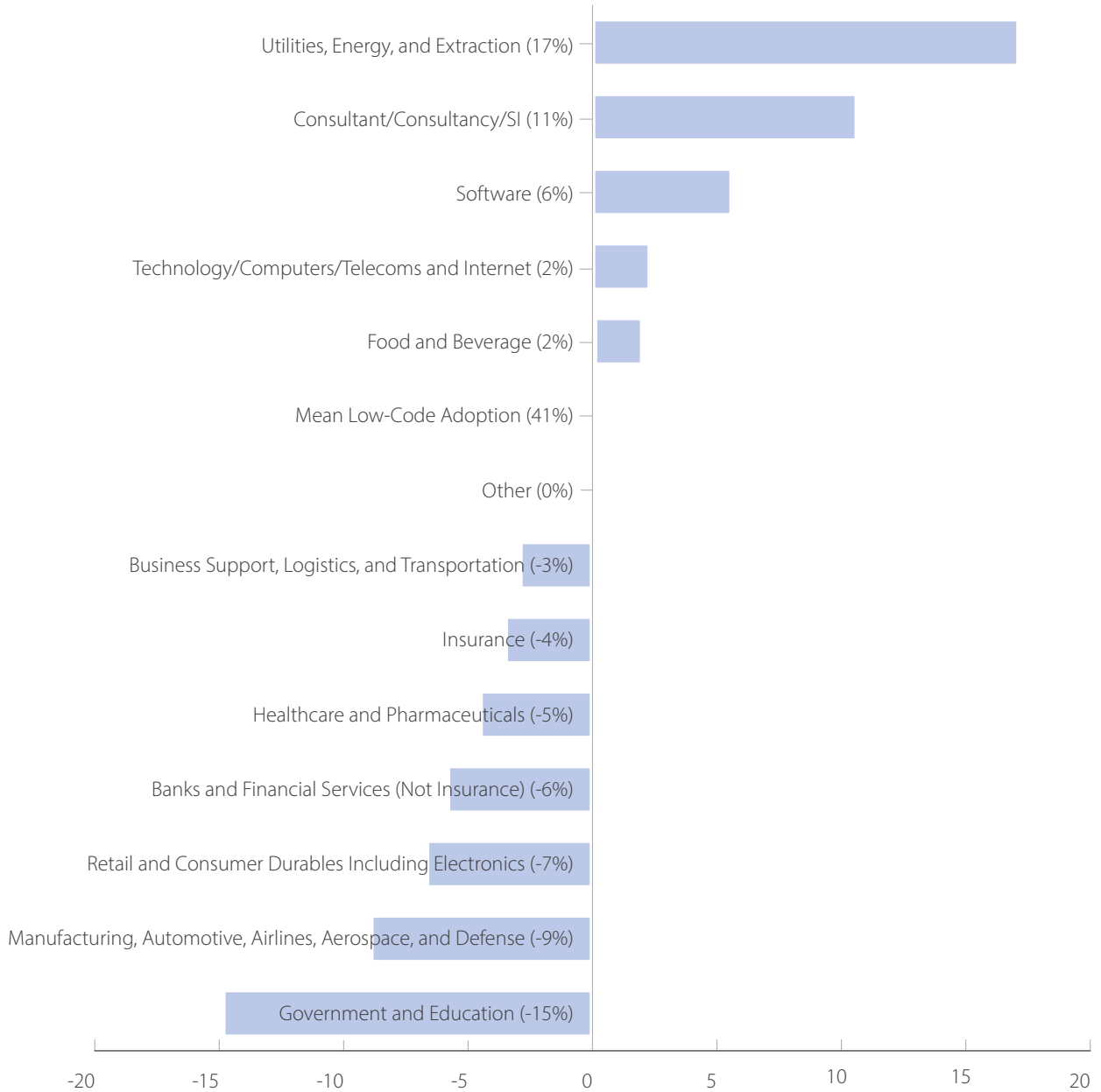


Fig. 33: **Low-Code/No-Code Adoption Variance by Industry**

Source: State of Application Development 2019/2020. OutSystems ©

In section 9 of this report, we explore whether adopters of low-code exhibit any performance advantage compared to industry peers that have not yet adopted low-code.

Kinds of Low-Code Developers

Respondents were asked what kinds of developers and low-code usage scenarios existed in their organization. They were allowed to select multiple options. We found the use of low-code outweighed the use of no-code by a factor of 4.7.

In the case of low-code, professional IT developers outweighed business developers by a factor of 1.6.

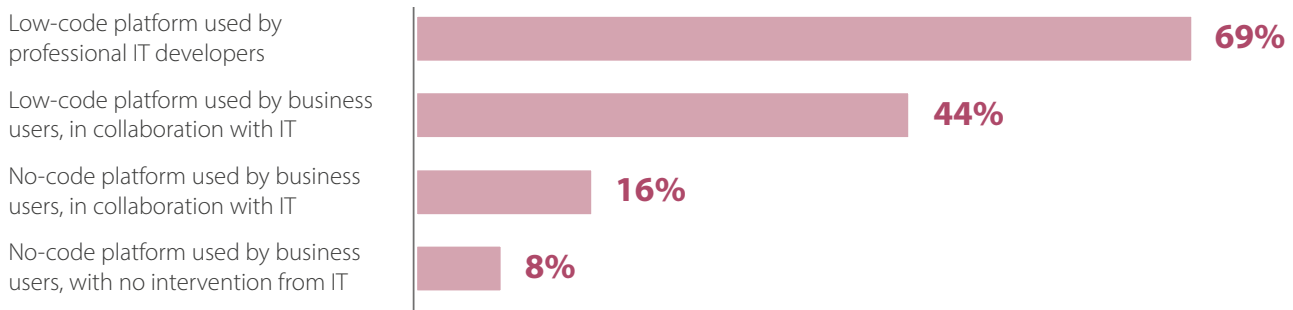


Fig. 34: **Kinds of Low-Code Developers**

Source: State of Application Development 2019/2020, OutSystems ©

Number of Low-Code Developers per Organization

Respondents were asked how many low-code developers worked in their organization (including contractors). As one would expect, larger organizations tended to have higher populations of low-code developers.

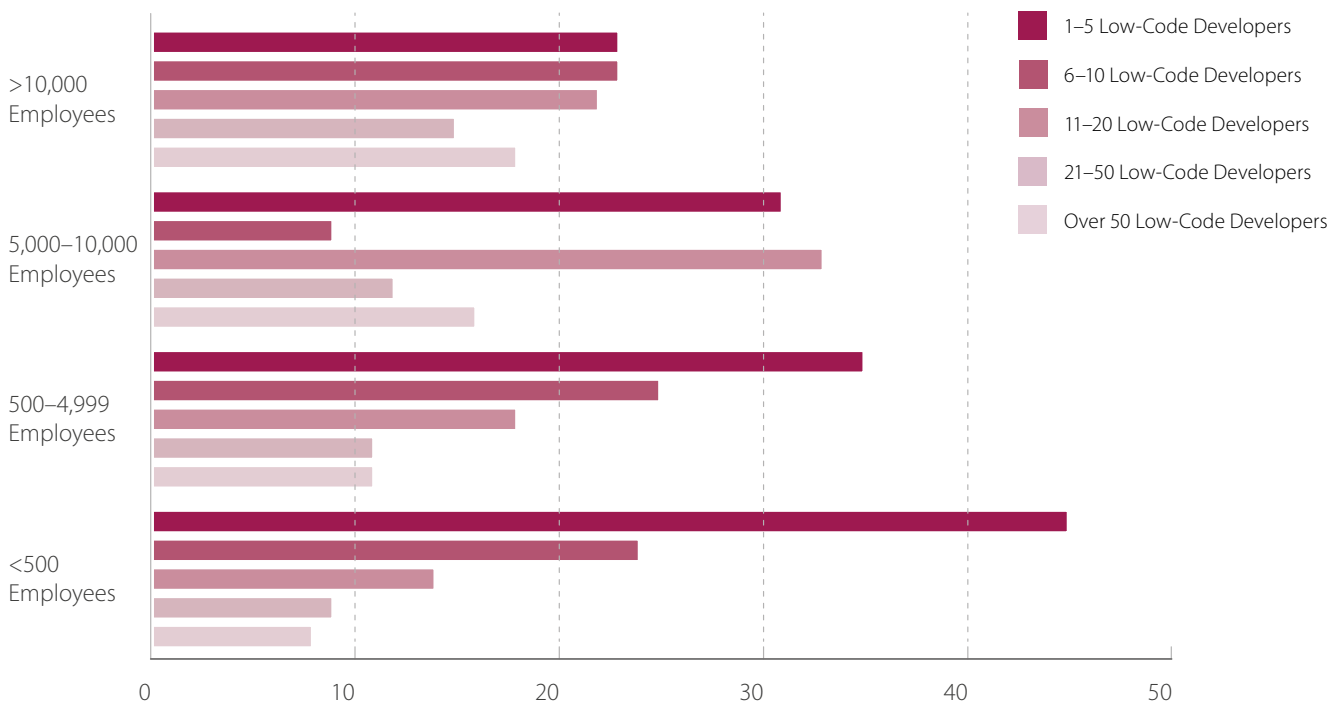


Fig. 35: **Number of Low-Code Developers per Organization**

Source: State of Application Development 2019/2020, OutSystems ©

Number and Types of Apps Built With Low-Code

To gauge how actively organizations were using low-code, we assessed the number and types of applications that had been delivered.

Number of Low-Code Apps Delivered

Respondents were asked how many applications they had successfully delivered using low-code. Overall, the average number of applications delivered was around 12. However, as shown in Fig. 36, the answer varied according to the number of low-code developers that the organization had.

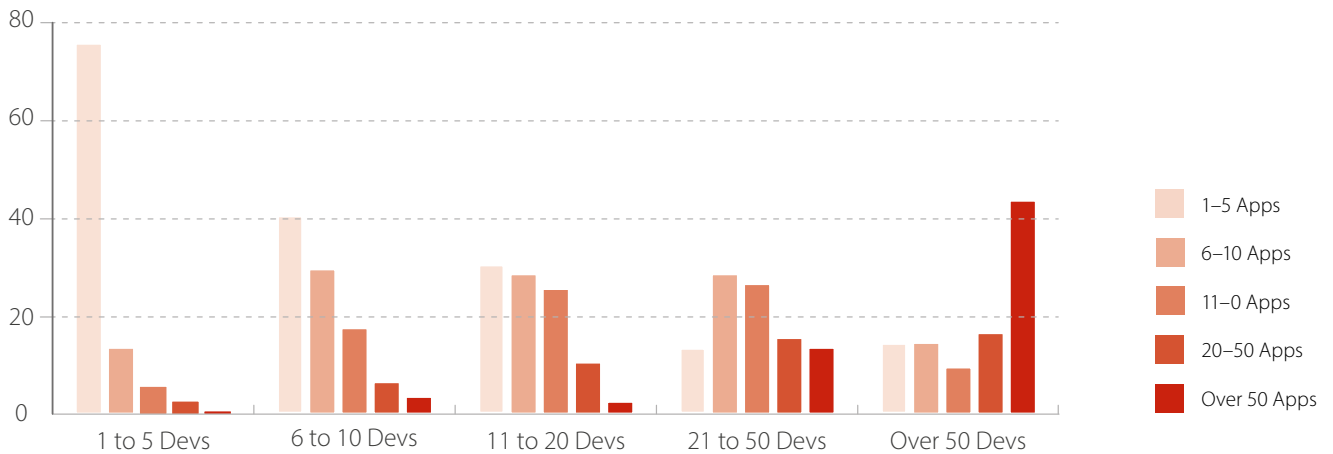


Fig. 36: Number of Low-Code Apps Delivered

Source: State of Application Development 2019/2020. OutSystems ©

Kinds of Projects Low-Code Is Being Used For

We asked what kinds of projects low-code was being used for. As shown in Fig. 37, portals and web-based applications used by both employees and customers or partners ranked highest. Other usage scenarios were very evenly distributed, including mobile applications, (employee and customer-facing), replacing legacy systems, extending existing systems, and rapid prototyping.

Twelve percent of respondents said they were just in the process of starting.

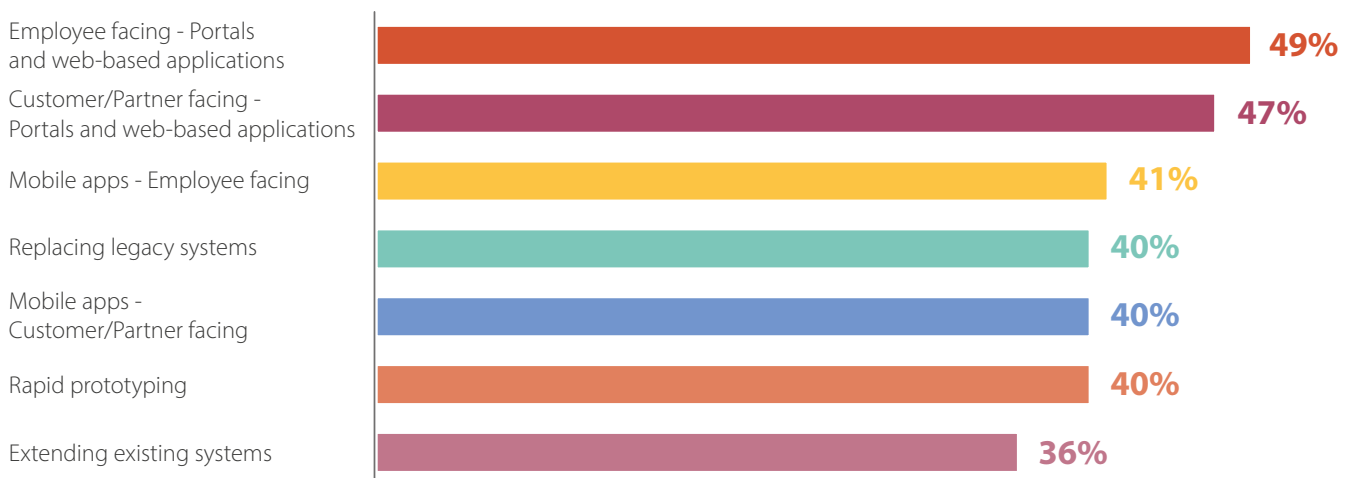


Fig. 37: Projects Using Low-Code

Source: State of Application Development 2019/2020. OutSystems ©

Largest Number of Users of a Low-Code Application

Respondents told us what the largest number of users was for any of their low-code applications. While 21% said less than 50 users, 35% reported that they had deployed applications that were used by over 1,000 users, and of these, 12% had over 10,000 users.

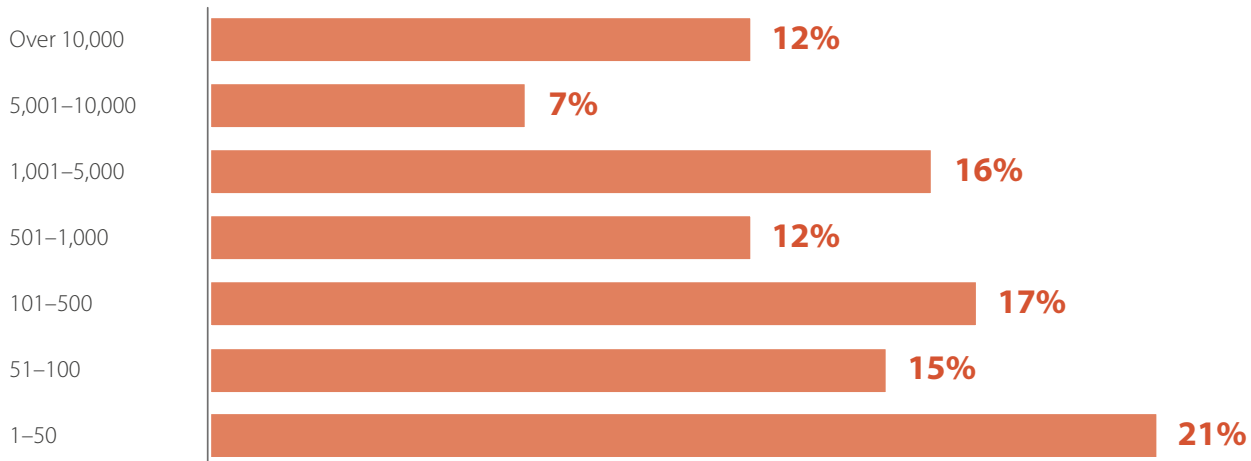


Fig. 38: Largest Number of Users of App Delivered Using Low-Code

Source: State of Application Development 2019/2020. OutSystems ©

Why Some Organizations Are Still Not Using Low-Code

We asked respondents who said that their organization was not using a low-code platform, or was not thinking of using one, what were the main reasons that discouraged them? (Multiple options were allowed.) As you can see in Fig. 39, lack of knowledge is the main barrier, and concerns about lock-in, flexibility, scalability, and security closely followed.

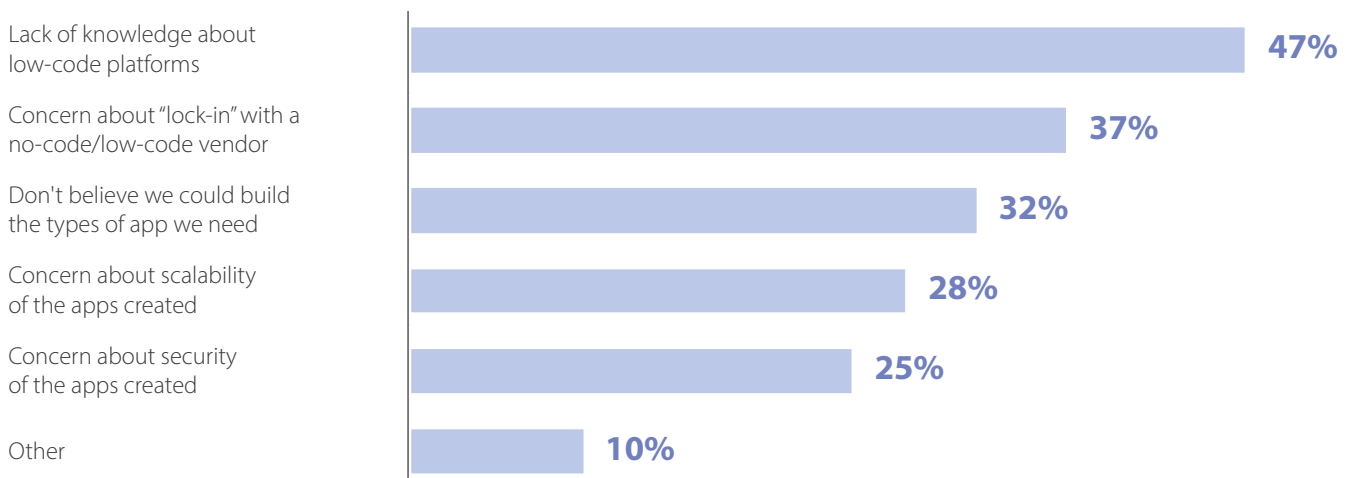


Fig. 39: Reasons for Not Using or Considering Low-Code

Source: State of Application Development 2019/2020. OutSystems ©

These same concerns were expressed by non-adopters in last year's survey, and yet, low-code adoption continues to grow. Our blog post series on the [Myths, Fears, and Realities of Low-Code](#) may be of interest to readers who would like assistance combating these fears. Alternatively, read on for a detailed analysis of the performance advantages exhibited by low-code users in this year's survey.

9. Low-Code Is Delivering

Our 2019 survey revealed that 49% of respondents were either not planning to use low-code or were undecided. This section of the report is devoted to the undecided, and we hope to encourage such readers to join the 51% who said they were already using, or about to start using, a low-code application development platform.

Main Reasons for Using Low-Code

Respondents told us their main reasons for using a low-code platform, and multiple responses were allowed. Three answers stood out: accelerate digital transformation, increase responsiveness to the business, and reduce dependency on hard-to-hire technical skills.

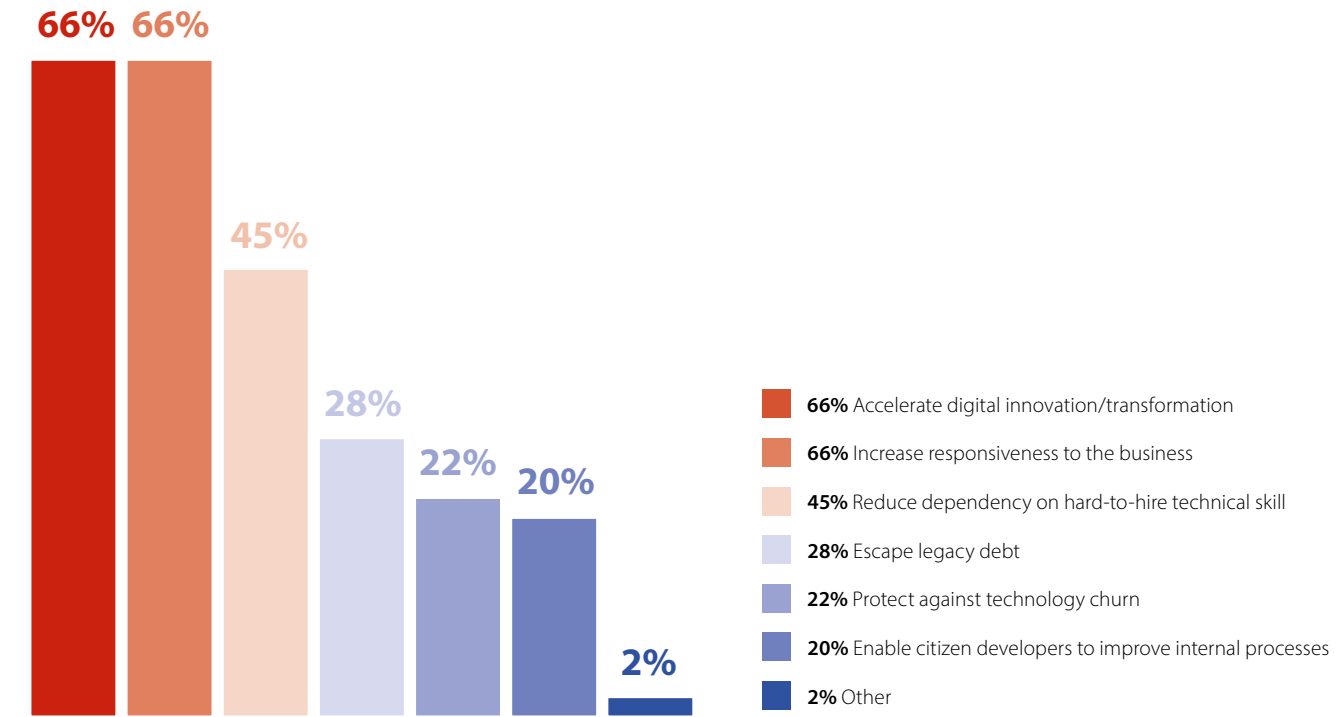


Fig. 40: Reasons for Using Low-Code Platforms

Source: State of Application Development 2019/2020. OutSystems ©

Most of the responses under “other” were variances on the theme of faster delivery, although some other interesting comments included “reduce project creep” and “the ability to focus on important business requirements instead of technical details.”

Low-Code Users Exhibit Multiple Performance Advantages

We analyzed survey responses from those who said they were already using low-code and found compelling evidence that they were outperforming industry peers that were not using low-code. Those advantages are summarized below.

Digital Transformation Maturity

Low-code users had a 16% higher self-assessment score for digital transformation maturity compared to those not using low-code.

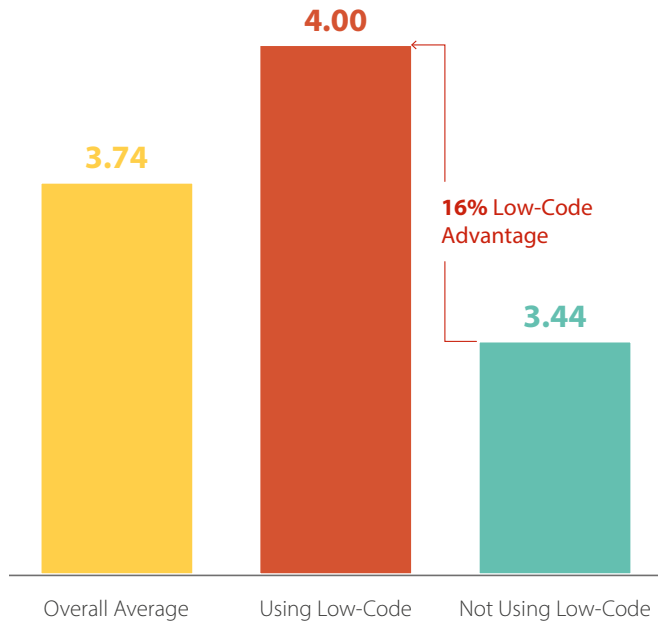


Fig. 41: Digital Transformation Maturity Advantage for Low-Code Users

Source: State of Application Development 2019/2020. OutSystems ©

The Proportion of App Dev Devoted to Innovation

Low-code users said that more of their app dev effort was devoted to innovation instead of maintenance, outperforming those not using low-code by 5%.

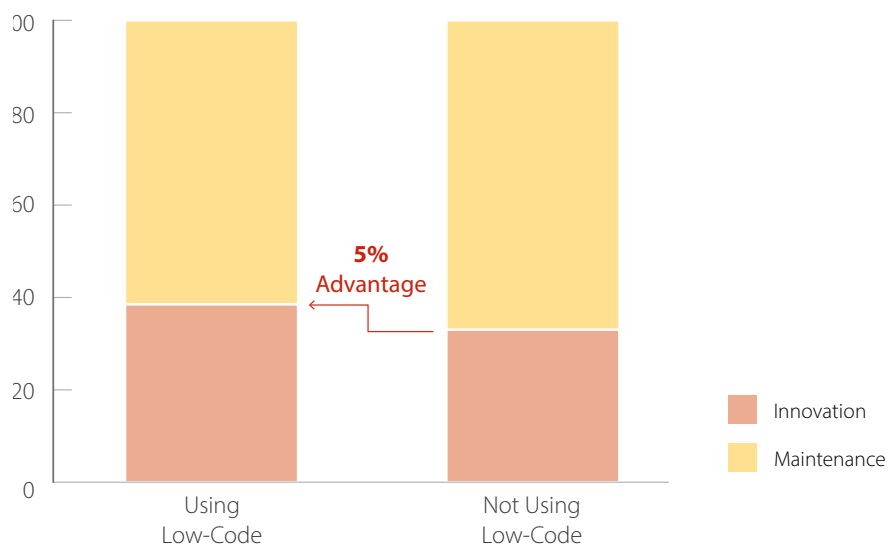


Fig. 42: Innovation vs. Maintenance - Low-Code Users' Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Software Release Cadence

Users of low-code said that they release new software versions more frequently, being nearly 7% more likely than those not using low-code to release monthly or more frequently.

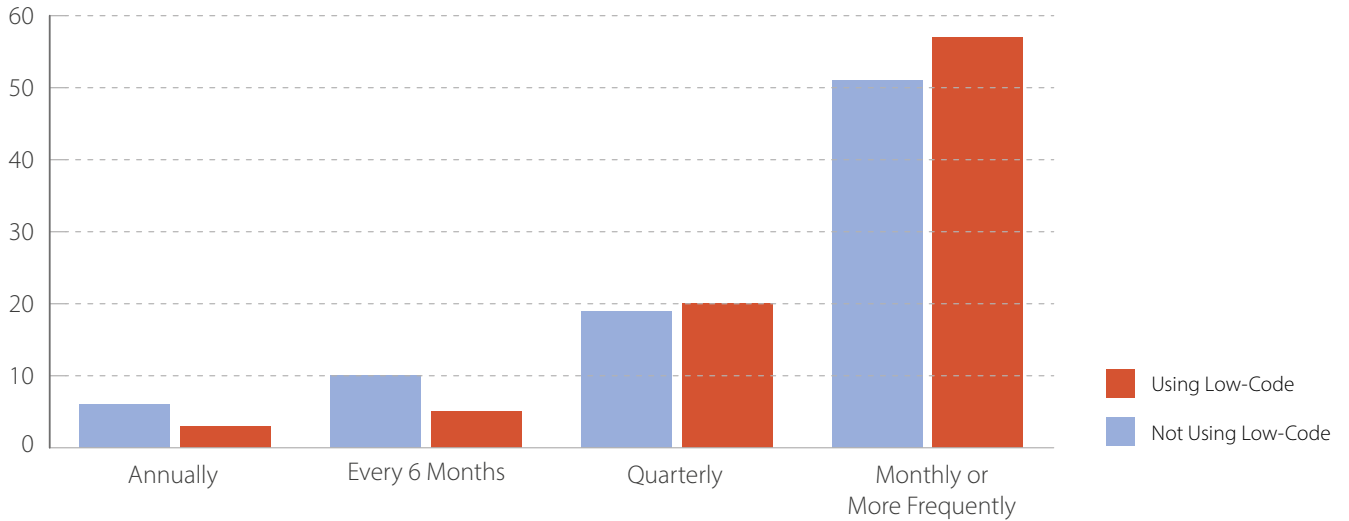


Fig.43: Release Cadence: Low-Code Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Business Satisfaction With Software Release Frequency

Thirty-seven percent of low-code users described their business as satisfied with their frequency of software release, compared to just 26% of those not using low-code.



Fig.44: Business Satisfaction With Release Cadence - Low-Code Users' Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Organizational Agility

Low-code users had an 8% higher organizational agility self-assessment score compared to those not using low-code.

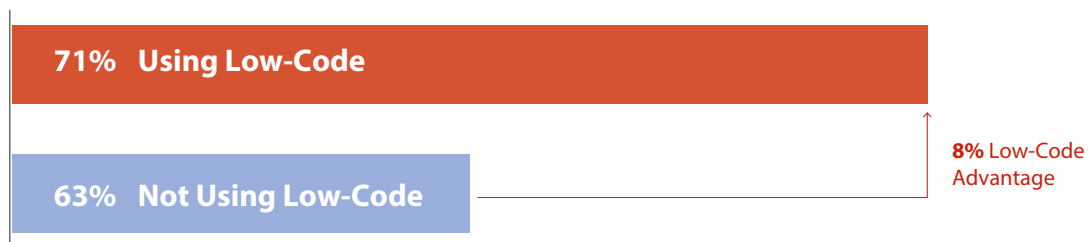


Fig. 45: Organizational Agility Advantage for Low-Code Users

Source: State of Application Development 2019/2020. OutSystems ©

Agile Maturity

Low-code users were 20% more likely to rate their agile maturity as level 3, 4, or 5 compared to those not using low-code.

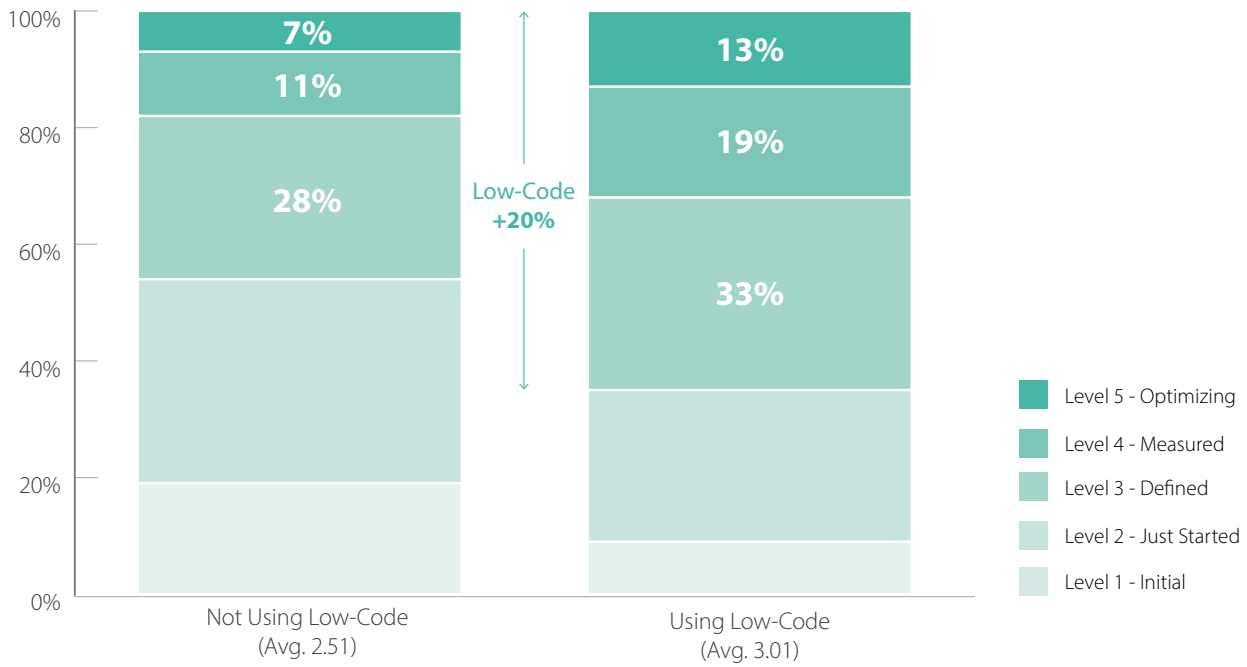


Fig.46: Agile Maturity Score - Low-Code Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Backlog

Low-code users were 12% more likely to say that their backlog had improved in the past year, compared to those not using low-code.

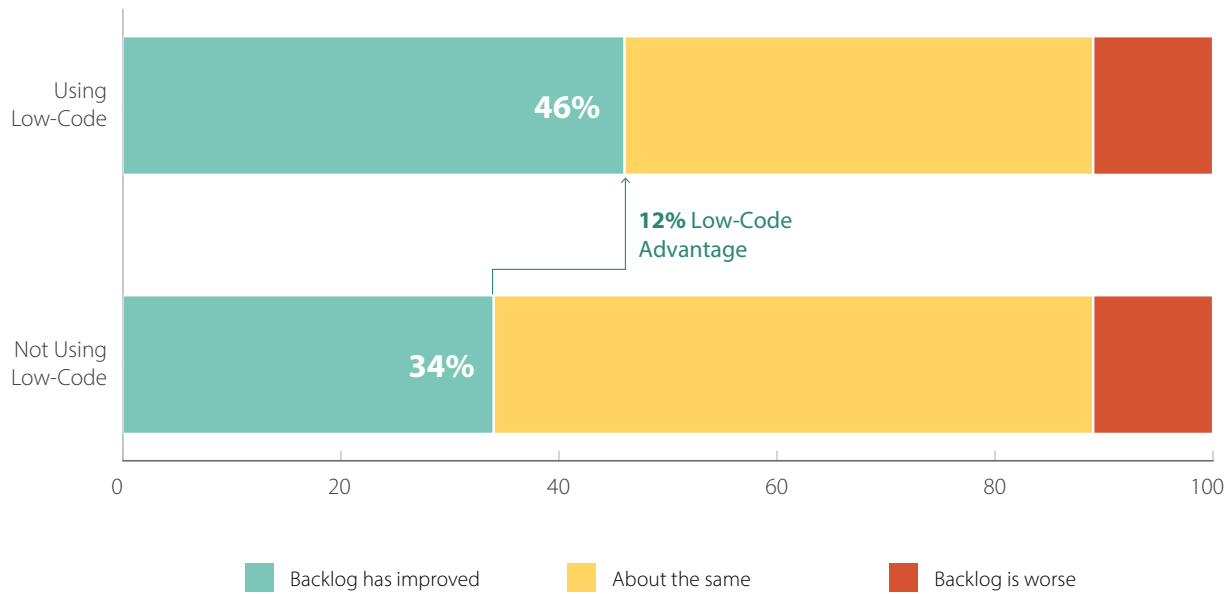


Fig.47: App Dev Backlog Improved – Low-Code Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Web Application Development Speed

Low-code users were 11% more likely to deliver web applications in 4 months or less compared to those not using low-code.

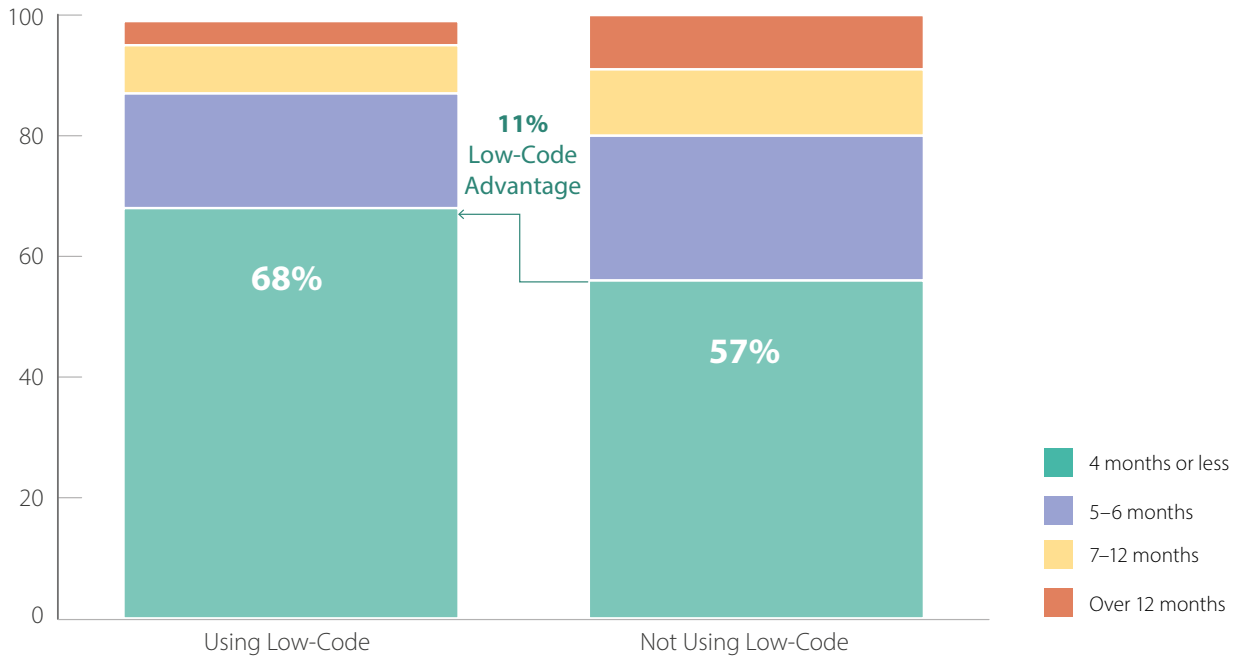


Fig. 48: Web App Development Time - Low-Code Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Mobile Application Development Speed

Low-code users were 15% more likely to deliver mobile applications in 4 months or less compared to those not using low-code.

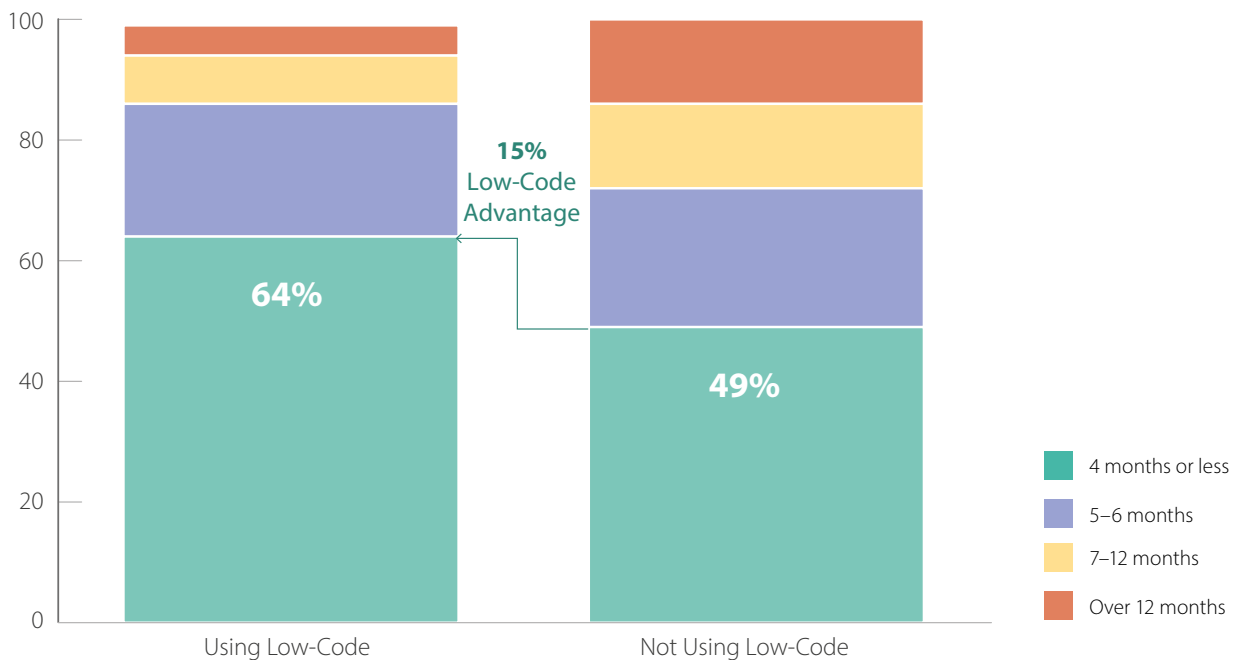


Fig. 49: Mobile App Development Time - Low-Code Advantage

Source: State of Application Development 2019/2020. OutSystems ©

Governance of Citizen Developers – Low-Code Advantage

Low-code users appear to have more success at governing citizen development in their organization compared to those not using low-code.

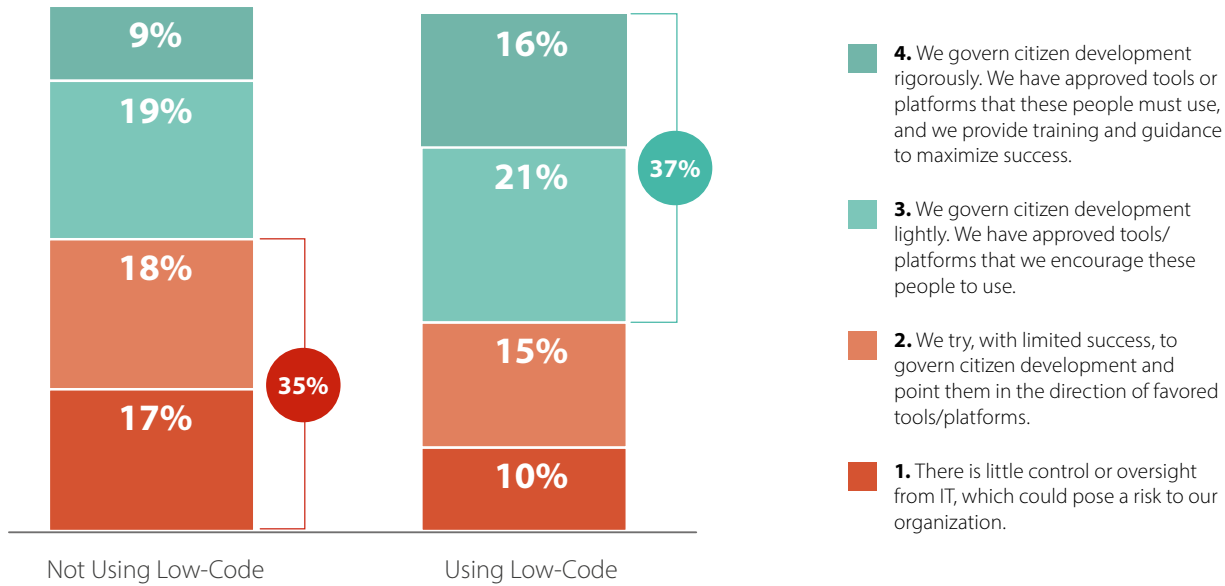


Fig. 50: Degree of Governance of Citizen Development

Source: State of Application Development 2019/2020. OutSystems ©

In summary—

37% Thirty-seven percent of low-code users described significant success at governing such development, a 9% advantage compared to organizations not using low-code.

35% Thirty-five percent of respondents whose organizations were not using low-code described ineffective governance of such users who could pose a risk to their organization. By comparison, users of low-code exhibited an 11% advantage.

10. Organizational Agility and the Case for Low-Code

“Whether or not there is a recession in the near term, companies face numerous political, economic, and climate risks. Responding to these risks is challenging. . . To prepare for an economic downturn, use the same strategy you would in boom times—**become an adaptive enterprise.**”³

—Forrester Research, March 2019

Downturns are difficult, perhaps impossible to predict, and it’s certainly not our place to be the harbinger of economic doom. Indeed, according to our survey respondents, many other possible causes of business disruption were deemed more threatening than stock market volatility.

The Agility to Escape Disruption or Be a Disruptor

Interestingly, low-code can help IT organizations counteract every one of the threats highly ranked by this year’s survey respondents.

Significant Changes in Customer Preference or Behavior

Visual model-driven development is up to 10 times faster than hand coding and therefore perfectly complements customer-centric development practices, including design thinking and Agile Methodology.

Low-code users exhibited a 20% agile maturity advantage compared to those not using low-code. So, if you want the agility to adapt customer-facing systems at the speed your customers demand, low-code can give you that agility.

Disruptive Regulatory Change

A top concern for banking and a significant concern for many others, regulatory change can impose urgent changes across swathes of customer-facing applications. What this year’s survey shows is that organizations that have adopted low-code are using it to tackle precisely these kinds of projects: customer or partner facing portals and web-based applications (47%), replacing legacy systems (40%), and mobile apps used by customer or partners (40%).

With omnichannel development challenges such as these, architecting for reuse is hugely important, and the right low-code platform includes multiple capabilities that help maximize reuse to accelerate development and maintenance even further.

3. Forrester Research - Ten Ways To Prepare For The Next Recession

Disruptive Cyber Attack

With the right kind of low-code platform, visually composed application models are automatically translated into secure, optimized code patterns. This helps IT organizations move application security “upstream,” reducing the security burden that slows down testing and delivery later on.

Considering the well-publicized shortage of qualified cybersecurity professionals and the 64% of survey respondents who complained about recruiting them, IT leaders should explore how automation reduces the security burden placed on their teams. Low-code should be part of that picture.

Digital Disruption From More Nimble Competitors

On multiple measures, the survey results attest to superior speed and agility enjoyed by users of low-code compared to those not using low-code:

- A 16% higher score for digital transformation maturity
- An 8% higher score for organizational agility

- A 5% higher proportion of app dev devoted to innovation
- A superior software release frequency
- Apparent higher business department satisfaction with release frequency
- An agile maturity advantage of 20%
- Improving backlogs, with a 12% advantage compared to those not using low-code
- Faster software development speed with significantly more respondents delivering web and mobile applications in less than 4 months.

With 41% of organizations already using low-code and another 10% saying they’re about to start, there’s an increasing risk that late adopters will face increasing disruption from more nimble competitors.

So, the question is: do you want to escape disruption, or be the disruptor?

In either case, organizational agility is the key, and as the results in this year’s survey report show, low-code application development can help your organization be more responsive, whatever economic challenges lie ahead.




11. Next Steps

We'd like to say a huge thank you to the 3,350 IT professionals, application developers, and senior business stakeholders who took considerable efforts to complete this survey. Without their interest and dedication to considering each of these questions and giving their full and frank responses, this report would not have been possible.

If you've read this far, then the chances are you're researching modern approaches to application development and low-code in

some detail. Perhaps your own organization's situation is similar to that of the 59% of respondents whose organizations have not yet implemented low-code. Or, perhaps you're a little further down the line like the 11% of respondents who said they'd be starting to use low-code soon.

Getting started with low-code is meant to be easy, and that's certainly true of OutSystems. Here are three recommended next steps to continue your learning.

<p>OutSystems Evaluation Guide </p>	<p>Try OutSystems For Free </p>	<p>See What Others Are Saying About OutSystems </p>
<p>This comprehensive guide answers the most common technical questions asked by teams that are considering OutSystems.</p>	<p>Get started with your own FREE personal environment on the OutSystems cloud, including full and free access to all our e-learning and documentation</p>	<p>Our Happy Customers microsite gives you one-click access to thousands of independent user reviews on websites like Gartner Peer Insights, Capterra, TrustRadius, G2-Crowd, and GetApp.</p>
<p>Read the Guide</p>	<p>Try Now Free</p>	<p>Feel the Love</p>

Thank you for reading. Whatever questions you have, we'd love to hear from you.

12. Demographics

The survey was promoted primarily to IT professionals who were not OutSystems customers to ensure we surveyed a broad cross-section of organizations and not just OutSystems fans. To achieve this, we turned to third-party media.

Roles

Respondents were developers, CIOs, IT managers, and other professionals, representing thousands of companies from around the world who agreed to share objective feedback based on their experiences.

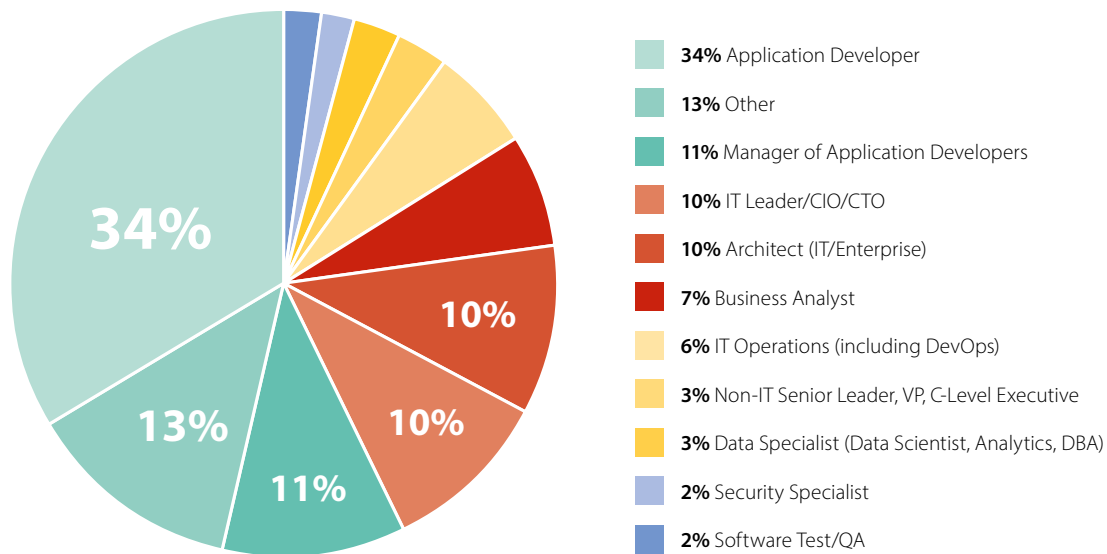


Fig. 51: Primary Job Function

Source: State of Application Development 2019/2020. OutSystems ©

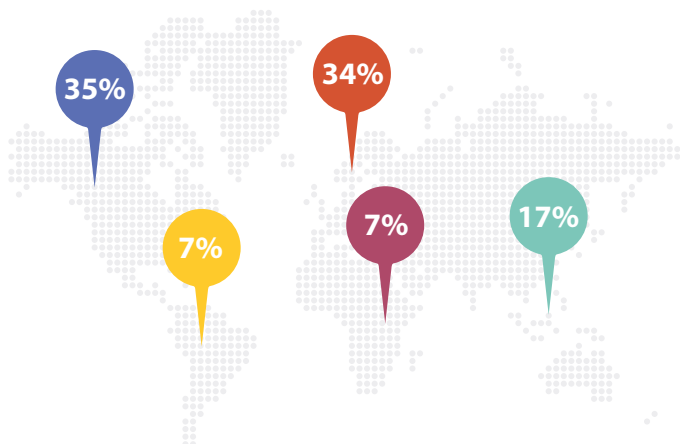
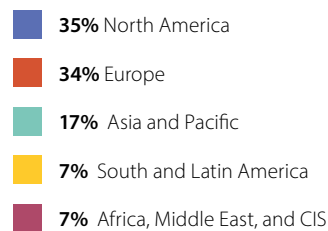


Fig. 52: Geography

Geography

Thirty-five percent of responses came from North America. Roughly 70% of the respondents' organizations have headquarters in either Europe or North America, 17% in Asia and the Pacific, and the remainder spread across the rest of the world.



Source: State of Application Development 2019/2020. OutSystems ©

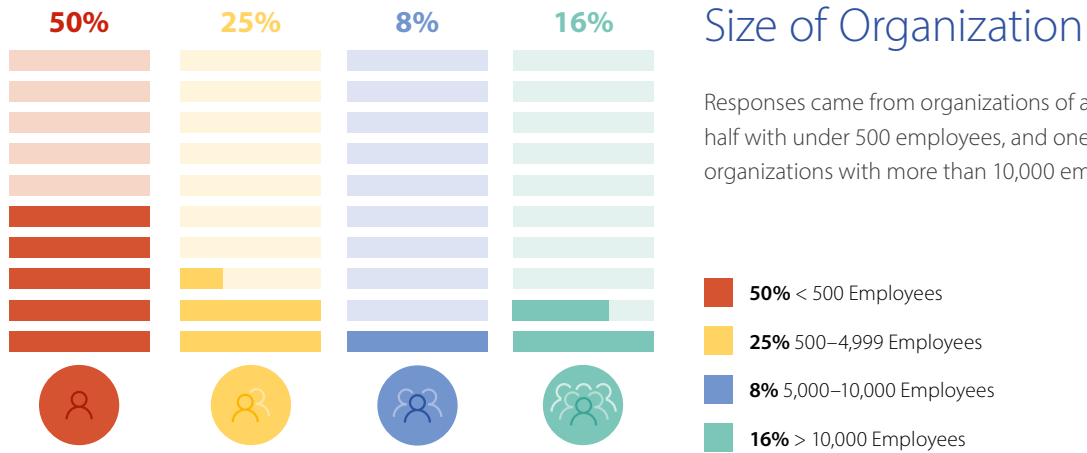


Fig. 53: Company Size

Source: State of Application Development 2019/2020. OutSystems ©

Industries

All industries were represented in the survey, the top seven being software, technology (including computers, telecommunications, internet), consultants and system integrators, government and education, manufacturing (including automotive, aerospace, and defense), and banks and financial services.

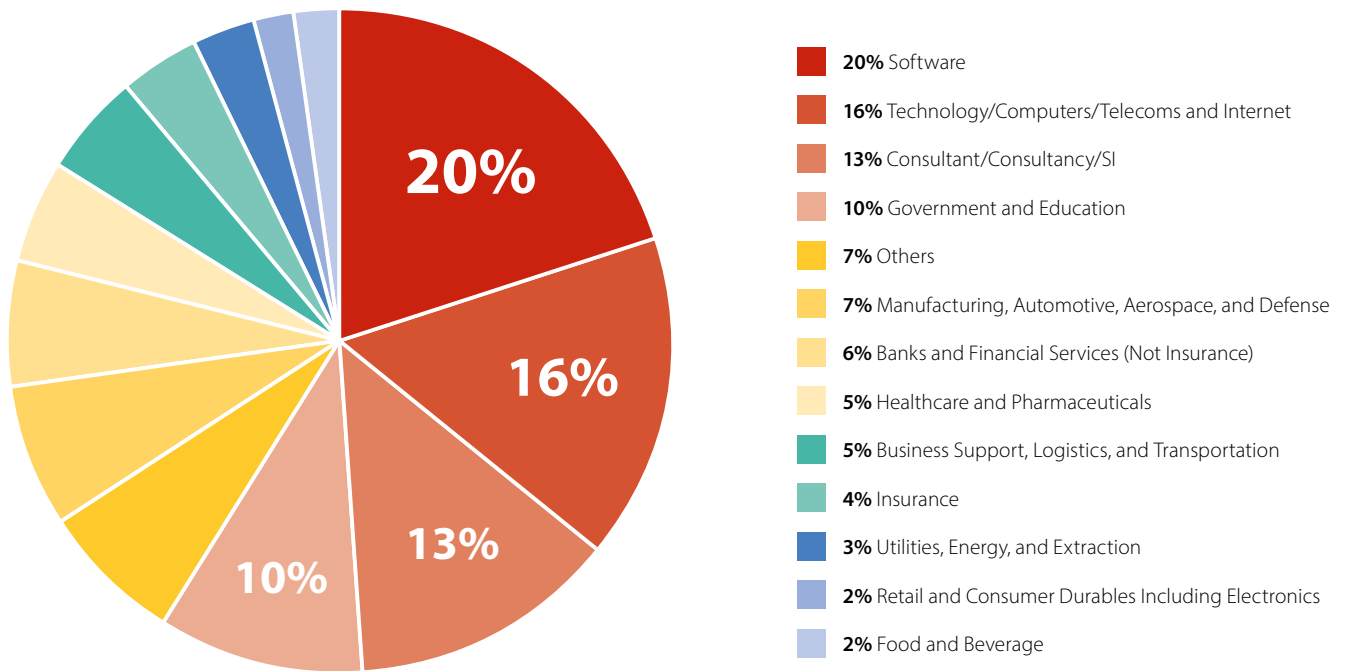


Fig. 54: Industries

Source: State of Application Development 2019/2020. OutSystems ©

13. About OutSystems

OutSystems is the number one platform for low-code rapid application development. Thousands of customers worldwide trust OutSystems as the only solution that combines the power of low-code development with advanced mobile capabilities, enabling visual development of entire application portfolios that easily integrate with existing systems.

The Fastest Way to Build Enterprise-Grade Applications

- Visually develop full-stack apps
- Integrate with everything
- Deploy to any device
- No lock-in, no boundaries

Learn more at www.outsystems.com



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