March 2019

Large Enterprises Succeeding With Low-Code

How To Recognize Low-Code Platforms Built For The Most Demanding Applications

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Table Of Contents

1 Executive Summary

2 Digital Transformation Requires A New Approach To Application Development

6 What Makes A Development Platform Enterprise-Ready?

10 Low-Code Powers Enterprise Digital Transformation

12 Key Recommendations

14 Appendix

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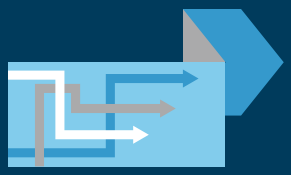


Executive Summary

Digital channels have become the battleground on which customers are won or lost, so enterprises must undergo an extensive digital transformation inside and out to remain competitive. As companies transform themselves into digital businesses, they hit constraints in their ability to develop applications software —whether in hiring and maintaining talent, collaborating across silos, or delivering solutions with a competitive speed-to-market.

This challenge is acute for large enterprises, which have the most demanding requirements for the scale, sophistication, security, and integrity of software solutions. Traditionally, these firms would rely on professional developers working in custom programming languages to build these top-priority applications. In recent years, however, low-code development platforms have become a quicker alternative to coding. But can low-code meet the demands of enterprises? Can enterprises build and run their top-priority applications on low-code and reap the benefits of rapid application development at scale?

Forrester conducted an onflfine survey of 254 IT and flfine-of-busfiness decision makers in the US, the UK, Canada, and Australia to evaluate expectations for and experiences with low-code development platforms for enterprise-scale applications. We found that while some enterprise application decision makers doubt low-code platforms can support enterprise scale, firms with the highest enterprise requirements are finding success running critical applications with low-code platforms.

KEY FINDINGS

- **Low-code accelerates development, meeting enterprise need for speed.** Eighty-four percent of enterprises have adopted a low-code development platform or tool. These firms are successful in efforts to improve existing IT capabilities, innovate products and services, and become more agile — all of which power a greater speed-to-market.
- **Low-code platforms can meet the highest enterprise requirements.** Firms with the lowest tolerance for downtime and data loss, as well as the strongest requirements for continuous auditing and independent security certification, are the most likely to run top applications on low-code. Their endorsement of low-code proves that enterprise-ready low-code solutions are already available in the market.
- **Enterprises will turn to low-code to build complex business logic.** While many firms use custom code to build applications for complex business logic today, they're eager to build on the success that low-code development has brought to other parts of the business. In the future, enterprises will likely deploy low-code, rather than custom code, to run these business-critical applications.

Digital Transformation Requires A New Approach To Application Development

The digital transformation imperative has led enterprises to develop a long list of software priorities that are quickly outstripping their development and delivery capacity and prompting business groups to seek alternatives to traditional IT delivery. We found:

- **Enterprises are under pressure to do more with what they have.** Firms will need to find efficiencies in process, technology, and capacity to meet digital transformation goals without cutting into the bottom line. The top drivers for digital transformation include 1) improving existing IT capabilities to promote agility and innovation, 2) innovating with new products, and 3) improving customer experience (CX). Yet reducing costs is also a top driver (see Figure 1). While the need for product innovation and improved CX may lead an enterprise to hire more professional developers, talent is in short supply, and average salaries for developers will remain high for the foreseeable future.[1]
- **Developers struggle to deliver what the business needs in time quickly and securely.** Security is the most common challenge facing enterprises today: 59% cite it as a challenge as they role out digital solutions. Meanwhile, delivering solutions as quickly as the business needs them and redesigning business processes are top of mind in terms of difficulty to overcome (see Figure 2). Without budget to dramatically expand development staff, technical teams must enlist the talents of business groups to speed solutions delivery. Arming cross-functional teams with development and collaboration tools appropriate for everyone's skill level will also help firms overcome another top challenge: lack of technology skills. But this expansion into business development cannot come at the expense of security.
- **Business experts are key to delivering process transformation.** New digital business initiatives and customer engagement are the highest-priority application use cases at the firms we surveyed (see Figure 3). It's encouraging, however, that end-to-end process automation also ranks within the top five. Automation is critical to agility, cost reduction, and smooth customer experience. This is also further proof that the business has greater value in application development — not only for its proximity to the customer but also for its knowledge of its processes.

Figure 1

"What are/will be the drivers of your firm's digital transformation efforts?" (Top five shown)

Base: 254 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia
Source: A study conducted by Forrester Consulting, December 2018

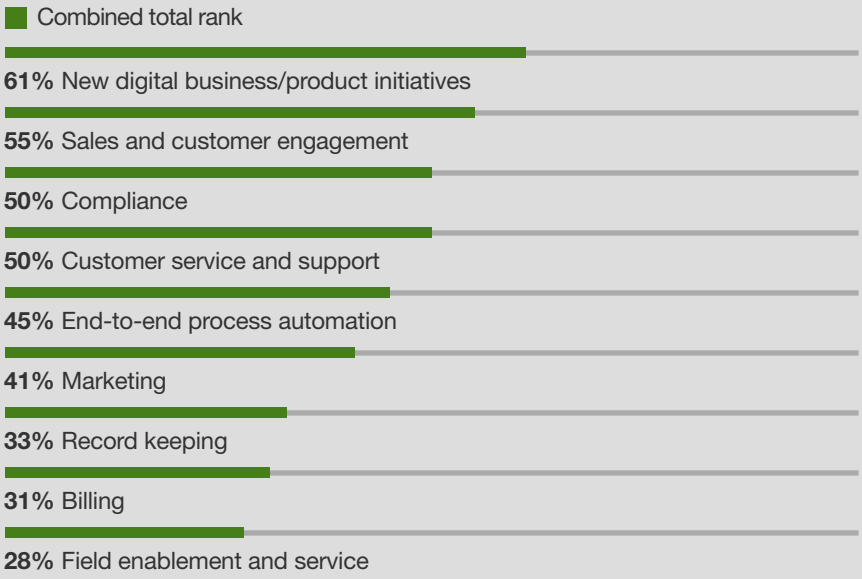
Figure 2

"How do/es the challenge/s you selected impede your ability to deliver on digital transformation priorities?"

Base: 60 to 138 IT and business decision makers whose enterprises experienced challenges executing digital transformation efforts
Source: A study conducted by Forrester Consulting, December 2018

Figure 3

Top application priorities in terms of value to the business overall



Base: 254 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia
Source: A study conducted by Forrester Consulting, December 2018

LOW-CODE DEVELOPMENT ALLEVIATES KEY CHALLENGES, YET MANY DOUBT IT CAN MEET ENTERPRISE NEEDS

Low-code platforms employ visual, declarative techniques instead of programming to build applications, accelerating the pace of pro developers and allowing business experts to lead or participate in solution delivery.[2] Eighty-four percent of enterprises have turned toward low-code development tools or platforms to handle some portion of their development needs.[3] Why? To reduce the strain on IT resources, increase speed-to-market, and better involve business decision makers in the development of digital assets. Interestingly, even though enterprises using low-code report impressive progress toward digital transformation goals, almost a third of these same firms are hesitant to use low-code platforms to develop their most demanding or top-priority applications (see Figure 4).

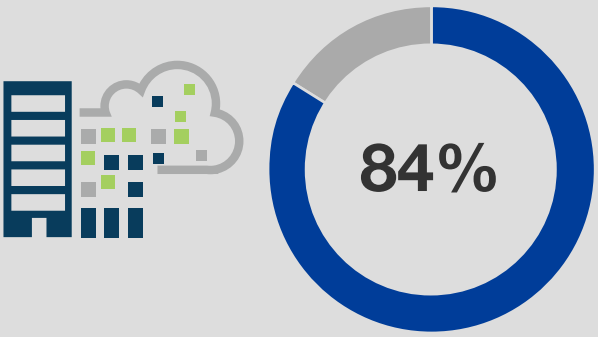
Is their reluctance to use low-code for top applications justified? Our findings say that low-code platforms help firms overcome scarce resources by accelerating developer productivity and empowering business experts to assist in application delivery. To understand how far and how well low-code platforms can scale to enterprise needs, decision makers need criteria to 1) clearly understand their requirements and 2) identify the most enterprise-ready options in the market.

84% of enterprises have turned toward low-code for its ability to reduce strain on IT resources, increase speed-to-market, and involve the business in digital asset development.

Figure 4

Enterprises using low-code are seeing impressive progress against digital transformation drivers, yet nearly a third of those using low-code are not using it to build and deliver top-priority applications.

1. Many enterprises have implemented a low-code development tool or platform to handle a portion of application development.

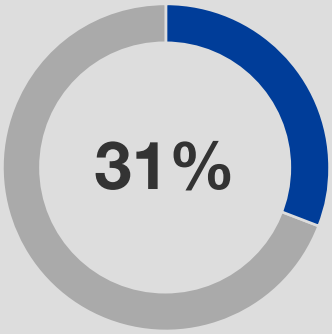


Base: 254 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia

2. These low-code firms are making significant progress toward top digital transformation goals.

Base: 212 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia using low-code

3. Yet 31% of enterprises using low-code have not used it to build and deliver any of their highest-value applications.



Base: 212 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia using low-code

The top five highest-priority applications in value to the business overall:

1. New digital business/product initiatives
2. Sales and customer engagement
3. Compliance
4. Customer service and support
5. End-to-end process automation

Source: A study conducted by Forrester Consulting, December 2018

What Makes A Development Platform Enterprise-Ready?

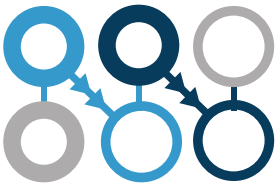
To investigate what enterprises consider to be critical requirements for top applications, we asked respondents a series of questions about the requirements of their highest-priority, most valuable application projects. Enterprises share six requirements for their top applications:

- **Acceptable downtime,** ranging from none to more than several hours.
- **Acceptable data loss,** ranging from none to more than an hour.
- **Scale of user base,** ranging from on the individual level to enterprisewide.
- **Frequency of independent audits,** ranging from never to continuously.
- **Independent security certifications,** ranging from none of them to all of them.
- **Support for the latest technology (i.e., operating systems and browsers),** ranging from not at all important to a critical requirement.

A cluster analysis of these factors identified three major groups of respondents within the larger enterprise community (see Figure 5):[4]

- **The Prudent: enterprises with the highest requirements overall.** These enterprises have the lowest levels of acceptable downtime and the strongest preference for zero data loss of the three groups. A sizeable portion requires continuous auditing (30%), and they also have the highest levels of independent security certification — 84% of these firms say most or all of their top applications require it.
- **The Vigilant: enterprises where independent monitoring outweighs other factors.** These enterprises have the second highest levels of independent security certification (64% say most or all top applications require it), and more than a quarter say top apps require continuous auditing. Meanwhile, this group has the highest tolerance for downtime and data loss of any of the three groups.
- **The Swift: enterprises where downtime and data loss outweigh other factors.** These enterprises have the lowest levels of independent security certification, and only 1% report needing continuous auditing. These firms are much more focused on staying online: They'll accept only moderate levels of downtime and data loss.

The Prudent, the Vigilant, and the Swift agree on the high value of platforms providing the latest, up-to-date technology. And while user-base size of top applications runs the gamut, there is high and consistent use of top applications across multiple departments and enterprisewide at all firms.



Top application data loss is detrimental to enterprises overall: 89% consider one hour or less to be the maximum acceptable time for data loss (RPO).

What group do your highest value applications fall into? Is your enterprise Vigilant, Prudent, or Swift?

Figure 5

Our cluster analysis of six enterprise requirements segmented firms into three groups: the Prudent, the Vigilant, and the Swift.

The Prudent
(N = 69)

- Lowest levels of acceptable downtime
- Strongest preference for zero data loss (81%)
- Most top apps run across multiple departments or enterprisewide
- Quarterly audit most common (48%), but 30% require continuous auditing
- Highest levels of independent security certification (84%, most or all apps require)
- Strong preference for latest platform technology

The Vigilant
(N = 106)

- Highest levels of acceptable downtime
- Highest tolerance for data loss
- Most top apps run across multiple departments or enterprisewide
- Quarterly audit most common (45%), but 26% require continuous audit
- Second-highest levels of independent security certification (64%, most or all apps require it)
- Strong preference for latest platform technology

The Swift
(N = 79)

- Moderate levels of acceptable downtime
- Moderate tolerance for data loss
- Relatively even use cases across scales, but most apps are run across multiple departments or enterprisewide
- Quarterly audit by far most common (62%); only 1% need continuous
- Lowest need for independent security certification (95% some, very few, or none)
- Strong preference for latest platform technology (though lower relative to other groups)

Figure 5 (cont.)

Looking more closely within and across the groups, we find what requirements are critical for all versus dependent on the firm's need.

Critical for all	**Latest platform technology:** All three groups have a strong preference for the latest platform technology.
	Scalability across large user bases: Top applications run the gamut in scale at nearly all firms; high and consistent selection across all scales, particularly multiple departments and enterprisewide.
Important, but depends on the firm	**No data loss:** Depends greatly on the organization, but even the most tolerant cluster draws the line (75% of the Prudent will only accept up to an hour of data loss).
	No downtime: Depends greatly on the organization, but even the most tolerant group draws the line (74% of the Prudent will only accept up to several hours of downtime).
	Independent security certification: Depends on the organization, but even 63% of the firms that need them the least (the Swift) say, "Some apps require independent security cert" (middle of the scale).
	Continuous independent audits: While a significant minority need continuous auditing, there's some consensus that quarterly is the sweet spot for top apps.

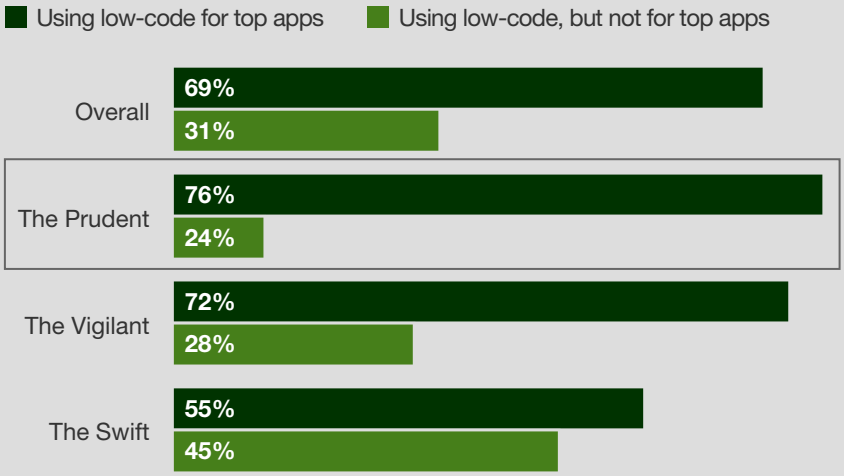
SOME LOW-CODE PLATFORMS ARE MEETING TOP ENTERPRISE REQUIREMENTS

A key finding: Enterprise development shops are using low-code platforms for their top enterprise applications. In fact, the group with the highest requirements overall (the Prudent) is also the group most likely to use low-code platforms for top applications (see Figure 6). This means that there are low-code platforms in the market today that fit even the most demanding of enterprise application requirements. A deeper look into the firms using low-code for top applications reveals:

- **Low-code use cases target most important use case for all firms.** Recall that "new digital business/product initiatives" is the most valuable use case for all firms we surveyed. This use case is also top for firms using low-code for top applications (see Figure 7). In fact, the top five use cases for all platforms are the same as the top five most valuable use cases for low-code.[5] The notion that enterprises use low-code platforms to deliver only small or departmental applications is false.
- **Top applications on low-code are likely to handle more users and data than other development platforms at the same firm.** Not only can low-code meet the most demanding enterprise requirements, it can take on a significant share of the user and data load once deployed. Sixty-five percent of enterprises using low-code platforms for their top applications say that more or significantly more users access applications on their low-code platforms compared with other platforms. Sixty percent say the same about data created or stored by low-code platforms. Interestingly, the percentages are even higher for the Prudent group (71% and 66%, respectively).

Figure 6

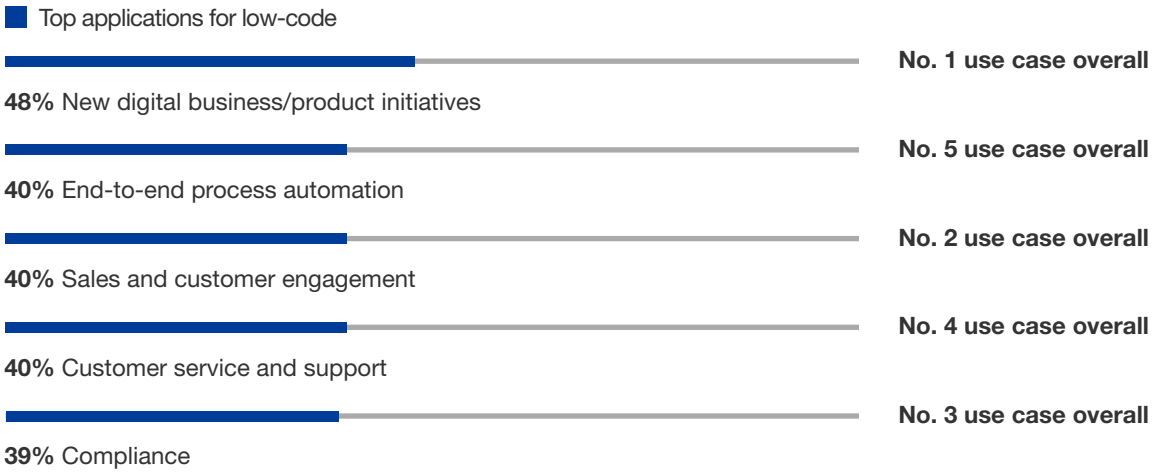
Enterprises with the highest requirements overall are the most likely to use low-code for top applications.



Base: Overall (N = 212), the Prudent (N = 63), the Vigilant (N = 96), the Swift (N =53), IT and business decision makers who use low-code platforms
Source: A study conducted by Forrester Consulting, December 2018

Figure 7

The top five priority applications overall are also the top five low-code use cases.



Base: 146 IT and business decision makers responsible for digital transformation initiatives at enterprises that use low-code platforms in the US, the UK, Canada, and Australia
Source: A study conducted by Forrester Consulting, December 2018

Low-Code Powers Enterprise Digital Transformation

By identifying low-code platforms with features that address the six enterprise requirements, firms can not only build and deliver critical applications faster and at scale, but also gain a deeper understanding of the business results of their digital transformation overall. Enterprises yet to adopt low-code or hesitant to deploy an existing low-code platform for their top applications can learn from the enterprises that are powering their digital agendas with low-code development. Our survey found:

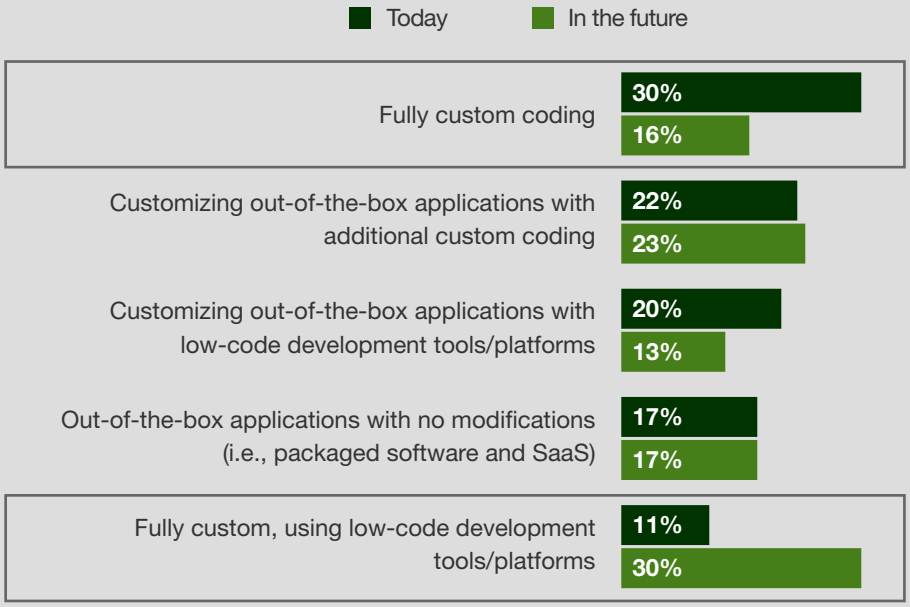
› **Low-code platforms running top applications extend flexibility, speed, and automation.** Sixty-four percent of enterprises using low-code to run top applications say they turn to low-code because it is the most flexible option. More than half say they use low-code because it has the fastest speed of delivery. And 49% say low-code has the greatest ability to automate processes. Prudent enterprises are even more likely to value low-code for flexibility (83%), speed (63%), and automation (67%). These qualities are particularly critical as firms attempt to overcome the toughest digital transformation challenges: inability to deliver at the speed the business needs, lack of technology skill, and business process redesign.

- **The results of using low-code for top applications align to the needs of the digital transformation agenda.** The top driver for digital transformation overall is to improve existing IT capabilities — and enterprises using low-code for top applications report this is the most common value driven by their use of low-code platforms (53%). They also report greater agility (43%) and reduced costs (42%). As a result, it shouldn't be surprising that 95% of these firms say they are satisfied or very satisfied with enterprise-focused features of their low-code platforms. Since 72% of firms overall are customizing out-of-the-box applications with custom code and 57% are using fully custom code to deliver top applications, there is significant potential in the market for low-code platforms to drive a greater share of the digital agenda.
- **Enterprise low-code use is likely to grow as platforms improve support for complex business logic.** We asked all the enterprises using low-code what tool or platform they would use today for an application requiring complex business logic and what they'd ideally use in the future (see Figure 8). Today, 30% would turn to fully custom coding to build complex logic, but this shrinks to 16% as they think about the future. Instead, firms would prefer to use custom low-code for complex business logic in the future (30%). This tells us that while enterprises may have reservations regarding low-code for complex logic today, they have their eye on low-code's future capabilities and will shift that way given the option.

Low-code has the power to overcome the toughest barriers to successful digital transformation. In fact, we found that **100% of low-code enterprises have received ROI from their low-code adoption.**

Figure 8

"If you were to build an application that required complex business logic, what tool/platform would you use to build it today? In the future?"



Base: 212 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia using low-code
Source: A study conducted by Forrester Consulting, December 2018

Key Recommendations

Can low-code development platforms help large enterprises deliver their most demanding application projects to accelerate digital transformation? The evidence says yes. Reservations about the ability of these application platforms to scale are prudent, but no longer well-grounded.

Forrester's in-depth survey of IT and business decision makers about the use of low-code development platforms at enterprise scale yielded five important recommendations:

Add a low-code development platform to your portfolio. Assuming your software teams, like those in the majority of other enterprises, must deliver more software in less time, one or more low-code development platforms belong in your portfolio. The evidence that enterprises can accelerate delivery of the software crucial to digital transformation by using low-code platforms is compelling. Moreover, development teams in large enterprises are delivering their most complex and demanding application projects using low-code platforms.

Use the six enterprise requirements to guide your product evaluations. "Enterprise" is a vague term freighted with hidden assumptions. Our findings expose the top six general enterprise requirements — and test their relative importance to enterprise IT and business decision makers. Use the six requirements in your vendor and product due diligence, as only a subset of the dozens of low-code development platforms will support them. Place your enterprise within the three groupings — the Prudent, the Vigilant, and the Swift — to streamline your investigations.

Probe vendor product road maps, and verify track records. Low-code development platforms are strategic investments that must support the delivery of many applications — and the sustainability of those applications over time. Sustaining means vendors keeping up with new operating-system and browser releases, but also continually adding new features and technologies that are important to customer applications. Today, the focus is on the variety of AI features; tomorrow, who knows? Low-code platform vendors must keep up to sustain customer value.

Include support for business-expert participation in your product evaluations. Lurking in this research: business experts participating in software delivery. Whether those experts play on an Agile team with developers and architects, use low-code tools to convey requirements to development and/or application teams, deliver solutions themselves, or all three, they must be part of your strategy. Include support for business-expert participation in software delivery in your consideration of low-code platforms.

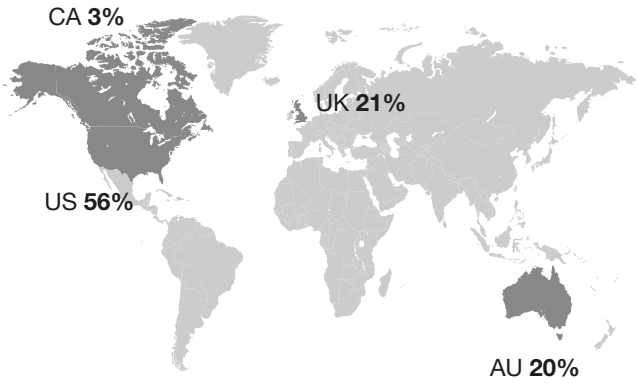
Use the benefits your peers report to create and measure your business case for low-code platforms. Our findings clearly report and rank the application use cases most meaningful to the business (see Figure 3), starting with new business and product initiatives and progressing through customer engagement and compliance to process automation. Focus on one or two of these in your low-code strategy and create *business* metrics to gauge success and business impact. Business cases based on a buckshot approach targeting many use cases are too difficult to manage and too likely to "fail" even if they produce some results.

Appendix A: Methodology

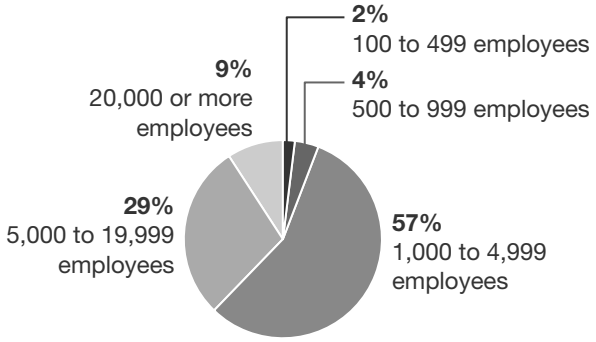
In this study, Forrester conducted an online survey of 254 organizations from a variety of industries in the US, the UK, Canada, and Australia to evaluate the adoption and use of low-code platforms. Survey participants included decision makers in operations/business process, executive management, and IT/technology. Respondents were offered incentives as a thank you for time spent on the survey. The study was completed in December 2018.

Appendix B: Demographics/Data

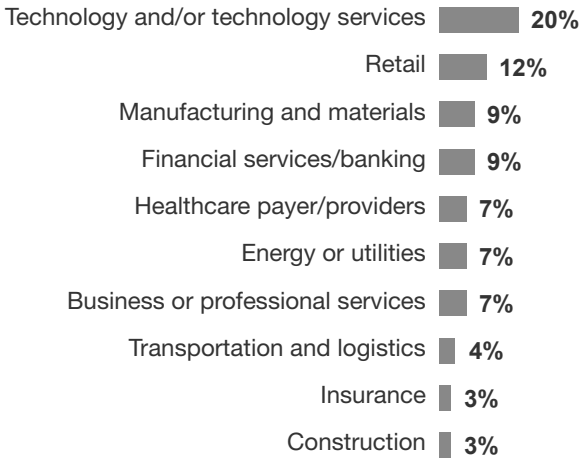
COUNTRY



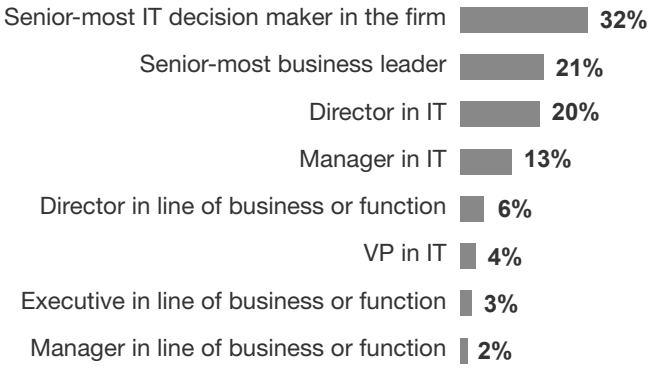
COMPANY SIZE



INDUSTRY
(only top 10 responses shown)



POSITION



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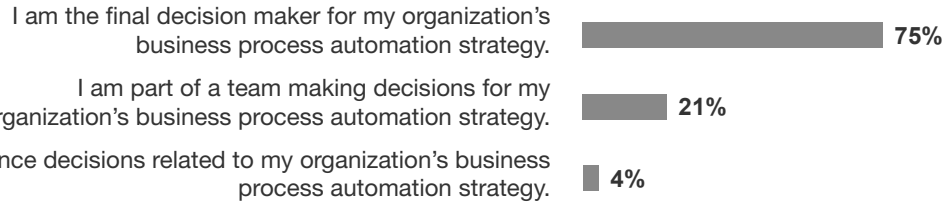
"What is your level of responsibility when it comes to application development and delivery strategy at your organization?"*

"What is your level of responsibility when it comes to strategy for business process automation at your organization?"†



Base: 254 IT and business decision makers responsible for digital transformation initiatives at enterprises in the US, the UK, Canada, and Australia
*Base: 174 IT decision makers
†Base: 80 LOB decision makers
Note: Percentages may not total 100 because of rounding.
Source: A study conducted by Forrester Consufltfing, December 2018

Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

"Customers Illuminate The Benefits And Challenges Of Low-Code Development Platforms," Forrester Research, Inc., January 23, 2018.

"Now Tech: Rapid App Delivery, Q1 2019," Forrester Research, Inc., January 4, 2019.

Appendix D: Endnotes

[1] Source: "Digital Transformation Requires Development Transformation," Forrester Research, Inc., October 9, 2018.

[2] Source: "Now Tech: Rapid App Delivery, Q1 2019," Forrester Research, Inc., January 4, 2019.

[3] Source: Ibid.

[4] Looking at the results of these questions in the aggregate does little to reveal how individual firms prioritize each of the six specifications. For example, are there firms for which some data loss is unacceptable, but hours of planned downtime are tolerated? Are there firms for which continuous independent audit is critical, but no applications require independent security certification? To answer these questions, we performed a k-factor cluster analysis of three groups using the six response sets. Each group weighs requirements for top applications differently.

[5] Though the order of the five use cases is different, the same five use cases appear at the top of both answer sets.