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THE RISE OF THE EMPOWERED CITIZEN DEVELOPER

2017 LOW-CODE ADOPTION SURVEY

By Joe McKendrick, Research Analyst
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EXECUTIVE SUMMARY

Is IT possible without IT?

In today's digitally driven economy, IT has become the lifeblood of enterprises. At the same time, it requires many people across organizations to be able to design and build applications that help move information to the places where it is needed. In essence, IT has become much bigger than the IT professional or developer — IT has become the business.

This survey report focuses on the role of the citizen developer. What is a citizen developer? For purposes of this survey, we define citizen developers as business users, not part of IT departments or contracted IT services, who build and use their own scripts, programs, algorithms, or interfaces designed to perform business functions or support business processes.

In September 2017, Unisphere Research fielded a study among readers of *KMWorld* and *CRM* Magazine — in partnership with Kintone — to examine the progress of citizen developers within today's enterprises. A total of 324 qualified responses were collected. Respondents came from organizations of all sizes and across various industries. A demographic overview is available at the end of the report.

Key findings of the study include the following:

On the following pages are the detailed results and analysis of this effort.

- In most cases, organizations have some type of IT department staffed with at least one dedicated employee. A majority of executives, 74%, say their IT department is actively engaged to some degree, overseeing most technology-related activities. Speed of application delivery and the sharing of data and analytics are two areas in which IT support is seen as weak.
- At least 76% of respondents indicate that at least some portion of their applications were developed outside of their traditional IT department or IT service. The plethora of open-source projects and offerings now available offer a wealth of possibilities for the citizen developer. A majority, 54%, turn to open source software as their first choice in building and supporting their self-built applications. Only 16% attempt to clamp down on citizen development activity — more than one in four has no policy of any kind in place, while 42% say non-IT app development is allowed, or in some cases, actively encouraged.
- Non-IT developers come from a range of backgrounds, but are, for the most part, power users and developers embedded within line-of-business departments building the applications. Outside consultants and line-of-business employees also partake in much of this activity as well. For the most part, this off-the-grid IT work takes place on company hours, suggesting that citizen developers are accepted within the workflow. Close to half, 45%, report that all outside IT work is conducted during regular company hours. Citizen developers do what they do because they feel IT departments — which are usually weighed down with firefighting to keep enterprise applications up and running and secure — are too slow to respond to their individual requests.
- Citizen developers get applications out the door faster than large IT departments. They turn around their required applications in a matter of weeks, or a couple of months. Only 17% report turnaround times exceeding three months. The challenges to citizen development include data security and trouble learning proper programming techniques, and handling of data.
- One-third of organizations are highly proactive in supporting their citizen developers with training and platforms. Almost all executives acknowledge more needs to be done. Executives and their staffs have some programming skills, but more than one in four knows nothing about programming. Still, a majority have downloaded applications on their own, and close to half have worked directly on corporate websites or mobile apps.

On the following pages are the results of the survey, with in-depth explorations of the issues and opportunities behind the evolution of today's citizen developers.

THE FUNCTIONAL IT DEPARTMENT LANDSCAPE

In most cases, organizations have some type of IT department staffed with at least one dedicated employee. A majority of executives, 74%, say their IT department is actively engaged to some degree, overseeing most technology-related activities. Speed of application delivery and the sharing of data and analytics are two areas in which IT support is seen as weak.

To determine the landscape for citizen developer activity, it is first important to understand the type of IT support structure that is in place within their enterprises. Is there a significantly-sized IT department, with many different teams with different roles? Or, is it a small department, perhaps even just one person in the case of small businesses, who are busy keeping things running? Or, does the organization outsource much of its IT work to some type of contracted service, such as consultants or systems integrators? This could make a difference in the leeway citizen developers have in working on their own creations, from an overbearing IT department to a loose, innovative arrangement. The survey confirms that in most cases, organizations have some type of IT department staffed with at least one dedicated employee. Nine in 10 of the managers and professionals responding to the survey have such a formal IT function. (See Figure 1.)

In addition, many IT departments are actually quite sizable, with 31% reporting IT staffs encompassing more than 5% of their workforces. A majority, 57%, report they have IT organizations equating to between 2% and 10% of their total workforces. (See Figure 2.)

Are the IT departments described by executives in the survey more hands-on or hands-off? Are they involved in all or most aspects of technology across their enterprises, or do they stay in the background, keeping servers and networks running? A majority of executives, 74%, say their IT is activity engaged to some degree, overseeing most technology-related activities. Within this segment, more than one-third, 36%, say their IT departments are "highly active," and 38% describe their IT organizations as "mostly active. As you review the results of this survey, keep in mind that there are robust, engaged IT staff members behind many of the citizen developer activities being explored. (See Figure 3.)

The survey explored the potential issues executives face with their IT organizations. Speed of application delivery and the sharing of data and analytics are two areas in which IT support is seen as weak. Close to one-third of respondents state they are mainly dissatisfied with the pace at which their IT departments can deliver applications. At the same time, it must be acknowledged that today's IT organizations are extremely busy, tasked with spearheading digital transformation efforts, while keeping the lights on within their existing data centers. They may be struggling with stagnant or shrinking budgets, and therefore unable to respond to user requests in a timely way. (See Figure 4.)

When looking at how respondents from IT departments view these satisfaction levels versus those outside IT, significant differences in perception emerge, the survey shows. For example, 35% of executives outside IT are not satisfied with the speed of application delivery from their IT departments, more than double the 16% of IT managers citing this as an issue. Likewise, while 35% of non-IT respondents point to a lack of sharing of data and analytics, only 15% of IT managers see this as a problem. (See Figure 5.)

Figure 1: Does the Organization Have a Formal IT Department with at Least One Dedicated Employee? (Includes contracted IT services)

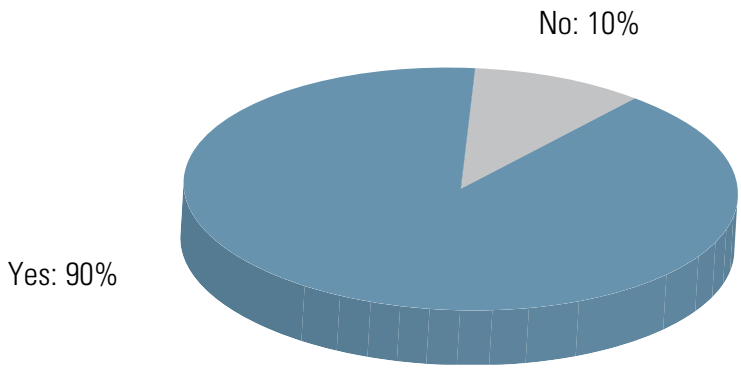

Figure 2: IT Organization Size

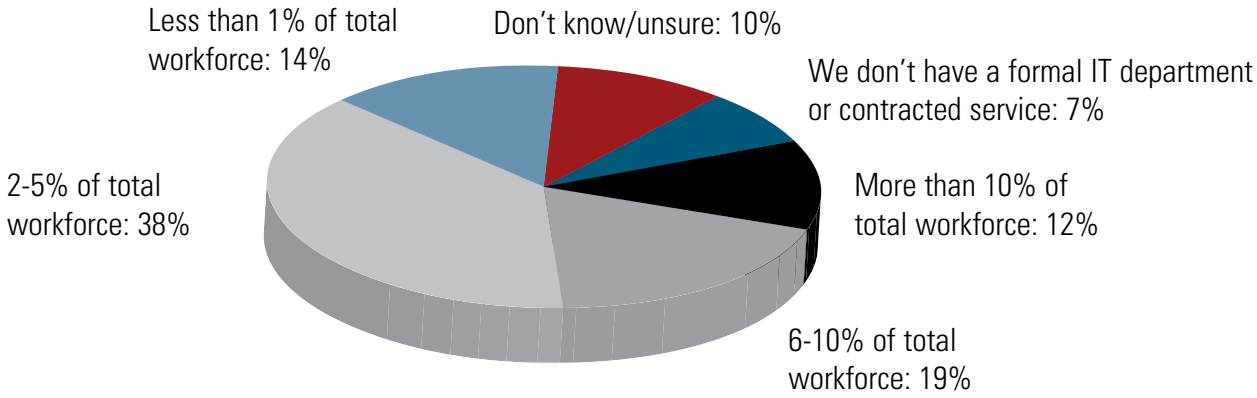

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Figure 3: Role of IT Department/IT Service

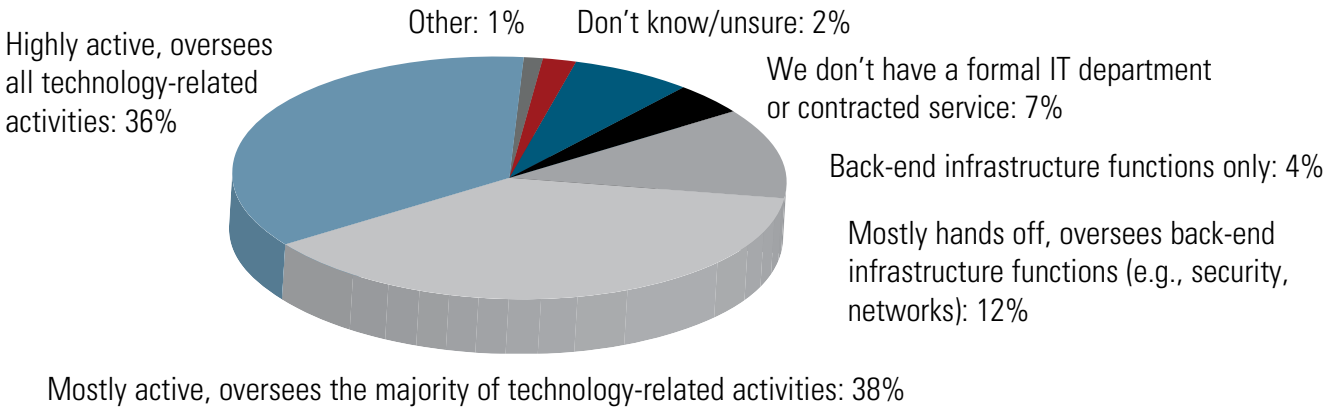


Figure 4: Level of Dissatisfaction with IT Department/IT Service (Reporting 1 or 2 on a scale of 1 to 5)

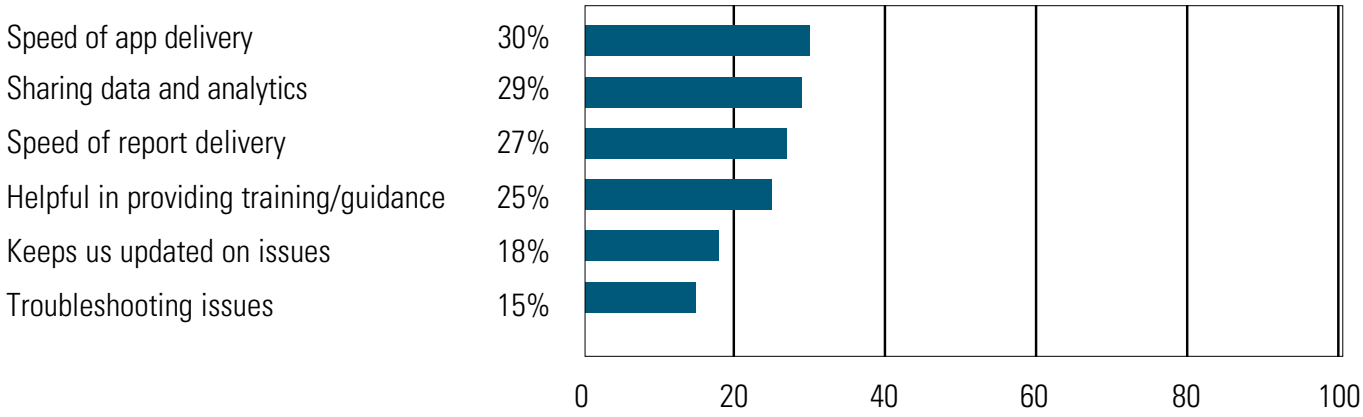
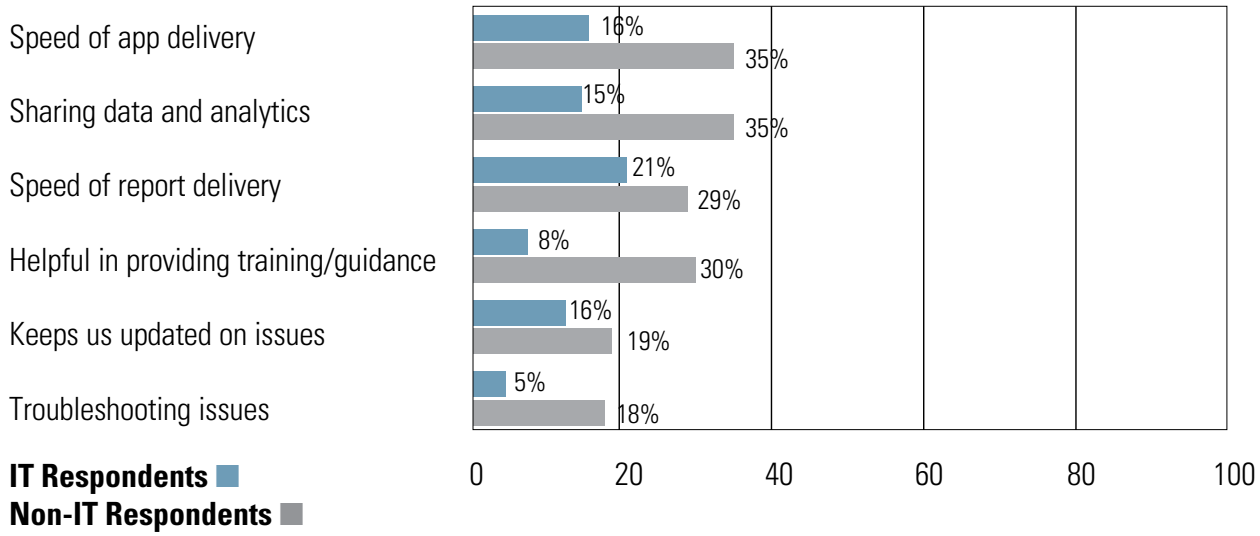


Figure 5: Level of Dissatisfaction with IT Department: IT Service — IT Versus Non-IT Respondents (Reporting 1 or 2 on a scale of 1 to 5)



RESOURCES AND POLICIES

At least 76% of respondents indicate that at least some portion of their applications were developed outside of their traditional IT department or IT service. The plethora of open source projects and offerings now available provide a wealth of possibilities for the citizen developer. A majority, 54%, turn to open source software as their first choice in building and supporting their self-built applications. Only 16% attempt to clamp down on citizen development activity — more than one in four has no policy of any kind in place, while 42% say non-IT app development is allowed, or in some cases, actively encouraged.

There is considerable citizen developer activity taking place within enterprises, with a significant percentage of the applications that are used in respondents' departments developed outside of IT by line-of-business users, or other parties such as outside contracted services. At least 76% of respondents indicate that some portion of their applications were developed outside of their traditional IT department or IT service. One in five executives state that the majority of their applications (more than 50%) were developed outside the confines of their IT departments. (See Figure 6.)

Data is the ingredient that citizen developers seek in their projects. A range of application types that respondents work with have been developed outside of IT or contracted service, either written or installed by business users. Data analytics apps top the list, cited by 43%, followed by 34% using marketing applications developed outside of their IT departments. Along with marketing, sales-related applications round out the top three applications built and employed by citizen developers, mentioned by 31% of the sample. (See Figure 7.)

What resources do non-IT developers draw on for their projects? The plethora of open source projects and offerings now available provide a wealth of possibilities for the citizen developer. A majority, 54%, turn to open source software as their first choice in building and supporting their self-built applications. Local productivity tools, such as spreadsheets, represent the second most-prevalent types of tools or platforms in use, cited by 45%. Cloud services also offer a wealth of resources for citizen developers, and may incorporate open source elements as well. More than one-third, 35%, draw upon public cloud services to build their apps. (See Figure 8.)

As they are proliferating and can be built and accepted into an app store relatively quickly, mobile apps are a format of choice for developers and citizen developers alike. The survey explored the parties overseeing the design, building, and maintenance of mobile applications within respondents' enterprises intended to support their workforces. IT departments are the main deliverers of mobile apps, with more than two-thirds of executives saying this job goes to their IT staffs. While mobile apps may be simpler to build than their PC or server-based counterparts, there is complexity with the wide assortment of end-user devices that consume them — including Apple's iOS, Android OS, Microsoft Windows Mobile, and others. Still, one in five also reports that individuals with lines of business get involved with mobile app building, and in 19% of cases, sales departments also play roles. (See Figure 9.)

The survey looked at the formal policies or procedures that may affect the efforts of citizen developers. Do companies attempt to regulate the building and use of applications developed outside of the IT department, or is there more of a hands-off policy? For the most part, companies allow for citizen development, primarily with some IT oversight. More than one in four has no policy of any kind in place, while another 42% say non-IT app development is allowed, or in some cases, actively encouraged. Only 16% have policies stipulating that non-IT app development is not prohibited. (See Figure 10.)

Figure 6: Percent of Applications in Use Developed Outside of IT Department/IT Service

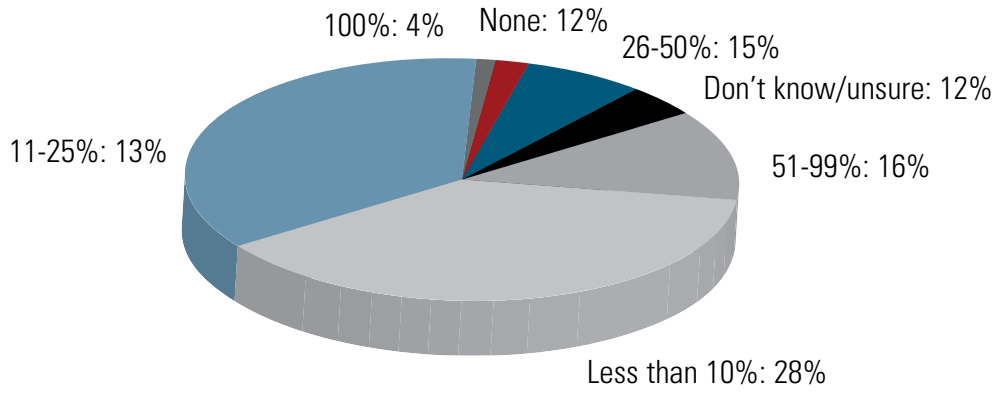


Figure 7: Types of Applications Developed Outside of IT Department/IT Service

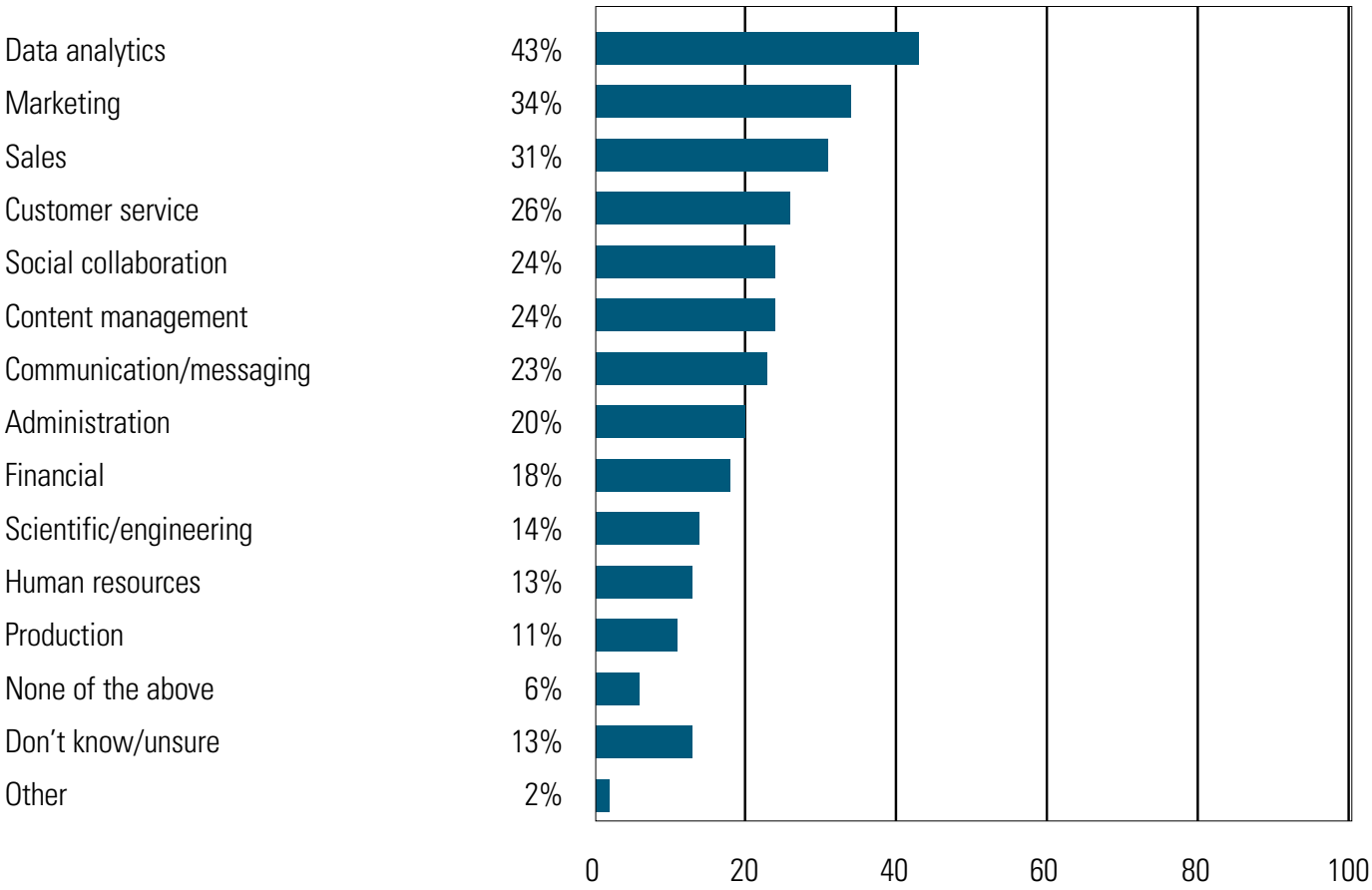


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Figure 8: Resources Non-IT Developers Draw on for Application Projects

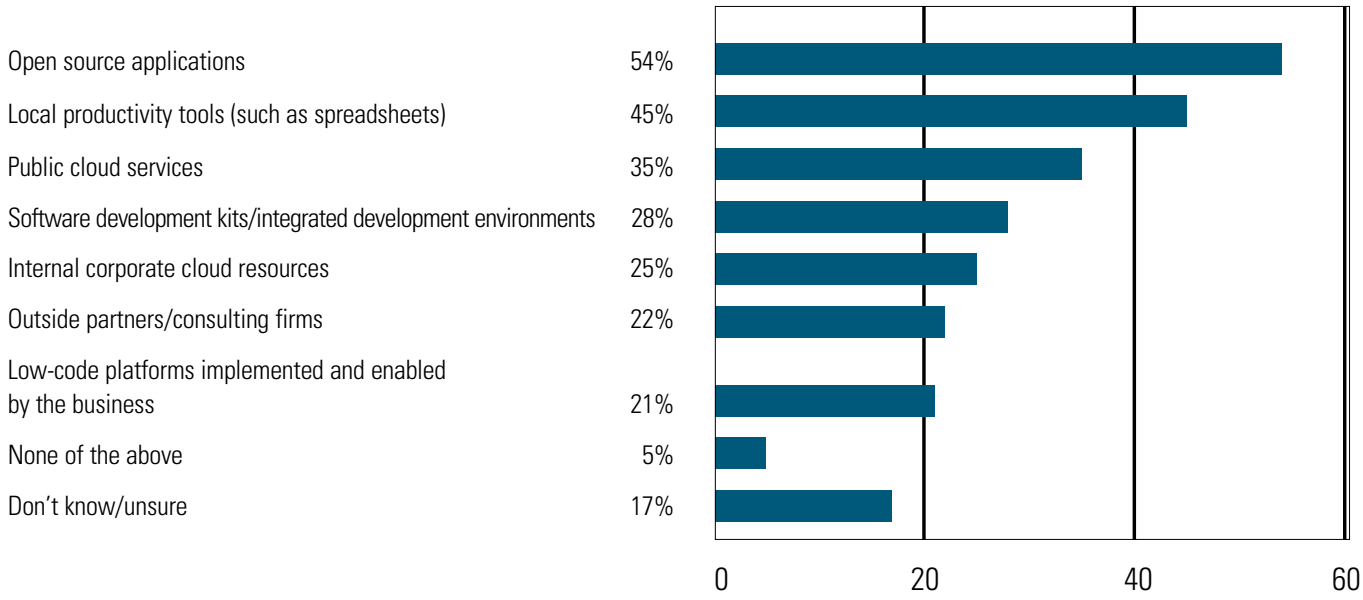

Figure 9: Mobile App Development Oversight

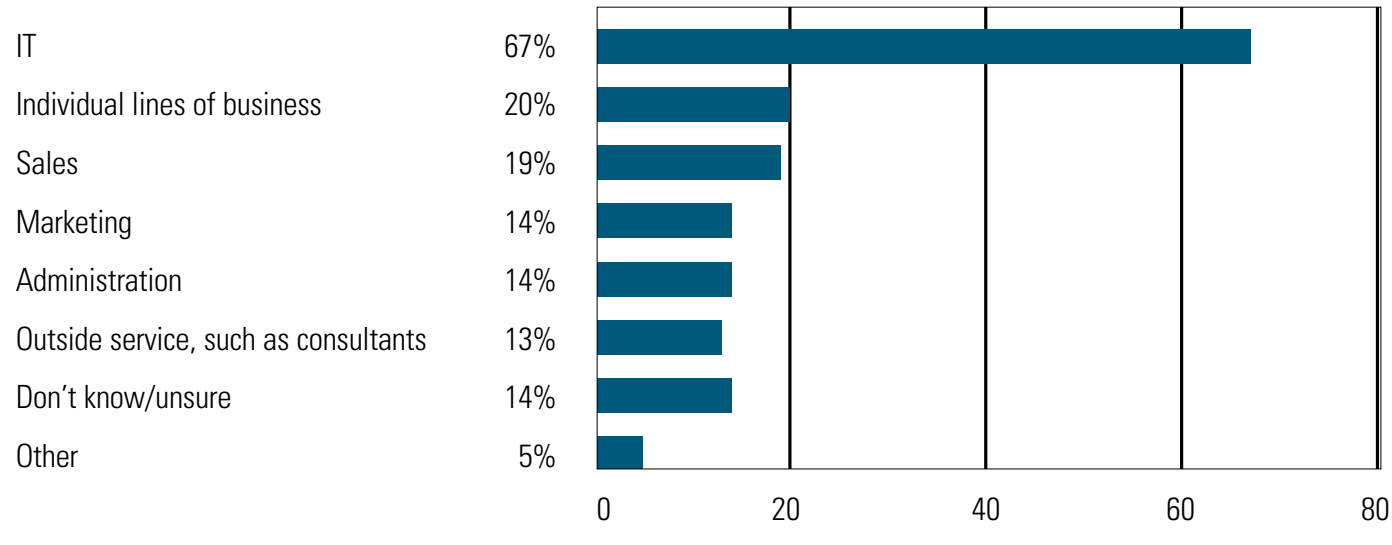

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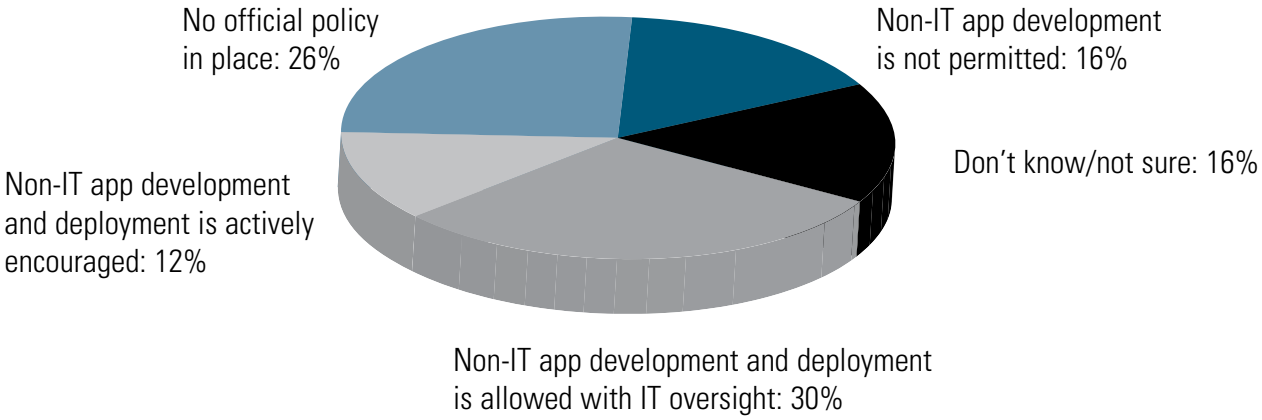
Figure 10: Organizations' Policies Toward Non-IT Application Development



PROFILE OF THE CITIZEN DEVELOPER

Non-IT developers come from a range of backgrounds, but are, for the most part, power users and developers embedded within line-of-business departments building the applications. Outside consultants and line-of-business employees also partake in much of this activity as well. For the most part, this off-the-grid IT work takes place on company hours, suggesting that citizen developers are accepted within the workflow. Close to half, 45%, report that all outside IT work is conducted during regular company hours. Citizen developers do what they do because they feel IT departments — which are usually weighed down with firefighting to keep enterprise applications up and running and secure — are too slow to respond to their individual requests.

Where are these citizen developers building, who are contributing to applications outside of IT or contracted services that enterprises now run on a day-to-day basis? Citizen developers come from many areas of the business, and may even include developers not directly under the purview of IT. For the most part, they are power users and developers embedded within line-of-business departments building the applications, as cited by 41% of respondents. Outside consultants and line-of-business employees also partake in much of this activity as well, cited by 38% and 37%, respectively. (See Figure 11.)

While citizen developers may be working under the corporate radar, they still build their applications while on the corporate clock, implying at least tacit business endorsement of these activities, though it may not be part of the primary duties outlined in their job descriptions. For the most part, this off-the-grid IT work takes place on company hours, suggesting that citizen developers are accepted within the workflow. Close to half, 45%, report that all outside IT work is conducted during regular company hours. (See Figure 12.)

This amount of time may consist of a sizable portion of the typical workweek, the survey also finds. While most citizen developers have other duties to attend to, it's notable that a sizable portion, 29% still spend a significant component of their time, more than 25% of their regular workweek, immersed in application development or maintenance. (See Figure 13.)

Why do non-IT employees decide to build their own applications? For the most part, they feel IT departments — who are usually weighed down with firefighting to keep enterprise applications up and running and secure — are too slow to respond to their individual requests. This aligns with the high level of dissatisfaction reported with the turnaround time IT can deliver. In addition, citizen developers see the technology around them as a way to boost the productivity of their jobs, as cited by one-third. This opens the door to innovation, and new ways of accomplishing goals, which may have not been apparent to IT managers. (See Figure 14.)

Figure 11: Non-IT Developers of Applications Currently in Use

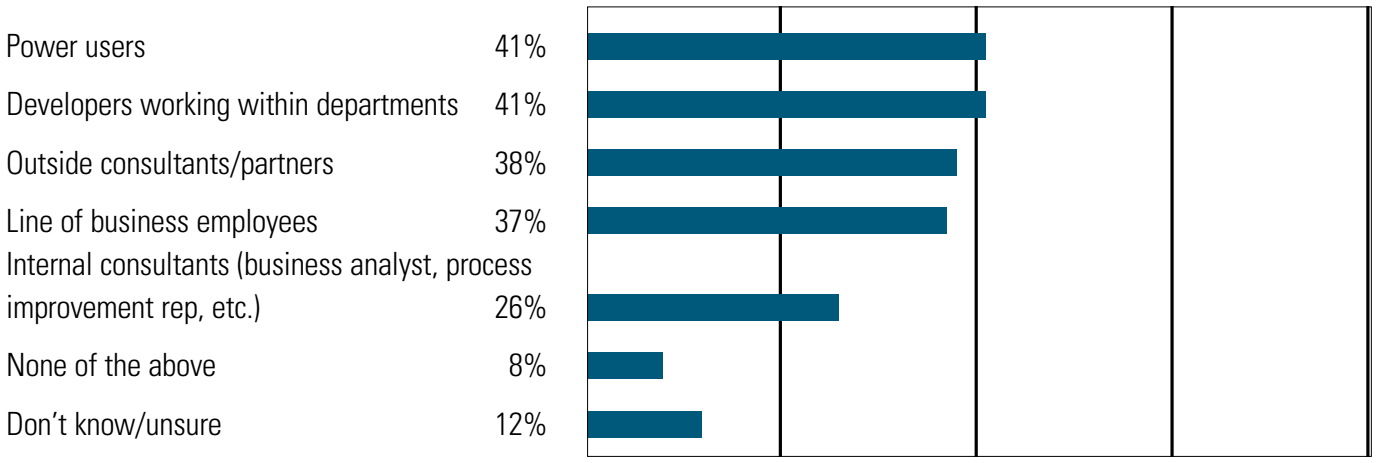


Figure 12: When Citizen Developers Build Their Applications

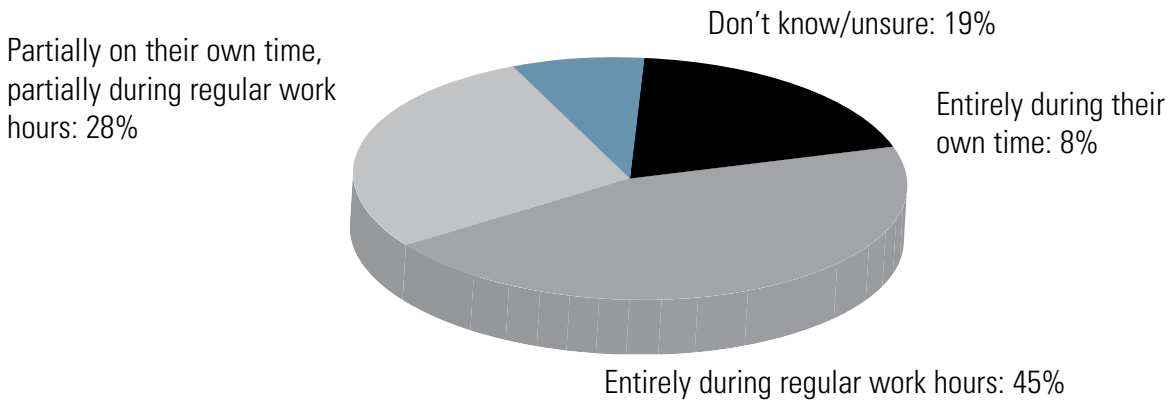


Figure 13: Amount of Time Citizen Developers Spend on Application Development

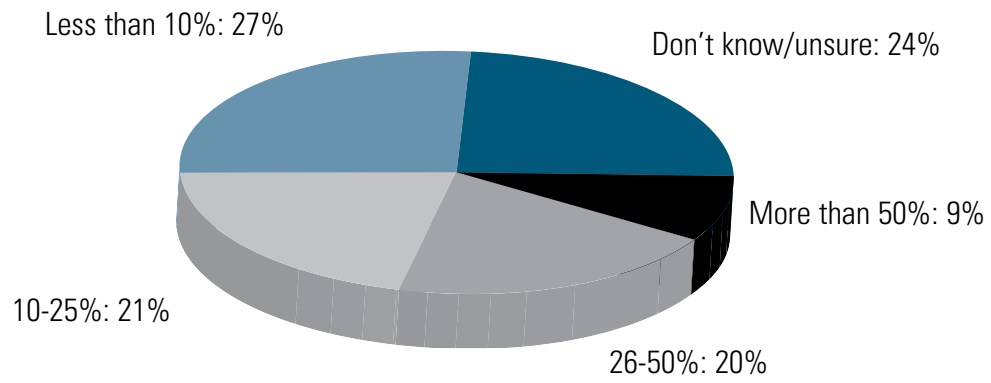
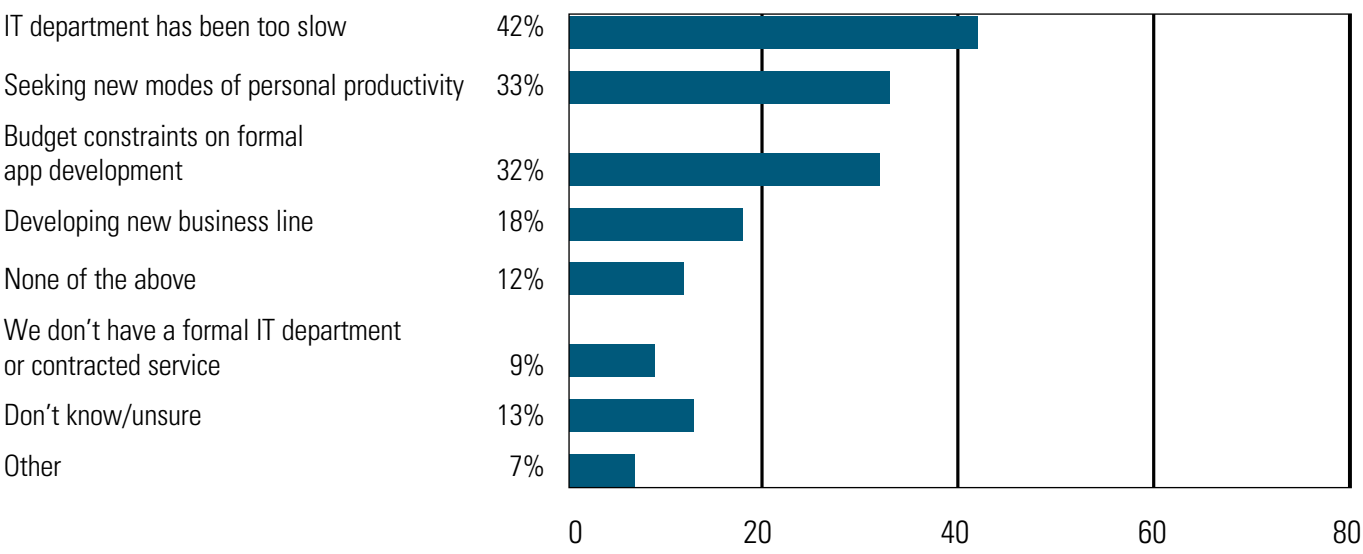


Figure 14: Primary Motivations of Non-IT Developers



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TURNAROUND TIME AND CHALLENGES

Citizen developers get applications out the door faster than large IT departments. They turn around their required applications in a matter of weeks, or a couple of months. Only 17% report turnaround times exceeding three months. The challenges to citizen development include data security and trouble learning proper programming techniques, and handling of data.

In this survey, executives said the main issue with relying on IT departments for applications is the long waits involved — IT staff is all too often involved in large-scale deployments or fighting fires. It's not uncommon to see wait times from IT departments of six months to a year for essential interfaces and front-end applications. Citizen developers, on the other hand, can turn around their required applications in a matter of weeks, or a couple of months. More than one-third, 34%, report taking a month or less to build and deploy their own apps. Another 20% say the turnaround time for their apps in within three months. Only 17% report turnaround times exceeding three months. (See Figure 15.)

The rise of citizen developers has its challenges as well, and the survey explored the main obstacles to enabling non-IT development within respondents' departments or enterprises. Data security ranks as the top concern, cited by 42%. There are already concerns about sensitive data — such as customer identifiers, credit card, and Social Security numbers — being replicated out of the secure zone of data center production systems and being passed on to less-secure development environments. Making such data available to "unofficial" applications that may be springing up across enterprises adds a whole new dimension to this concern. The ability of non-developers to effectively build robust applications that do not break, or do not disrupt enterprise systems, is another concern — another 38% said lack of knowledge gets in the way. Related to this potential lack of expertise in properly building apps or interfaces is the type of insights these apps may be generated. Such citizen developer applications may have not been vetted by IT departments or security teams to assess the viability or accuracy of the information. (See Figure 16.)

Looking at how IT respondents versus their line-of-business counterparts view the challenges, one thing stands out: IT managers are far more likely to be concerned with many of the controls and safeguards that go with application development than non-IT managers. For example, while 61% of IT professionals cite data security concerns around non-IT development, only 35% of non-IT managers say it is an obstacle. Likewise, a majority of IT managers, 51%, are worried about the lack of programming knowledge citizen developers may bring to the table, versus only 33% of their business counterparts. Insufficient governance of applications also stands out in IT managers' minds, cited as a concern by almost half. Only 25% of business-side managers worry about governance, however. (See Figure 17.)

Figure 15: Typical Turnaround Time for Non-IT Applications

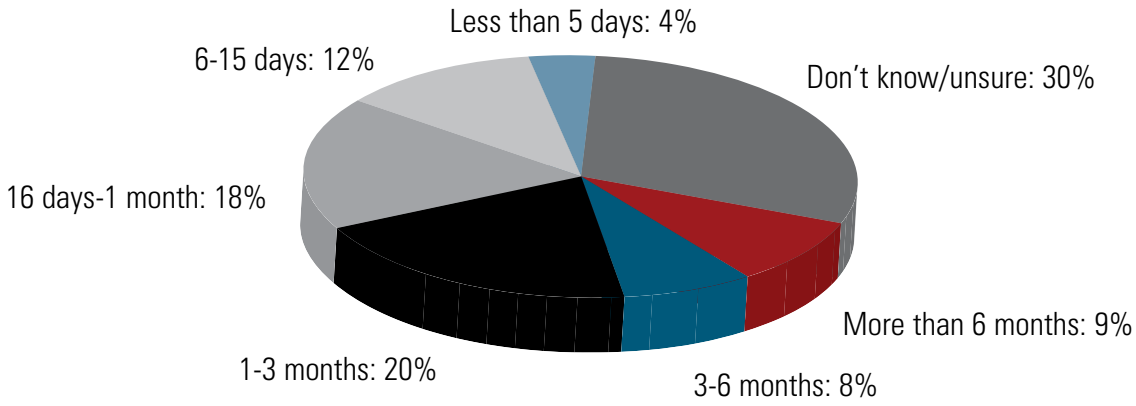


Figure 16: Obstacles to Non-IT Application Development

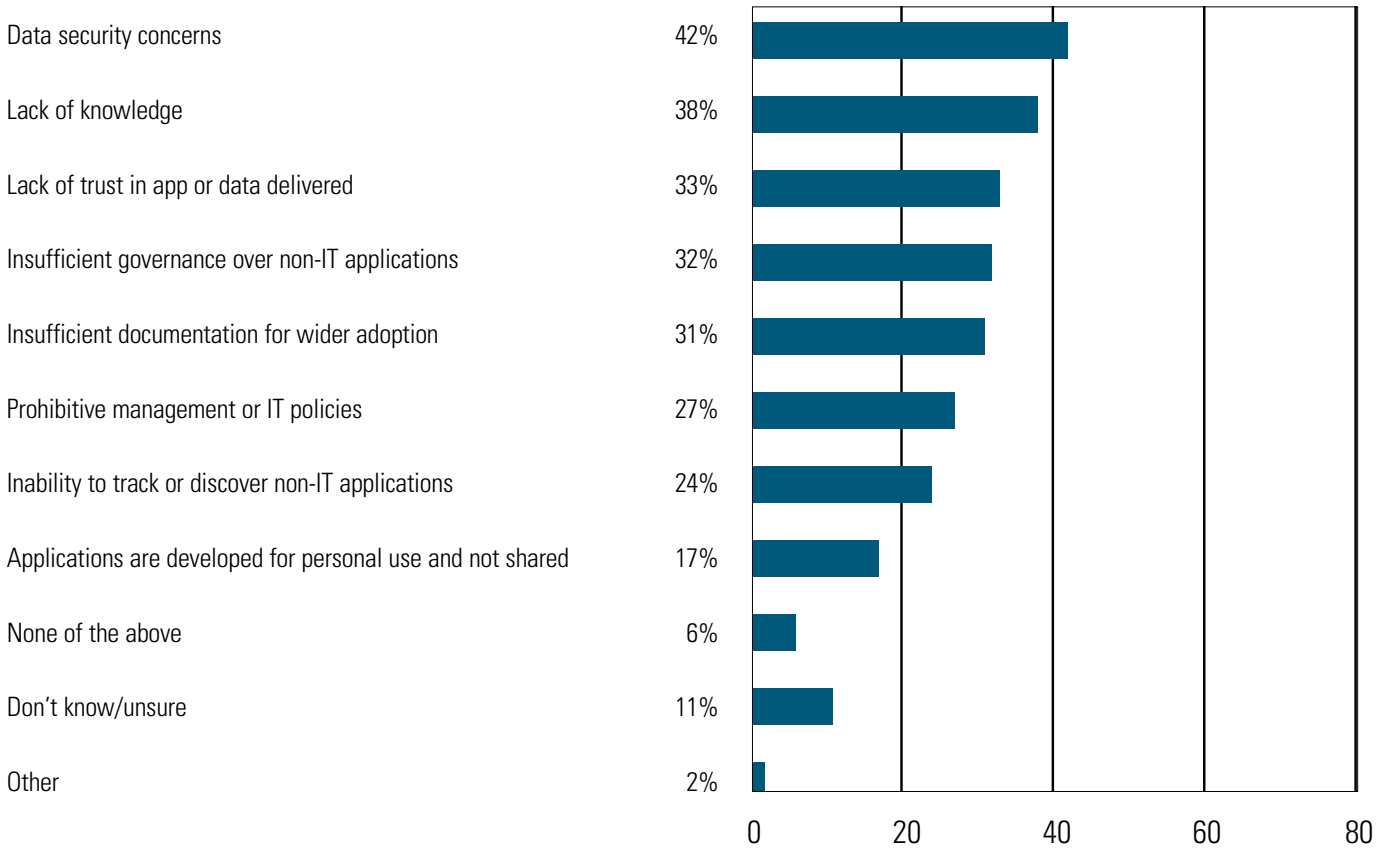
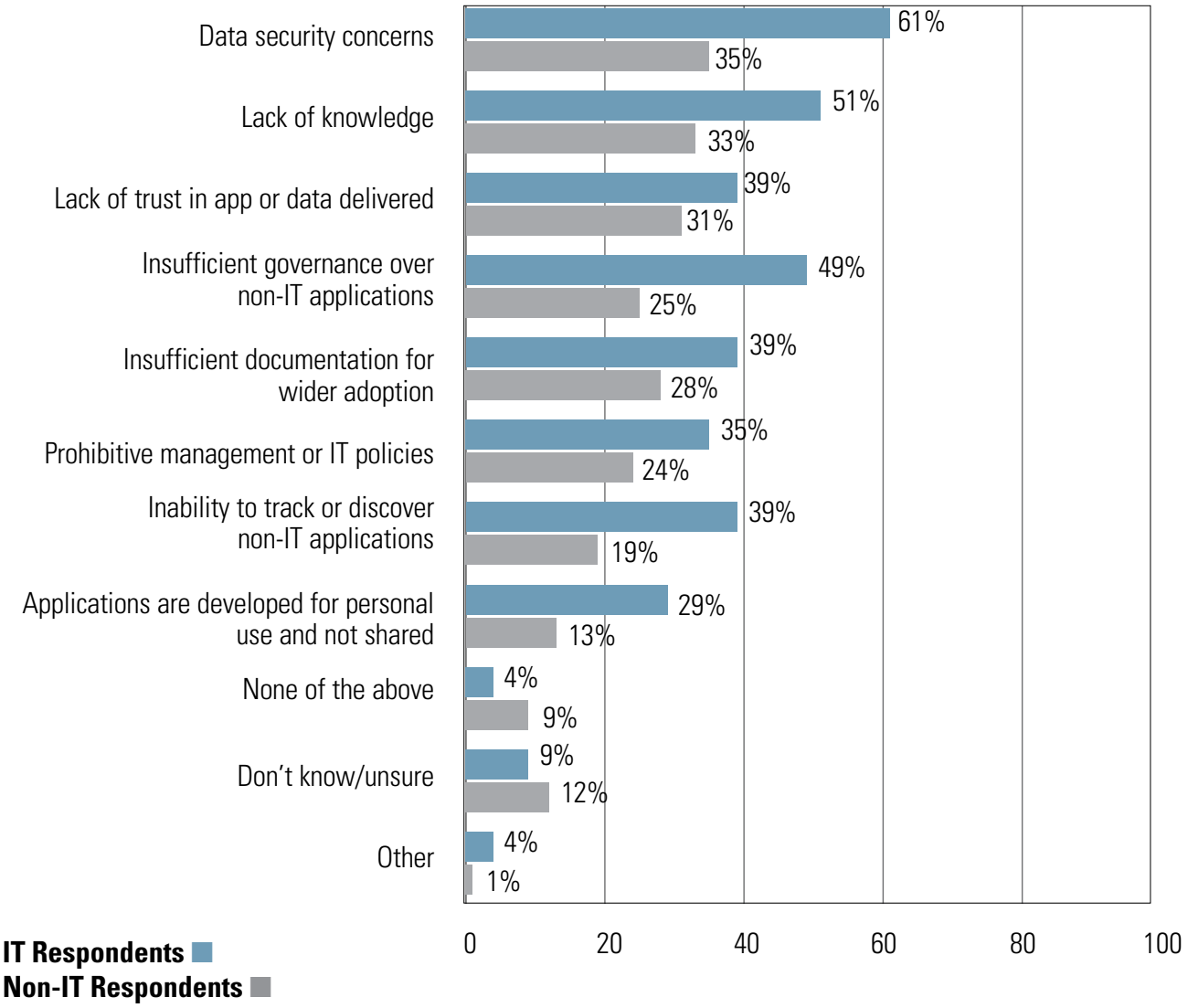


Figure 17: Obstacles to Non-IT Application Development—IT Versus Non-IT Respondents



SUPPORT AND SKILLS

One-third of organizations are highly proactive in supporting their citizen developers with training and platforms. Almost all executives acknowledge more needs to be done. Executives and their staffs have some programming skills, but more than one in four knows nothing about programming. Still, a majority have downloaded applications on their own, and close to half have worked directly on corporate websites or mobile apps.

As explored earlier in this survey report, enterprises either encourage or turn a blind eye to citizen developer activities. A segment are highly proactive as well. At least 32% of respondents' organizations actively encourage non-IT employees to develop programming or app development skills, providing training and tools. One in four provides training and classes in programming to non-IT employees to further their capabilities as citizen developers. One in five offers mentoring and encourage Agile practices, meaning close work with IT teams. Another 12% have brought in consultants or services to help non-IT employees with their programming efforts. The same number have implemented "low-code" platforms that help ease the process of app development for non-technical users. Of course, it needs be noted that a majority of organizations in the survey, 68%, either provide no training and support, or simply are not aware of such efforts. (See Figure 18.)

At least 84% of respondents, however, would like to see their organizations do more to encourage and support their citizen developers. A majority, 51%, see technology-based solutions as the best route to help ramp up citizen developers' capabilities or support to help in building and deploying applications. Close to half, 46%, also want to ramp up training and education provided to employees to increase their programming acumen. Just under one-third support enterprise app stores as a way to promote the proliferation of new applications. The same number also see Agile development — with business users and technologists working closely together — as the route to build citizen developers. (See Figure 19.)

Do IT managers see eye-to-eye with business managers on what is needed to encourage and support citizen developers? Not necessarily — IT managers support more training for business users, but also seek to expand more centralized, IT-focused approaches, such as expending enterprise app stores, introducing cloud and service-oriented architectures, and moving to Agile mythologies. On the other hand, businesspeople are more likely to favor implementation of low-code platforms to enable greater self-service when it comes to building apps. (See Figure 20.)

The survey sought to gauge the programming skills respondents may already have, as well as the current level of skills among staff members or colleagues. More than one-fourth, 27%, say they have absolutely no programming abilities at all. For the most part, respondents in the survey have some modest background in programming — 14% are highly skilled, while 19% report having moderate levels of skills. Another 39% indicate they have minor programming skills, or experience with low-code platforms. The pattern is similar for respondents' immediate staff or colleagues, with the exception of a dearth of highly skilled programmers within their staffs. (See Figure 21.)

Along with skill levels for programming, respondents were asked about the kinds of technology work they personally conducted in support of their jobs, departments, or enterprises over the past year. More than half report they have downloaded applications outside the purview of their IT departments. Close to half have worked directly on websites or mobile applications. (See Figure 22.)

To get a picture of the scope of local applications required to do their jobs, executives were asked how much of their day-to-day activities involves working in spreadsheets or developing analysis reports. A majority, 92%, indicate at least some of their days are spent working with front-end data analysis, though for at least half, this doesn't exceed 10% of their time. (See Figure 23.) A majority, 52%, expect this amount of their own time, as well as the time of their staff and colleagues, with these tools to grow. (See Figure 24.)

Figure 18: How Organizations Proactively Encourage Non-IT Application Development Skills

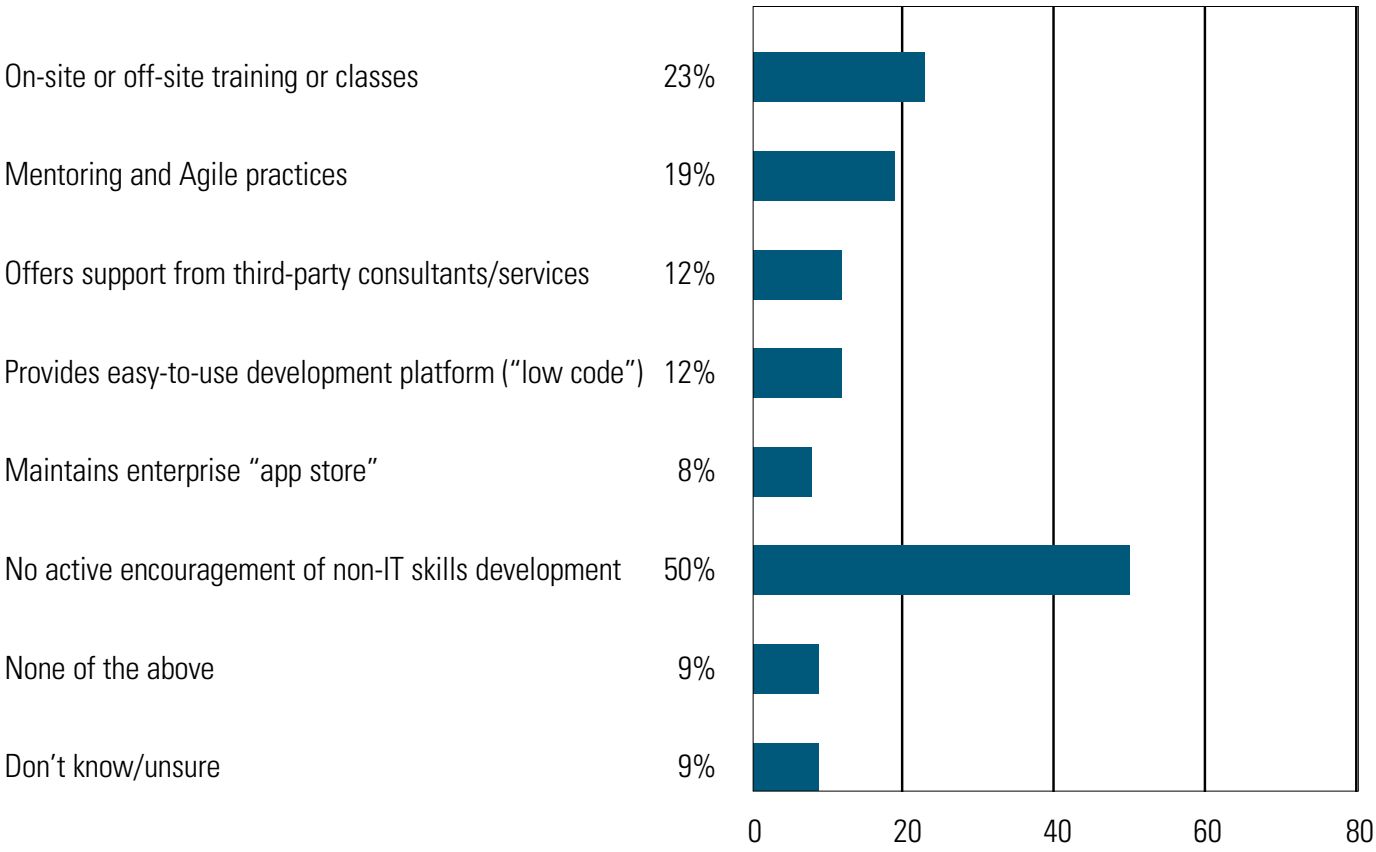


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Figure 19: Support Needed to Encourage Citizen Developers

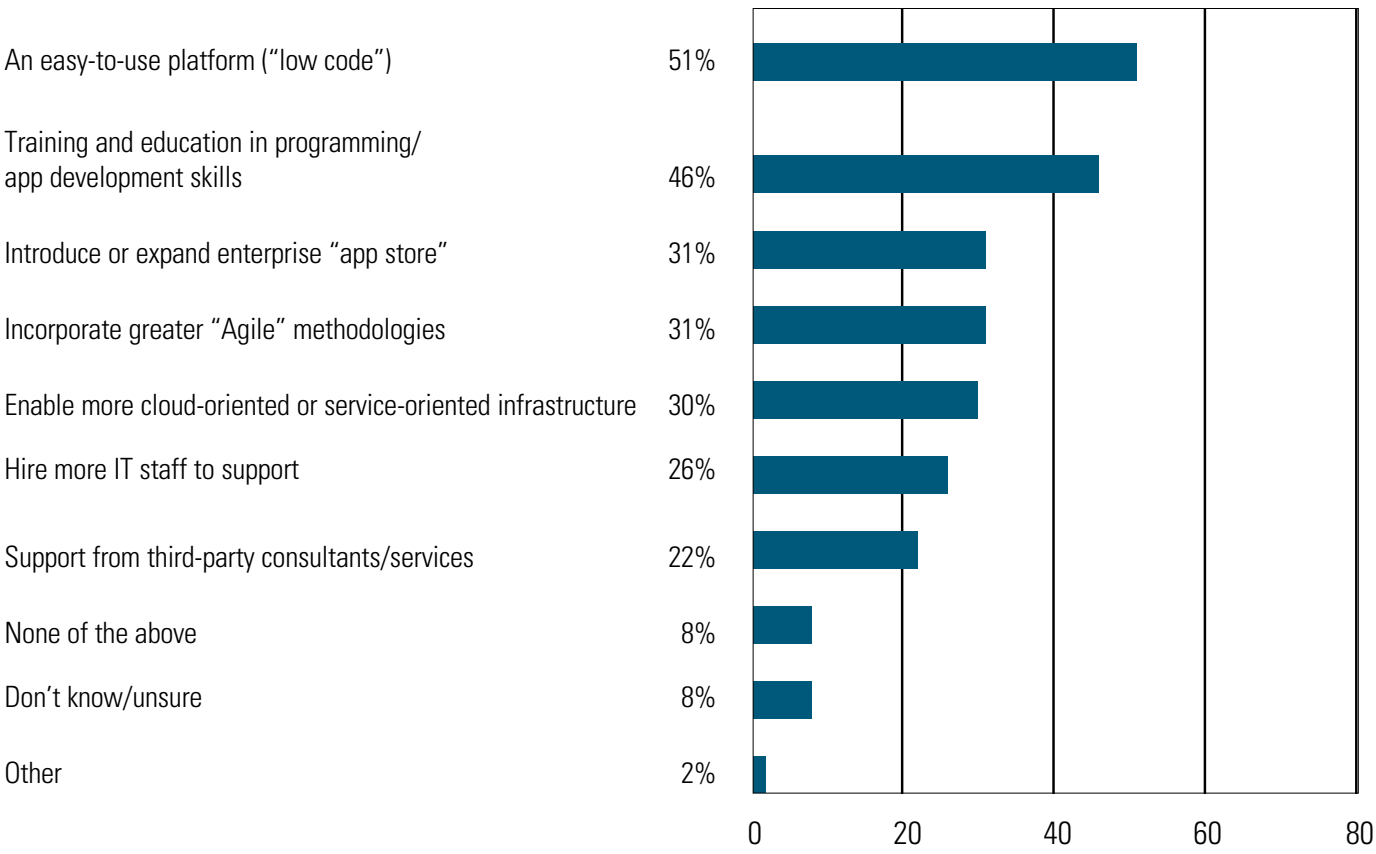

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Figure 20: Support Needed to Encourage Citizen Developers

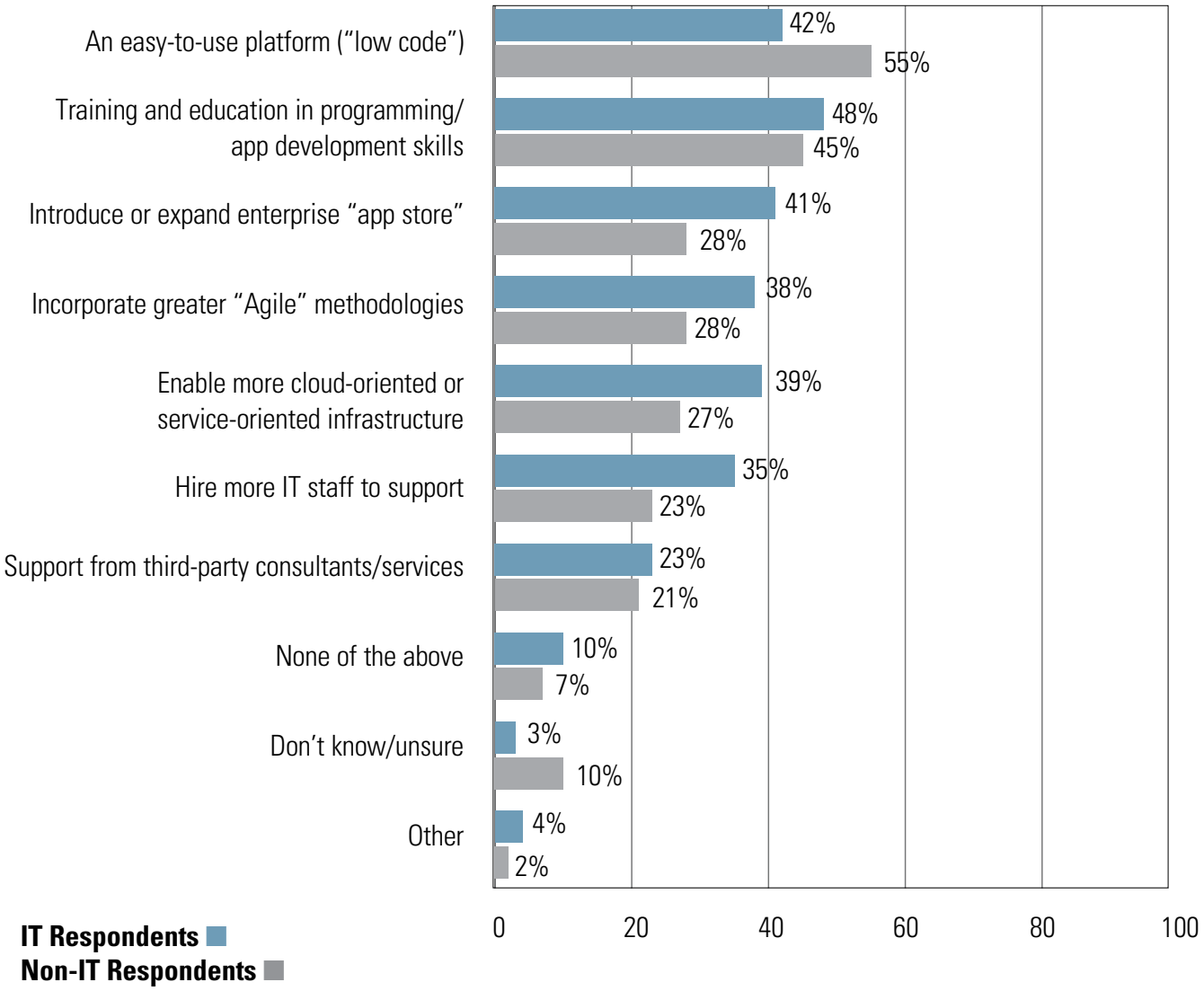
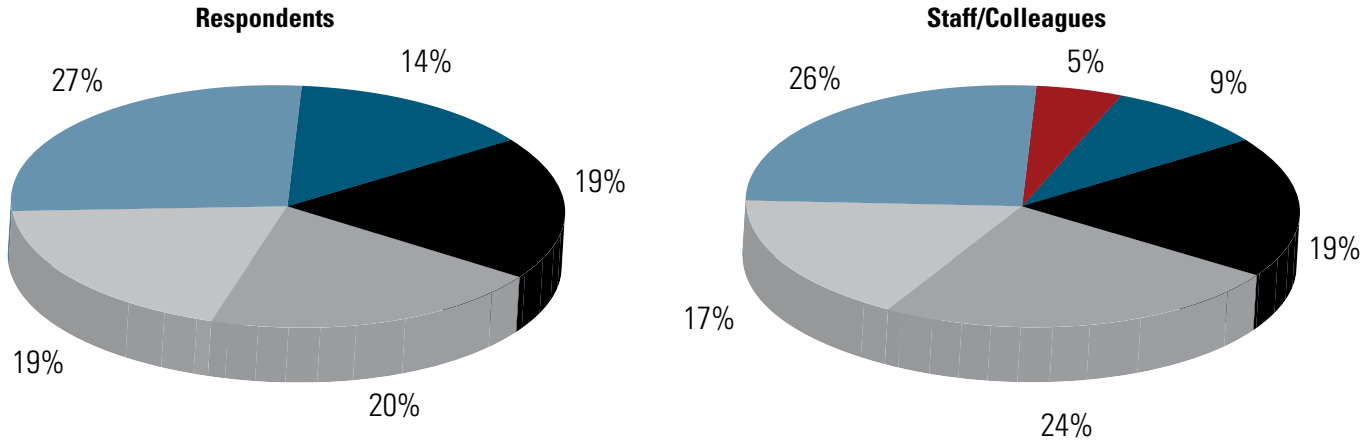


Figure 21: Respondents' and Staffs' Application Development Ability



	Respondents	Staff/Colleagues
No programming/development skills	27%	26%
Low-code/no-code developer	19%	17%
Minor programming/development skills	20%	24%
Moderate programming/development skills	19%	19%
Highly skilled programmers/developers	14%	9%
Don't know/unsure	0%	5%

Figure 22: Respondents' and Staffs' Technology Initiatives Over the Past Year

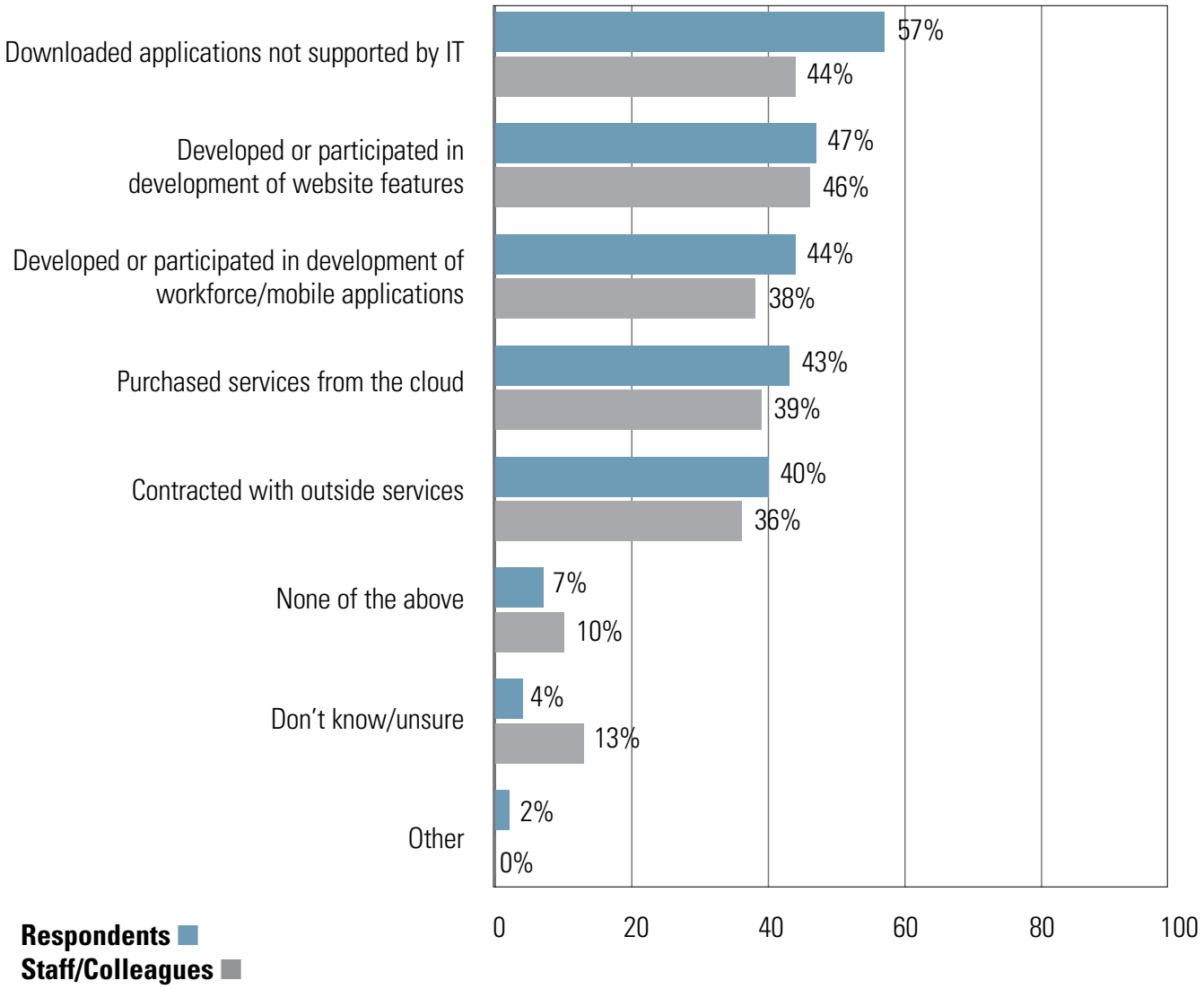
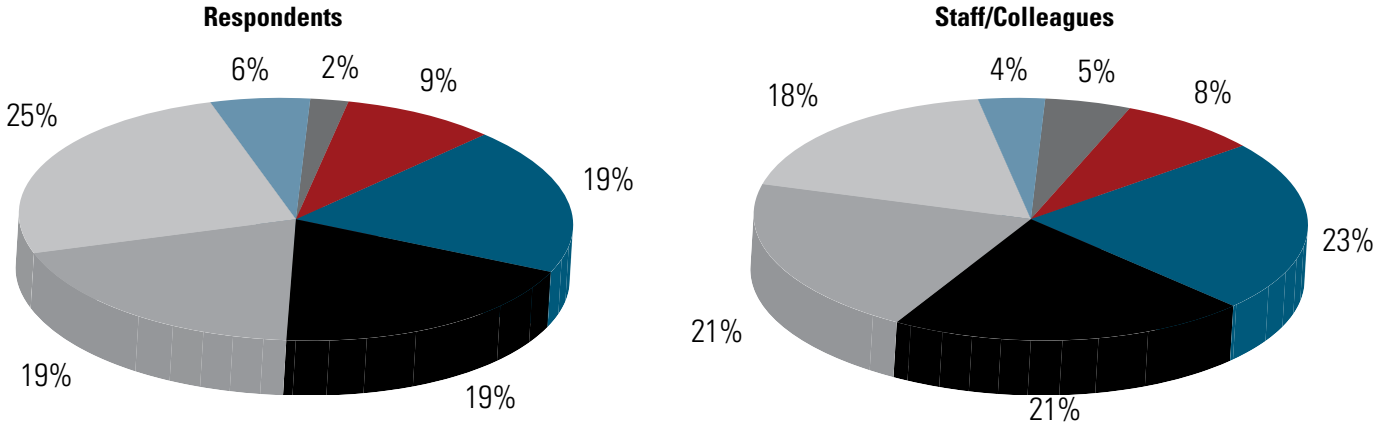
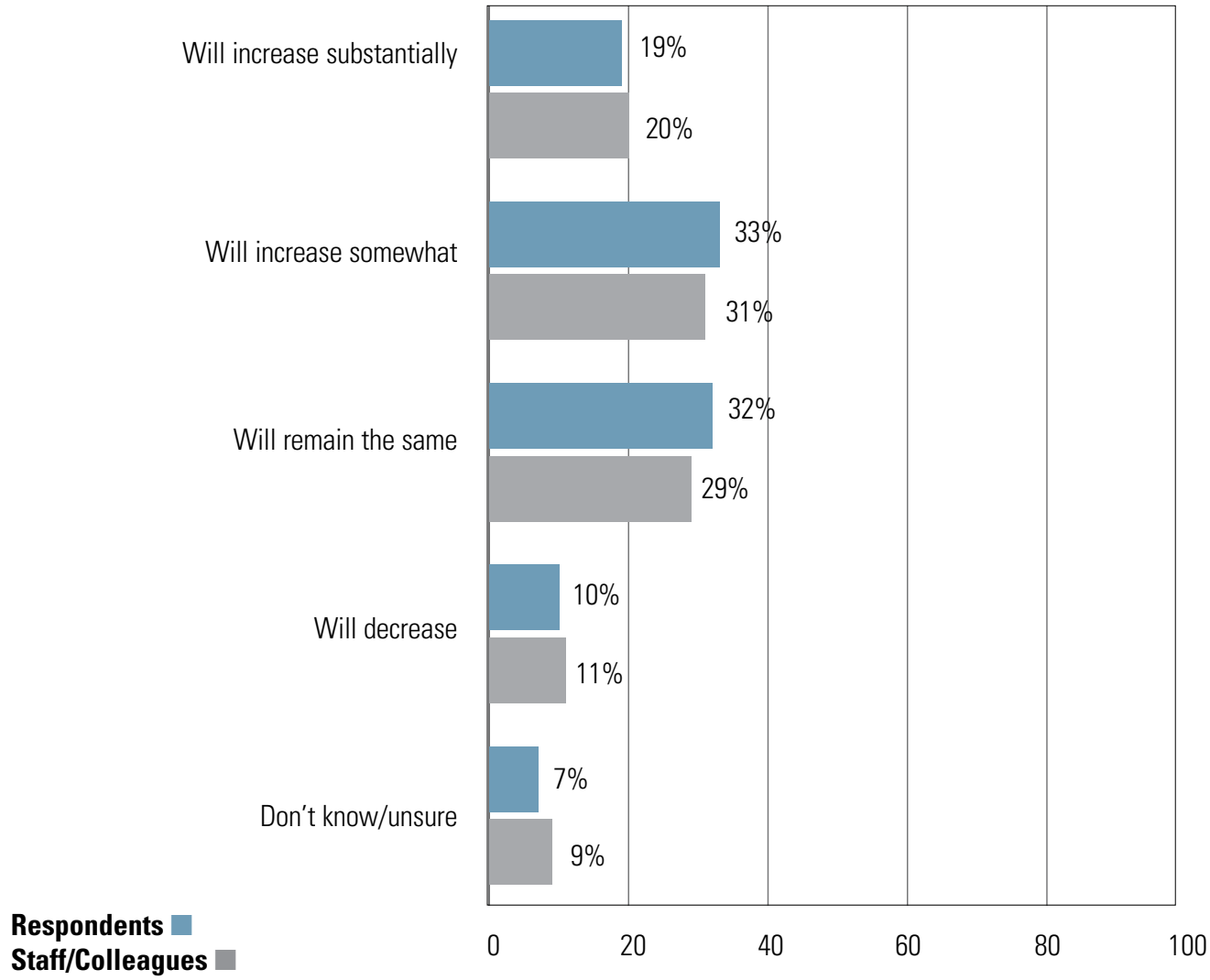


Figure 23: Respondents' and Staffs' Time Spent With Spreadsheets and Analysis Reports



	Respondents	Staff/Colleagues
None:	6%	4%
1-5%:	25%	18%
6-10%:	19%	21%
11-25%:	19%	21%
26-50%:	19%	23%
More than 50%:	9%	8%
Don't know/unsure:	2%	5%

Figure 24: Change in Respondents' and Staffs' Time Spent With Spreadsheets and Analysis Reports Over Next Two Years



CONCLUSION

As organizations' evolution to digital accelerates, the era of the citizen developer is dawning. This survey of executives and managers finds citizen development is not only encouraged by enterprises, but many of their applications are being put into day-to-day use. More than three in four organizations have applications in production that were developed outside the scope of their traditional IT departments or contracted IT services.

While most organizations in the survey have formal IT departments, these departments may be consumed within digital initiatives and large systems maintenance, with all the related corporate inertia that encumbers the delivery of services to end-users. Business users are building their own applications to get around the relatively slower speed of application delivery from their IT departments, as well as a need for greater sharing of data and analytics.

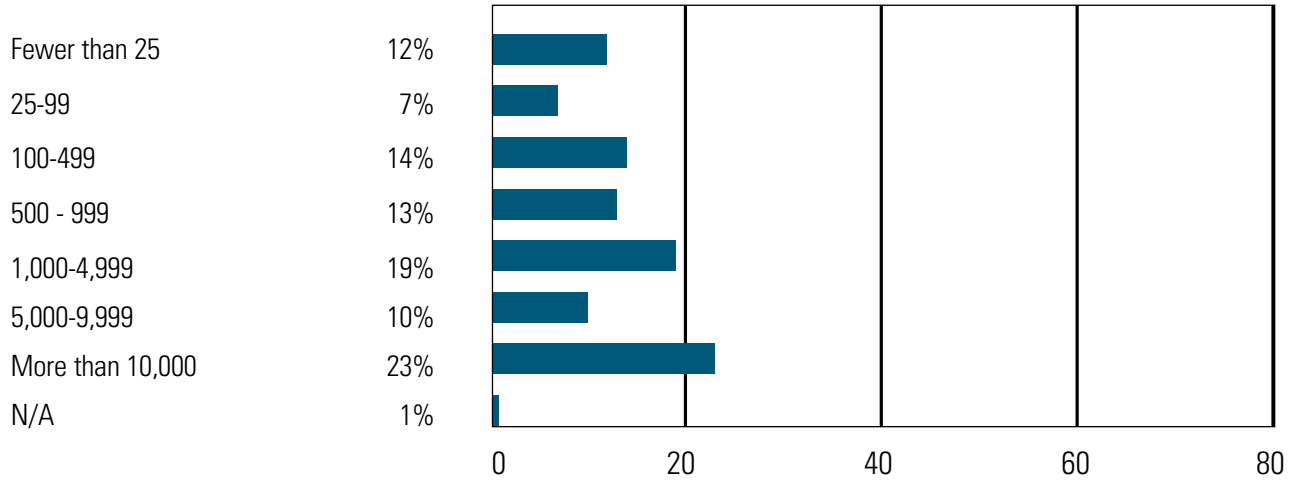
While many citizen developers are power users and developers embedded within line-of-business departments, there is also a substantial number of line-of-business employees building their own applications. They are able to take advantage of a range of robust resources now available to assist citizen developers, including open source tools, low-code platforms, and cloud services.

With these tools, platforms, and requirements for a highly engaged digital organization, the citizen developer has become a valuable player in the growth of digital enterprises.

THE RISE OF THE EMPOWERED CITIZEN DEVELOPER: 2017 LOW-CODE ADOPTION SURVEY *was produced by Unisphere Research and sponsored by Kintone. Unisphere Research is a division of Information Today, Inc., publishers of KMWorld and CRM Magazine. To review abstracts of our past reports, visit www.unisphereresearch.com. Unisphere Media, 121 Chanlon Road, New Providence, NJ 07974; 908-795-3702.*

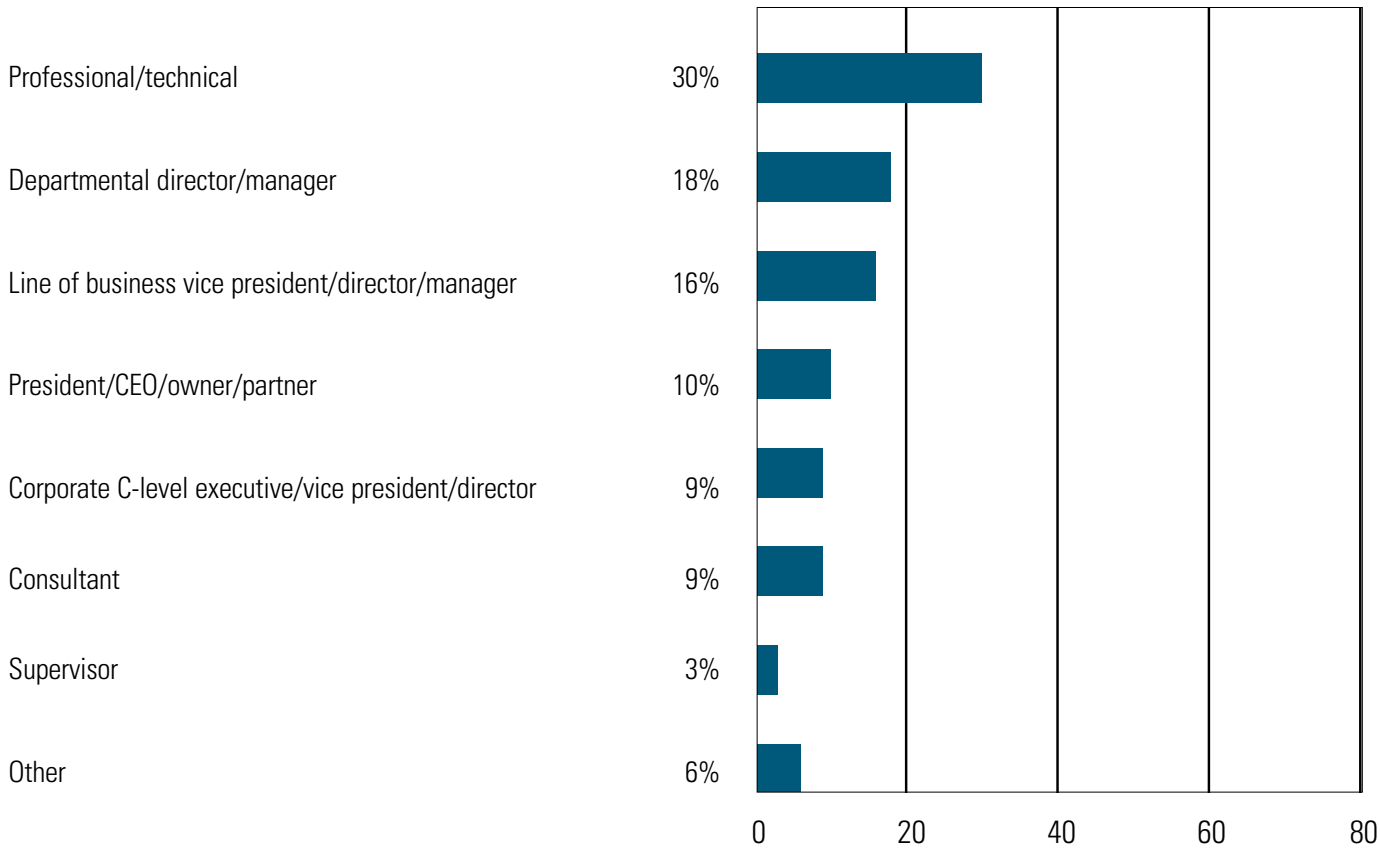
Demographics

Figure 25: Respondents' Company Size (Includes all locations, branches, and subsidiaries)



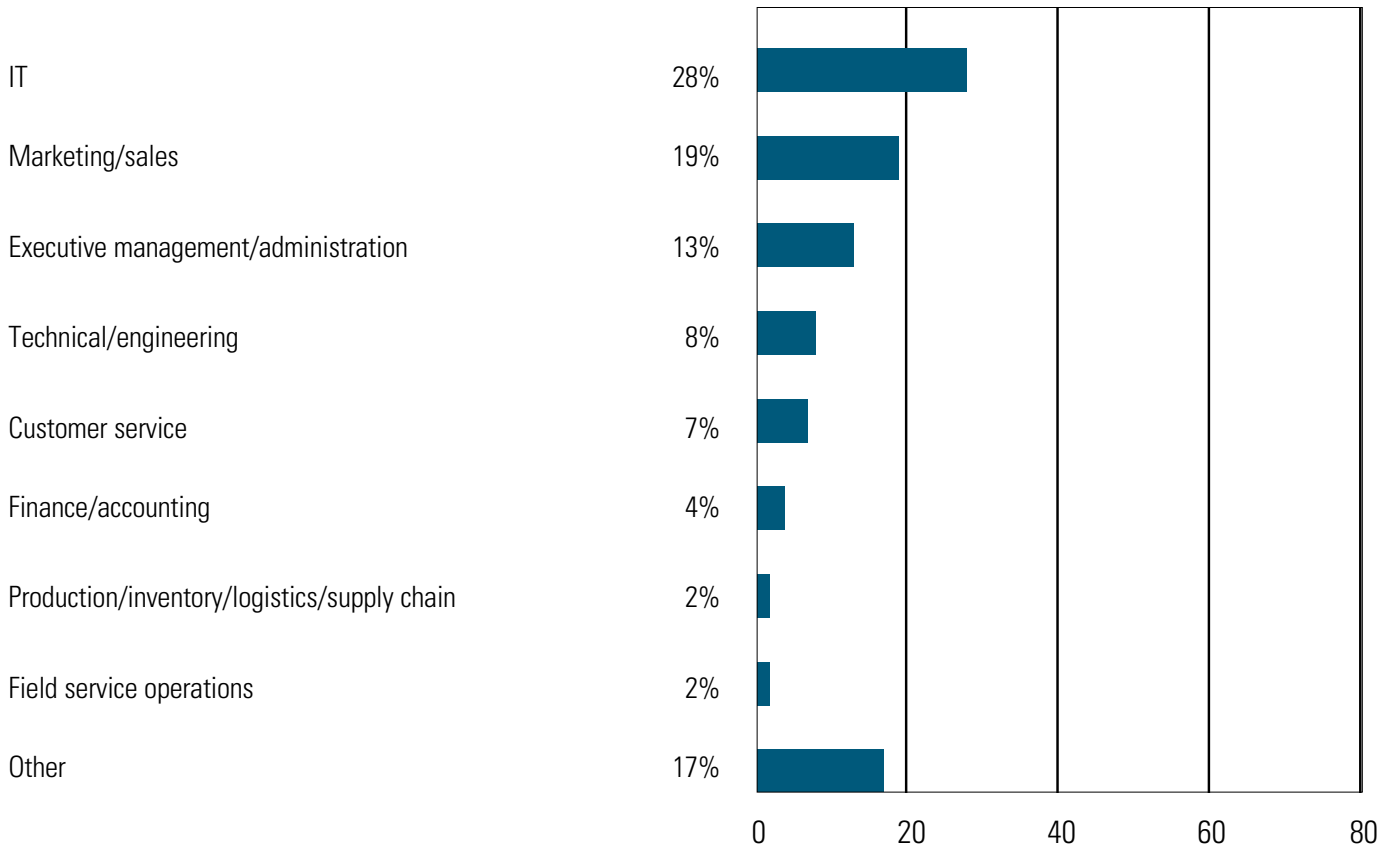
Demographics

Figure 26: Respondents' Primary Job Titles



Demographics

Figure 27: Respondents' Primary Departments



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Demographics

Figure 28: Respondents' Primary Industries